

100
Y 4. 522/1:103-88
pt 2

**SAFETY AND SOUNDNESS ISSUES RELATED TO
BANK DERIVATIVES ACTIVITIES—PART 2**

Enviro... and Waste...

HEARING

BEFORE THE

**COMMITTEE ON BANKING, FINANCE AND
URBAN AFFAIRS
HOUSE OF REPRESENTATIVES**

ONE HUNDRED THIRD CONGRESS

FIRST SESSION

OCTOBER 28, 1993

(PART 2)

Printed for the use of the Committee on Banking, Finance and Urban Affairs

Serial No. 103-88



**SAFETY AND SOUNDNESS ISSUES RELATE
BANK DERIVATIVES ACTIVITIES—PART**

**HEARING
BEFORE THE
COMMITTEE ON BANKING, FINANCE AND
URBAN AFFAIRS
HOUSE OF REPRESENTATIVES**

ONE HUNDRED THIRD CONGRESS

FIRST SESSION

OCTOBER 28, 1993

(PART 2)

Printed for the use of the Committee on Banking, Finance and Urban Affairs

Serial No. 103-88



U.S. GOVERNMENT PRINTING OFFICE

74-907-2

WASHINGTON : 1994

For sale by the U.S. Government Printing Office
Superintendent of Documents, Congressional Sales Office, Washington, DC 20402

ISBN 0-16-043588-9

HOUSE COMMITTEE ON BANKING, FINANCE AND URBAN AFFAIRS

HENRY B. GONZALEZ, Texas, *Chairman*

STEPHEN L. NEAL, North Carolina
JOHN J. LAFALCE, New York
BRUCE F. VENTO, Minnesota
CHARLES E. SCHUMER, New York
BARNEY FRANK, Massachusetts
PAUL E. KANJORSKI, Pennsylvania
JOSEPH P. KENNEDY II, Massachusetts
FLOYD H. FLAKE, New York
KWEISI MFUME, Maryland
MAXINE WATERS, California
LARRY LAROCOCO, Idaho
BILL ORTON, Utah
JIM BACCHUS, Florida
HERBERT C. KLEIN, New Jersey
CAROLYN B. MALONEY, New York
PETER DEUTSCH, Florida
LUIS V. GUTIERREZ, Illinois
BOBBY L. RUSH, Illinois
LUCILLE ROYBAL-ALLARD, California
THOMAS M. BARRETT, Wisconsin
ELIZABETH FURSE, Oregon
NYDIA M. VELAZQUEZ, New York
ALBERT R. WYNN, Maryland
CLEO FIELDS, Louisiana
MELVIN WATT, North Carolina
MAURICE HINCHEY, New York
CALVIN M. DOOLEY, California
RON KLINK, Pennsylvania
ERIC FINGERHUT, Ohio

JAMES A. LEACH, Iowa
BILL McCOLLUM, Florida
MARGE ROUKEMA, New Jersey
DOUG BEREUTER, Nebraska
THOMAS J. RIDGE, Pennsylvania
TOBY ROTH, Wisconsin
ALFRED A. (AL) McCANDLESS, California
RICHARD H. BAKER, Louisiana
JIM NUSSLE, Iowa
CRAIG THOMAS, Wyoming
SAM JOHNSON, Texas
DEBORAH PRYCE, Ohio
JOHN LINDER, Georgia
JOE KNOLLENBERG, Michigan
RICK LAZIO, New York
ROD GRAMS, Minnesota
SPENCER BACHUS, Alabama
MIKE HUFFINGTON, California
MICHAEL CASTLE, Delaware
PETER KING, New York

BERNARD SANDERS, Vermont

CONTENTS

Hearing held on:			
October 28, 1993			
Appendix:			Page
October 28, 1993.....			1
MISCELLANEOUS MATERIAL SUBMITTED FOR THE RECORD			
Supplementary Materials on Derivatives (continued from Part 1):			
Federal Deposit Insurance Corporation.....			2
Office of the Comptroller of the Currency.....			343
OCC Guidelines on Derivative Activities.....			737
Federal Reserve:			
Federal Reserve Guidelines on Derivative Activities.....			767
Summaries of Various Studies on Derivatives:			
The Report of the Commodities Futures Trading Commission: OTC Derivative Markets and Their Regulation (October 1993).....			1139
The Institute of International Finance: An Integrated Bank Regulatory Approach to Derivative Activities (May 1993).....			1159
International Monetary Fund: Systematic Issues in International Finance (August 1993).....			1165
Group of Thirty: Derivatives: Practices and Principles Appendix I Working Papers (July 1993).....			1177
Problems Real and Imagined: A Washington Perspective on Derivatives, Christopher Whalen.....			1197
Perspective on Trading Revenues: Keefe, Bruyette & Woods, Inc. (July 29, 1993).....			1209
Swaps Revisited, David N. Pringle, Lazard Freres & Co. (October 26, 1993)			1219
Moody's Assessment of Derivative Risk, by Douglas Lewis, Moody's Investors Service (June 8, 1993).....			1233
Statement of Financial Accounting Standards Board [FASB].....			1239
Various Newspaper Articles on Derivatives.....			1241

APPENDIX

PART 2
(Continued from Part 1)

FDIC

Appendix I

Appendix I

Glossary of Terms

Add-ons: The term used in the 1988 Basle capital accord that denotes the amounts added to the credit equivalent value of derivative contracts to reflect potential credit exposures arising from future price or volatility changes. Add-ons are calculated on the basis of notional principal values, and vary according to the nature of the derivative instrument and its maturity.

Agencies: For the purpose of this document, refers to the four principal financial institution regulatory agencies, the FDIC, OCC, FRB and OTS.

Aggregation Risk: This refers to linkages between products or markets which are created or heightened by derivatives. (Also called Intereconnection Risk)

Arbitrage: Trading strategies designed to profit from price differences for the same or similar goods in different markets. Historically the term implied little or no risk in the trade, but more recently it has come to suggest some risk of loss or uncertainty about total profits.

Backroom Operations: Segregated supporting or control functions.

Bid/Offer Spread: The difference between the buying and selling price of an instrument.

Bilateral Netting : A proposed method for determining credit risk exposure positions which permits the offsetting of positions or payment obligations between two parties whereby a large number of individual positions or payment obligations are reduced to one single position or payment obligation, such that in the event of a counterparty's failure to perform due to default, bankruptcy or liquidation, the other counterparty would have a claim or payment obligation to receive or pay only the net value of the sum of unrealized gains and losses on all transactions.

BIS : Bank for International Settlements.

Caps: An option-like contract for which the buyer pays a fee, or premium, to obtain protection against a rise in a particular interest rate above a certain level. For example, an interest rate cap may cover a specified principal amount of a loan over a designated time period such as a calendar quarter. If the covered interest rate rises above the rate ceiling, the seller of the rate cap pays the purchaser an amount of money equal to the average rate differential times the principal amount times one quarter.

Clearing System (or Clearing House Arrangement): A mechanism for calculation of mutual positions within a group of participants with a view to facilitating the settlement of their mutual obligations on a net basis.

Collar: The simultaneous purchase of a cap and the sale of a floor with the aim of maintaining interest rates within a defined range. The premium income from the sale of the floor reduces or offsets the cost of buying the cap.

Collateralized Mortgage Securities: Mortgage-backed bonds or obligations secured by the cash flow of a pool of mortgages.

Commodity Options: A contract providing the purchaser the right, but not the obligation, to buy or sell a given quantity of a commodity at a strike price, on or before a given date.

Commodity Swaps: A transaction that allows an investor to exchange payment streams which are based on commodity prices. Commodity swaps involve swaps of payment streams only and are usually settled in cash. However, physical delivery may also occur. Commodity swaps enable producers and consumers to hedge commodity price risk. Usually, the consumer pays fixed, the producer floating.

Counterparty : One of the two entities engaged in a derivative transaction. Both the buyer and the seller are counterparties to each other.

Covered Option: An option position hedged with a position in the cash instrument.

Credit Equivalent Value: Amount representing the credit risk exposure in off-balance sheet transactions. In the case of derivatives, credit equivalent value represents the potential cost at current market prices of replacing the contract's cash flows in the case of default by the counterparty.

Credit Risk: The risk that a counterparty to a transaction will fail to perform according to the terms and conditions of the contract, thus causing the holder of the claim to suffer a loss.

Cross-Currency Interest Rate Swaps: A transaction involving the exchange of streams of interest rate payments (but not necessarily principal payments) in different currencies and often on different interest bases (e.g., fixed Deutsche Mark against floating dollar, but also fixed Deutsche Mark against fixed dollar).

Cross-Currency Settlement Risk (or Herstatt Risk): Risk relating to the settlement of foreign exchange contracts that arises when one of the counterparties to a contract pays out one currency prior to receiving payment of the other. Herstatt risk arises because the hours of operation of domestic interbank fund transfer systems often do not overlap due to time zone differences. In the interval between final settlement of each leg, counterparties are exposed to credit risk and market risk.

Cross Product Agreements: Master agreements between counterparties covering more than one type of derivative instrument.

Currency Swaps: A transaction involving the exchange of cash flows and principal in one currency for those in another with an agreement to reverse the principal swap at a future date.

Current Exposure Method: Term used in the Basle capital accord to denote a method of assessing credit risk in off-balance sheet transactions, consisting of adding the marked-to-market replacement cost of all contracts with positive value and an add-on amount for potential credit exposure arising from future price or volatility changes.

Dealers: Enter into transactions with customers and other market participants, seeking to profit by maintaining a generally balanced portfolio from which they expect to earn a bid/offer spread.

Deferral Accounting: The postponement of hedge instrument gains or losses to coincide with the maturities or repricing dates of the underlying asset or liability.

Division of Supervision (DOS) - Division of the FDIC responsible for examination and supervision of open banks.

Discount Swaps: Also called off-market swaps, in which the fixed payments are below market rates. At the end of the swap, the shortfall is made up by one large payment. The credit risk taken on by the fixed rate recipient (usually the bank) increases with the discount applied to interest rates.

Division of Supervision: Division of the FDIC responsible for examination and supervision of open banks.

DOS Regions: Located in Atlanta, Boston, Chicago, Dallas, Kansas City, Memphis, New York and San Francisco.

Duration: A calculation measuring the price sensitivity of a financial instrument to changes in interest rates. Expressed as a measurement of time, duration measures the weighted average time to maturity of all cash flows from a financial instrument.

Embedded Options: An option (either tied to an interest rate index, to an equity price or an equity index) embedded in a debt instrument that affects the instrument's redemption. Examples include callable bonds and mortgage backed securities.

End-User (swap market): In contrast to a swap-trading institution, a counterparty which engages in a swap to change its interest rate or currency exposure. End-users may be nonfinancial corporations, financial institutions or governments.

Equity Options: Encompass a class of options giving the purchaser the right, but not the obligation, to buy or sell an individual share, a basket of shares, or an equity index at a predetermined price, on or before a fixed date.

Equity Securities: Principally stock or other traded ownership interests.

Equity Swaps: A transaction that allows an investor to exchange the rate of return (or a component there of) on an equity investment (an individual share, a basket or index) for the rate of return on another non-equity or equity investment.

Examination and Supervisory Guidance: The universe of regulations, statements of policy, operating bulletins, and examination and procedural manuals.

Exchange Traded: Instruments with standardized contract terms traded in an established clearinghouse environment.

Exercise Price (also Strike Price): The fixed price at which an option holder has the right to buy, in the case of a call option, or to sell, in the case of a put option, the financial instrument covered by the option.

FDICIA: The Federal Deposit Insurance Corporation Improvement Act of 1991

FIRREA: Financial Institutions Reform Recovery and Enforcement Act of 1989.

Floor: A contract whereby the seller agrees to pay to the purchaser, in return for the payment of a premium, the difference between current interest rates and an agreed (strike) rate times the notional amount should interest rates fall below the agreed rate. A floor contract is effectively a string of interest rate guarantees.

Foreign Exchange Contracts: Agreement between two parties to exchange one currency for another at an agreed upon exchange rate.

Forward Rate Agreement (FRA): A contract in which two counterparties agree on the interest rate to be paid on a notional deposit of specified maturity at a specific future time. Normally, no principal exchanges are involved, and the difference between the contracted rate and the prevailing rate is settled in cash.

Funding: The obtaining of capital, debt and deposits.

Futures Contract: An exchange-traded contract generally calling for delivery of a specified amount of a particular grade of commodity or financial instrument at a fixed date in the future. Contracts are highly standardized and traders need only agree on the price and number of contracts traded. Traders' positions are maintained at the exchange's clearinghouse, which becomes a counterparty to each trader once the trade has been cleared at the end of each day's trading session. Members' positions are marked-to-market daily at the clearinghouse and members must post margin. Most trades are unwound before delivery. The interposition of the clearinghouse facilitates the unwinding since a trader need not find his original counterparty but may arrange an offsetting position with any trader on the exchange.

GAAP: Generally Accepted Accounting Principles.

Global Market: Generally the largest industrialized nations.

Group of Thirty: Blue ribbon international panel of industry, legal, and academic representatives, supported by the major institutional participants in the global financial markets.

Hedge Funds: Speculative funds managing investments for private investors (in the US, such funds are unregulated if the number of investors does not exceed one hundred).

Hedging: A financial technique used to offset investment risk such as risk of loss from price fluctuations in the market.

Historical Loss Rates: Determined from data accumulated over a given time frame.

Index: A numerical figure or statistical measure adjusted periodically to reflect changes in the quantity of goods produced, prices paid or loan interest rates, by comparing current activity to a base year or other specified time frame.

Insured Financial Institutions: For the purposes of this document, commercial banks, savings banks, savings and loans, and certain trust companies, thrift companies and industrial loan companies.

Interest Rate Contracts: For purposes of this document, include interest rate swaps, caps, options, floors, futures, forwards and forward rate agreements.

Interest Rate Risk (IRR): The adverse net worth or earnings impact on individual positions, portfolios or institutions resulting from changes in the market interest rate environment.

Interest Rate Swap: A transaction in which two counterparties exchange interest payment streams of differing character based on an underlying notional principal amount. The three main types are coupon swaps (fixed rate to floating rate in the same currency), basis swaps (one floating rate index to another floating rate index in the same currency), and cross-currency interest rate swaps (fixed rate in one currency to floating rate in another currency).

Intermediary (swap market): A counterparty who enters into a swap in order to earn fees or trading profits. Most intermediaries, or swap dealers, are major U.S. money-center banks, major U.S. and U.K. investment and merchant banks, and major Japanese securities companies.

Intraday Credit (or Daylight Credit): Credit extended for a period less than one business day; in a credit transfer system with end-of-day final settlement, daylight credit is tacitly extended by the receiving institution if it accepts and acts on a payment order even though it will not receive final funds until the end of the business day.

ISDA: International Swap and Derivatives Association.

Leverage: The debt to equity position of a company.

Liquidity: Characteristic of a security or commodity with enough units outstanding to allow large transactions without a substantial decrease in price.

Margin: Funds or collateral posted as a good-faith performance guarantee. Futures and options exchanges often require traders to post initial margin when they enter into new contracts. Margin accounts are debited or credited to reflect changes in the current market prices on the positions held. Members must replenish the margin account if margin falls below a minimum. In similar fashion, customers must post margin on positions held for them at the exchange clearinghouse by member firms.

Market Liquidity: Measured by participants as the extent to which their own actions (transactions) change the market price of an asset. A market is said to be liquid if the immediate reversal of a transaction does not involve losses (other than fixed transaction costs).

Market Liquidity Risk: The uncertainty associated with the market liquidity of a financial asset. Often considered as the risk that a (negotiable or assignable) financial instrument cannot be sold quickly and at a price close to its fundamental value.

Market risk: The risk of a change in the price of an asset resulting in a financial loss to the holder when the asset is sold. Price, interest rate, volatility, basis, and currency risks are commonly referred to as market risks.

Marking-to-Market: The process of recalculating the exposure in a trading position or a portfolio (of securities, equities or derivatives) on the basis of current market prices. For capital adequacy purposes, the Current Exposure, or Replacement Cost, is the Mark to Market value.

Master Agreement: An agreement that incorporates the entire range of derivative (usually swap) transactions between two counterparties into one legal agreement.

Money Center Banks: Large, multinational US banks historically headquartered in New York, Chicago and San Francisco.

Multilateral Netting: Netting arrangements involving more than two counterparties.

Netting (or Netting Schemes): An agreed offsetting of positions or obligations by trading partners or participants in a system. The netting reduces a larger number of individual positions or obligations to a smaller number of positions. Netting may take several forms which have varying degrees of legal enforceability in the event of default of one of the parties.

Notional Value (or Notional Principal): The underlying face amount on which some index, price movement, interest rate or multiple, acts in order to determine the actual cash flows to be paid or received. Notional principal amounts calibrate the volume of future cash flows but do not represent the actual amount transferred.

Novation: The satisfaction and discharge of existing contractual obligations by the substitution of new contractual obligations (whose effect, for example, is to replace gross with net payment obligations.)

Off-Balance Sheet Activities: Banks' business that does not generally involve the recording of assets or liabilities. Examples include trading in swaps, options, futures, and foreign exchange forwards, and the granting of stand-by commitments and letters of credit.

Option: The contractual right, but not the obligation, to buy or sell a specified amount of a given financial instrument at a fixed price before or at a designated future date. A call option confers on the holder the right to buy the financial instrument. A put option involves the right to sell the financial instrument.

Original Exposure Method: A term used in the Basle capital accord to denote a method for assessing the credit risk in a derivatives portfolio, consisting of applying a standard set of conversion factors to the notional principal amounts of each instrument according to the nature of the instrument and its maturity.

OTC Market (Over-the-Counter Market): Trading in financial instruments transacted off organized exchanges. Generally the parties must negotiate all details of the transactions, or agree to certain simplifying market conventions. In most cases, OTC market transactions are negotiated over the telephone. OTC trading includes transactions among market-makers and between market-makers and their customers. Firms mutually determine their trading partners on a bilateral basis.

Peer Group: Institutions with similar size and other characteristics, within parameters established by the Agencies.

Premium: The price paid for an option by an option holder to an option writer.

Primary Federal Regulator: For Nationally chartered banks the Office of the Comptroller of the Currency; for State Member Banks the Federal Reserve; for State Nonmember Banks the Federal Deposit Insurance Corporation and for Savings and Loans the Office of Thrift Supervision.

Qualified Financial Contract: Specifically defined in FIRREA to include any "securities contract, commodity contract, forward contract, swap agreement, and any similar agreement ..."

Reference Rate: The interest rate used as an index for pricing or determining cash flow of a derivative product.

Risk Management: In the context of this document, altering the impact of market risks on the balance sheet or its components.

Risk Based Capital: Defined in Part 325 of the FDIC Rules and Regulations to reflect different capitalization requirements for different balance sheet assets and off balance sheet instruments.

Safety and Soundness Examination: Conducted by DOS to determine the financial capacity of insured institutions.

Settlement Risk: Between two counterparties, the risk that a counterparty to whom a firm has made a delivery of assets or money defaults before the amounts due or assets have been received; or the risk that technical difficulties interrupt delivery or settlement even if the counterparties are able to perform. In the latter case, payment is likely to be delayed but recoverable. Settlement risk exposes no-fault parties to credit, cash liquidity and market risk.

Stop-Loss Order: A mechanism by which a dealer (or end user) leaves instructions with a counterparty to buy or sell a particular instrument (currency, future, option, etc.) when its price reaches a certain level. The level of an index (Dow Jones Industrial Average, S&P 500, CRB, etc.), or the price of a different but related instrument can also be used as the trigger mechanism for the order.

Swap: A financial transaction in which two counterparties agree to exchange streams of payments over time according to a predetermined rule. A swap is normally used to transform the market exposure associated with a loan or bond borrowing from one interest rate base (fixed term or floating rate) or currency of denomination to another.

Swaptions: An option to enter (or cancel) a swap.

Systemic risk: The risk that a disruption (at a firm, in a market segment, to a settlement system etc.) causes widespread difficulties at other firms, in other market segments or in the financial system as a whole.

Tier 1 Capital: Defined in Part 325 of the FDIC Rules and Regulations essentially as common and preferred stock less most intangible assets and identified losses.

Trading: The purchasing or selling of instruments in attempts to take advantage of incremental price movements.

Two Way Payments: Provision under a master agreement establishing the continuation of contractually obligated payments following a bankruptcy or other default event. Limited two way payments allows for the possible interruption of contractual cash flows due to certain default events (such as FDIC receivership), while full or unlimited two way payments require the continuation of such cash flows irrespective of the nature of the event.

Underlying: The designated financial instruments which must be delivered in completion of an option contract or a futures contract. For example, the underlying may be fixed-income securities, foreign exchange, equities, or futures contracts (in the case of an option on a futures contract).

Unmatched Position: Acceptance of the market risk of a contract without entering into an opposite or offsetting contract to allow benefit from the same market risk or risks.

US Banks: Banks whose headquarters are domiciled in the states or possessions of the United States.

Value Calculation Models: Used to calculate the present value of future cash flows using forward yield curves and probability expectations.

Variation Margin: The gain or loss on open positions, calculated by marking to market at the end of each trading day. Such gain or loss is credited or debited by the clearinghouse to each clearing member's account and by members to their customer's accounts.

Volatility: A measure of the variability of the price of an asset, usually defined as the annualized standard deviation of the natural log of asset prices.

Sample Off-site Monitoring Report

Appendix II

Office of Capital Markets

Summary of Financial Institution Mortgage and Off-Balance Sheet Securities Activities

Trend of Holdings

Quarter Ending March 31, 1993 to Quarter Ending June 30, 1993.

The following report analyzes several key trends pertaining to holdings of off-balance sheet contracts, mortgage pass-through securities, and CMOs/REMICs in FDIC-insured institutions at the end of the first calendar quarter of 1993 when compared to the end of the second calendar quarter of 1993. Preliminary Call Report data has been utilized. The data provided in the off-balance sheet activity report contains all institutions with reported activity in interest rate and foreign exchange contracts. Interest rate contracts include: interest rate swaps, interest rate futures and forward contracts, and interest rate option contracts. Foreign exchange contracts include: foreign exchange swaps, foreign exchange futures and forward contracts, and foreign exchange option contracts.

Financial institutions with substantial volumes of mortgage securities, as defined below, are included in the mortgage securities monitoring report. The criteria used to include an institution for this report are one or more of the following conditions:

- Total mortgage securities as a percentage of total assets must be greater than or equal to 40% or;
- Total mortgage pass-through securities as a percentage of total assets must be greater than or equal to 30% or;
- Total CMO tranches as a percentage of total assets must be greater than or equal to 15%.

National Overview

Interest Rate Contracts:

The number of FDIC insured institutions holding interest rate contracts decreased 2.4 % in the second quarter of 1993 to 1,120. The New York Region showed the largest decrease in the number of institutions reporting interest rate contracts, dropping to 213 from 229 at the end of the quarter. The total dollar volume of interest rate contracts for FDIC insured institutions increased to \$ 6.4 trillion from \$5.5 trillion in the first quarter, a gain of 16.4 %. Option contracts showed the biggest increase in dollar volume, climbing 33 %, from \$ 1.2 trillion to \$ 1.6 trillion.

The majority of activity in interest rate contracts continues to be held by national and state member institutions in the New York region, which hold 78 % of the dollar volume of all outstanding contracts. State non-member and savings banks reported a total of \$ 135.5 billion in outstanding contracts, an increase of 26 % over the first quarter. The bulk of the activity in these banks is in interest rate swaps and options contracts.

Foreign Exchange Rate Contracts:

The total holdings of foreign exchange (FX) rate contracts held by FDIC insured institutions increased 7 % in the most recent quarter to \$ 4.5 trillion. Banks in the New York region accounted for 81 % of the total volume. The overwhelming majority of the dollar volumes reported for FX contracts was in futures and forwards contracts, which made up 81 % of the total volume. National and state member banks accounted for \$ 4.4 trillion, or 98 %, of the total dollar volume. State non-member bank FX holdings were up slightly over the first quarter, to \$ 66.1 billion. There was no FX contract activity reported by savings and loans, savings banks, or mutual-insured institutions.

Mortgage Securities:

The number of FDIC insured institutions with substantial holdings of mortgage securities fell by 3% in the second quarter of 1993 to 1,120. Chicago, Dallas, Kansas City, and Memphis experienced a reduction in the number of institutions reporting substantial mortgage securities holdings, while Atlanta, Boston, and New York saw an increase in the number of institutions. There was no change in the number of institutions that qualified for the report in the San Francisco region. While the number of institutions declined nationwide, the dollar volume of mortgage securities holdings grew by 3% to \$164.2 billion. New York experienced the largest growth in terms of dollar volume with a \$4.2 billion increase in mortgage securities holdings. Dollar volume also jumped in San Francisco, growing \$3.5 billion to \$10.4 billion. As larger institutions replaced smaller institutions on the report, the dollar volume climbed while the total number of institutions declined. State non-member banks remained the largest group with 39% of the total number of institutions, followed by national banks with 28%, savings and loans with 13%, and savings banks with 11%. National banks remained the largest group in

terms of dollar volume with 32% of the total, followed by savings banks with 25%, state non-member banks with 13%, and savings and loans with 13%. Of all institutions with substantial holdings of mortgage securities, 64% reported more than 15% of total assets in CMOs at the end of the second quarter of 1993.

ATLANTA

Interest Rate Contracts:

The number of banks reporting interest rate contract activity in the Atlanta region was stable during the most recent quarter, but the total dollar amount outstanding grew by 18% to \$ 134 billion. State non-member banks and savings banks holdings shrank by 5.5%, with the majority of the decrease seen in savings banks, whose holdings dropped from \$ 1.6 billion to \$ 1.4 billion.

Foreign Exchange Rate Contracts:

The number of banks reporting foreign exchange rate contracts grew by 4 to 16 in the Atlanta region, and the total dollar outstandings grew by 52% to \$ 12 billion. Most of this growth is a result of an increase in holdings of futures and forward contracts by national banks, which grew from \$ 7 billion to \$ 11 billion at the end of the quarter. State non-member banks reported \$ 13 million in outstanding futures and forward contracts, up from \$ 7 million in March 1993.

Mortgage Securities:

Steady growth continued during the second quarter in the Atlanta region in the number of institutions with substantial holdings of mortgage securities. Following a 7% increase in the first quarter, the number of institutions reporting substantial mortgage securities holdings climbed 8% in the second quarter to 112. The addition of 2 national banks and 3 savings and loans accounted for the majority of the quarterly increase. State non-member banks remained the largest group with 47, or 42%, of the 112 total institutions. In terms of dollar volume, state non-member banks remained in fourth position with 11% of the total, behind state member banks with 19%, national banks with 27% and savings banks with 31%. Of the 112 institutions, 73% held more than 15% of total assets in CMOs, which is an increase from 72% as of the first quarter.

BOSTON***Interest Rate Contracts:***

The number of banks reporting holdings of interest rate contracts increased marginally from 55 to 56 in the second quarter. Total dollar outstandings were reported at \$ 67 billion, up from \$ 55 billion since March. National banks make up the bulk of the activity in the Boston region, with 93 % of the total dollar outstandings. State non-member banks doubled their outstandings in interest rate swaps to \$ 1.3 billion from \$ 653 million. State member institutions saw a huge decrease in futures and forward contracts, down to \$ 28 million from \$ 482 million in the first quarter.

Foreign Exchange Rate Contracts:

Total foreign exchange dollar amounts outstanding increased 3.5 % in the second quarter, to a total of \$ 68 billion, with the biggest gains seen in futures and forwards in national and state non-member banks. National banks increased their outstandings from \$ 33 billion to \$34 billion, while state non-member bank activity grew from \$ 5.4 billion to \$ 7 billion. National banks saw a decline in the total dollar amount of option contracts, down to \$ 2.4 billion from \$ 3.1 billion. There was no change in the number of banks reporting FX activity.

Mortgage Securities:

State non-member banks accounted for the majority of the second quarter increase in the Boston region, as the number of institutions with substantial holdings of mortgage securities increased to 25 from 19. The number of state non-member banks reporting substantial mortgage securities holdings doubled in the second quarter, growing from 4 to 8. Mutual insureds continued to represent the region's largest group in terms of both the number of institutions and total dollar volume. As a group, mutual insureds comprised 12 of the 25 institutions and 65% of the total dollar volume of mortgage securities holdings. State non-member banks were the second largest group with 32% of the total number of institutions and 17% of the total dollar volume. Of the 25 institutions with substantial holdings of mortgage securities, 60% held more than 15% of total assets in CMOs.

CHICAGO

Interest Rate Contracts:

There was a decrease in the number of banks reporting holdings in interest rate contracts from the Chicago region, from 258 to 242. However, dollar outstandings increased 6.2 %, with most of the gains seen in interest rate swaps holdings of national banks, which increased from \$ 192 billion to \$ 216 billion. Savings and loans reported lower totals in all three interest rate contract categories, and with the exception of state member banks, all categories of institutions reported lower dollar values for option holdings, which in total fell 2.6 % to \$ 99 billion.

Foreign Exchange Rate Contracts:

Total dollar amounts of foreign exchange contracts in the Chicago region increased only slightly, to \$ 305 billion from \$ 303 billion. While both the state non-member and member banks saw their total dollar volumes drop (26 % and 4 %, respectively), national bank dollar volume rose by 1.5 % to \$ 270 billion. National banks hold the majority of FX contract volume, accounting for 89 % of the regions total.

Mortgage Securities:

The number of institutions in the Chicago region with substantial holdings of mortgage securities declined by 4% in the second quarter of 1993 and dropped to its lowest level since the third quarter of 1992. A reduction in the number of state non-member banks and savings banks reporting substantial mortgage securities holdings accounted for virtually all of the quarterly change. State non-member banks remained the largest group with 41% of the total number of institutions, followed by national banks with 20%, and savings and loans with 19%. Savings and loans surpassed savings banks in the second quarter as the largest group in terms of dollar volume. Savings and loans comprised 38% of the dollar volume, while national banks and savings banks both held 24%. State non-member banks remained in fourth position with 11% of the total dollar volume. Of the 206 institutions, 66% held more than 15% of total assets in CMOs.

DALLAS

Interest Rate Contracts:

Total dollar outstandings of interest rate contracts increased by 6.7 % in the Dallas region in the second quarter to \$ 32 billion. The largest dollar gain was seen in interest rate swaps among national banks, which increased their holdings by \$ 3 billion. The largest percentage gain was in interest rate swaps in savings banks, which increased by 89 % to \$ 1.7 billion. National banks decreased their holdings of futures and forwards and options, which were down a combined 20 % during the quarter.

Foreign Exchange Rate Contracts:

In foreign exchange activity, FDIC insured institutions in Dallas reported an overall increase in total dollars outstanding at quarter end, to \$ 3.8 billion from \$ 3.2 billion. National bank holdings of futures and forwards contracts, which make up 82 % of all FX activity in the region, accounted for almost all of the gains.

Mortgage Securities:

The number of institutions in the Dallas region with substantial holdings of mortgage securities dropped by 16 to 303 in the second quarter. Much of the decline was attributable to a reduction in the number of state non-member banks and national banks reporting substantial mortgage securities holdings. The two largest groups, national banks and state non-member banks, represented 45 % and 42 %, respectively, of the total number of institutions. Savings banks remained the largest group in terms of dollar volume with 40 % of the total, followed by national banks with 27 %, state non-member banks with 17 %, and savings and loans with 16 %. Of the 303 institutions, 64 % held more than 15 % of total assets in CMOs. As a percentage of total assets, holdings of total mortgage securities (45 %), total pass-throughs (26 %), and total CMOs (18 %) remained constant in the second quarter for institutions in the Dallas region.

KANSAS CITY

Interest Rate Contracts:

The number of banks reporting interest rate contracts in the Kansas City region decreased by 4 to 86, and the total dollar outstandings fell as well, by nearly 7 %, to \$ 34 billion. The largest decrease was seen in holdings of option contracts, which fell by \$ 2.6 billion to \$12.7 billion, a decrease of 17 %. Also decreasing were holdings of futures and forward contracts, which fell to \$ 9.1 billion from \$ 10.6 billion. National banks led the trend in declining outstandings of option contracts, dropping to \$ 8.5 billion from \$ 11.6 billion.

Foreign Exchange Rate Contracts:

Outstandings of foreign exchange contracts, by contrast, increased in the Kansas City region in the most recent quarter, by 13 % to \$ 4.3 billion. The increase was largely seen in futures and forward contracts held by national banks, which hold 97 % of all FX outstandings in the region. National bank futures and forward contracts rose to \$ 3.9 billion from \$ 3.5 billion. Exchange rate contracts also increased in national banks to \$ 127 million from \$ 0 in the second quarter.

Mortgage Securities:

The number of institutions with substantial holdings of mortgage securities in the Kansas City region decreased in the second quarter of 1993, consistent with the pattern established by four of the previous five quarters. The number of institutions fell by 8 % in the second quarter to 163. The decline in the number of institutions was evenly distributed across categories. State non-member banks remained the largest group with 50% of the number of institutions, followed by national banks with 20% and savings and loans with 14%. Savings banks led all categories in terms of dollar volume with 37%, followed by national banks with 32%, state non-member banks with 16%, and savings and loans with 12%. Approximately 67% of the institutions with substantial holdings of mortgage securities reported more than 15% of total assets in CMOs.

MEMPHIS

Interest Rate Contracts:

Seven additional banks reported interest rate contract activity in the Memphis region in the second quarter, bringing the total up to 58. Dollar outstandings increased by \$ 1.2 billion to \$ 9.2 billion. Total interest rate swap activity nearly doubled, to \$ 4.7 billion from \$ 2.7 billion. Futures and forward contracts, however, declined 21 %, to \$ 3.1 billion. As in most regions, national banks make up the majority of interest rate contract outstandings, with 82 % of the total regional volume. Holdings of interest rate swaps in national banks and state non-member banks increased in the second quarter, to \$ 3.6 billion (from \$ 1.6 billion) and \$ 136 million (from \$ 56 million), respectively.

Foreign Exchange Rate Contracts:

The number of banks reporting FX contracts declined to 1 from 4 in the region during the second quarter, and total dollar outstandings fell as well, from \$ 41 million to \$ 10 million. Holdings at national banks declined from \$35 million to \$ 10 million, and holdings at state member banks also declined, from \$ 6 million to \$ 0.

Mortgage Securities:

The number of institutions in the Memphis region with substantial volumes of mortgage securities fell 12% to 109 in the second quarter. A sharp decline in the number of state non-member banks reporting substantial holdings of mortgage securities, from 67 to 50, accounted for the majority of the quarterly change. Despite this decline, state non-member banks remained the largest group with 46% of the number of institutions, followed by national banks with 28%, savings and loans with 12% and savings banks with 11%. While the region's total dollar volume of mortgage securities holdings jumped significantly from \$10.9 billion to \$12.3 billion, the increase was almost entirely due to the addition of a \$6 billion state member bank to the report. National banks remained the dominant group in terms of dollar volume with 57%, while state member banks vaulted into second position with 15%. State non-member banks accounted for 11% of the total dollar volume. Of the 109 institutions, 69% held more than 15% of total assets in CMOs.

NEW YORK

Interest Rate Contracts:

The New York region saw a large increase in the total interest rate contract outstandings, even as the number of banks reporting activity dropped 7 % to 213. Total dollar volume rose to \$ 5.1 trillion, from \$ 4.3 trillion an increase of 19 %. The largest increase was seen in state member banks, whose holdings at quarter end rose 21 % to \$ 1.3 trillion. In terms of contract type, all categories showed increases in outstanding dollar volumes, with the largest increase seen in option contracts, which gained \$ 390 billion to \$ 1.3 trillion. Most (\$ 310 billion) of this gain came from state member banks.

Foreign Exchange Rate Contracts:

As with interest rate contracts, foreign exchange activity in New York showed a decrease in the number of banks reporting (from 48 to 45) and an increase in outstandings (from \$ 3.4 trillion to \$ 3.6 trillion). The gain was mostly a result of increases in the outstandings of futures and forward contracts held by state member and national banks, with state member institutions leading the way with a 13 % increase to \$ 1.4 trillion. State non-member banks also increased holdings of futures and forward contracts, from \$ 10 billion to \$ 11 billion.

Mortgage Securities:

The number of institutions in the New York region with substantial holdings of mortgage securities rose slightly during the second quarter from 138 to 142. An increase in the number of mutual insured institutions reporting substantial mortgage securities holdings accounted for the majority of the quarterly change. Savings and loans remained the largest group with 22 % of the total number of institutions, followed by savings banks with 20 %, mutual insureds with 20 %, state non-member banks with 17 %, and national banks with 15 %. In terms of dollar volume, national banks were the leading group with 34 % of the total, followed by savings banks with 21 %, mutual insureds with 14 %, and state non-member banks with 14 %. Of the 142 institutions, 46 % held more than 15 % of total assets in CMOs.

SAN FRANCISCO

Interest Rate Contracts:

The San Francisco region showed a small gain in total dollar outstandings of interest rate contracts, up \$ 40 billion to \$ 555 billion. The largest increases came in interest rate swaps (up \$ 22 billion, or 9 %) and option contracts (up \$ 17 billion, or 19 %). Most of these increases were made by national banks. Holdings at savings and loans and state member banks decreased slightly.

Foreign Exchange Rate Contracts:

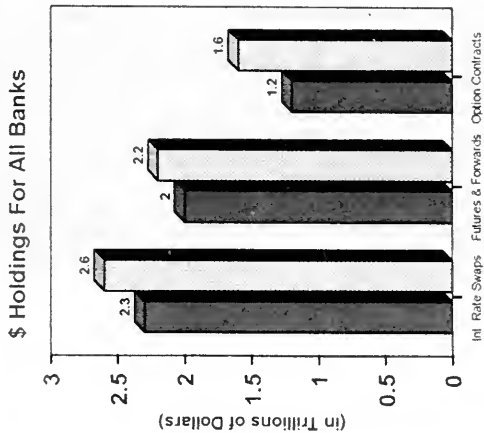
Outstanding FX contracts at San Francisco region banks increased by 8.5 %, to \$472 billion, while the number of institutions reporting holdings remained steady at 23. Total option contract dollar volumes declined slightly (by \$ 3 billion), but futures and forward contracts and exchange rate swaps both posted increases. For futures and forward contracts, a decline in state member bank holdings from \$ 339 million to \$ 38 million was more than offset by the gains in national bank activity, which rose from \$ 388 billion to \$ 427 billion. Exchange rate swaps saw small gains in national banks and state non-member banks as well.

Mortgage Securities:

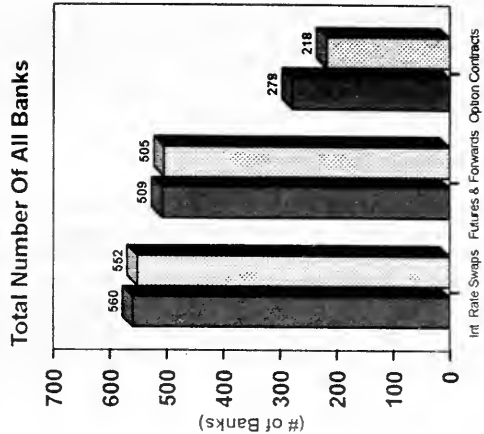
The number of institutions in the San Francisco region with substantial holdings of mortgage securities remained at 60 in the second quarter of 1993. While the number of institutions was unchanged, the dollar volume of mortgage securities holdings jumped by 52% to \$10.4 billion. The increase in dollar volume was attributable to the addition of a \$20 billion state member bank to the report. National banks reported 39% of the total dollar volume of mortgage securities and represented 30% of the total number of institutions. State non-member banks were the second largest group with 25% of the total number of institutions followed by savings and loans, state member banks, and savings banks, each with 15%. State member banks leaped from fifth position to second in terms of dollar volume with 31% of the total, followed by savings banks with 15%, savings and loans with 11%, and state non-member banks with 4%. Of the 60 institutions, 68% held more than 15% of total assets in CMOs.

Holdings of Interest Rate Contracts National Summary

Trend from 3-31-93 to 6-30-93



■ 3-31-93 □ 6-30-93

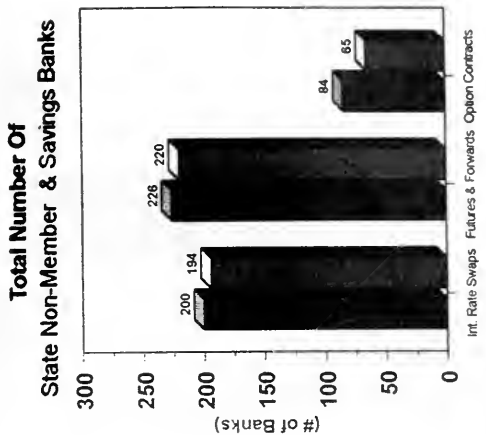
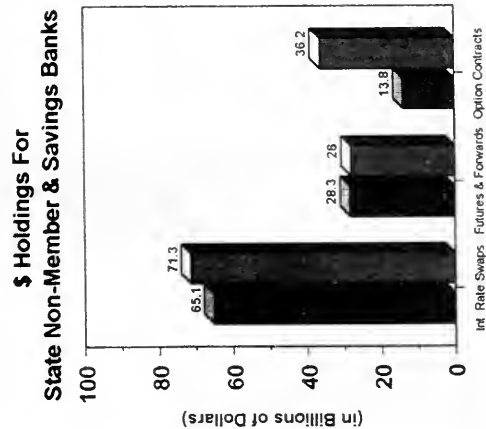


■ 3-31-93 □ 6-30-93

Holdings of Interest Rate Contracts

National Summary

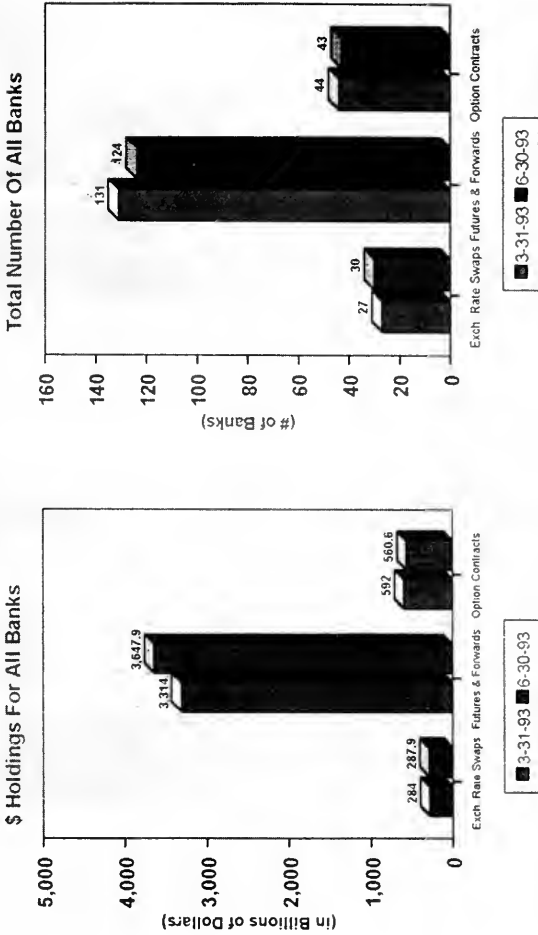
Trend from 3-31-93 to 6-30-93



Holdings of Foreign Exchange Rate Contracts

National Summary

Trend from 3-31-93 to 6-30-93

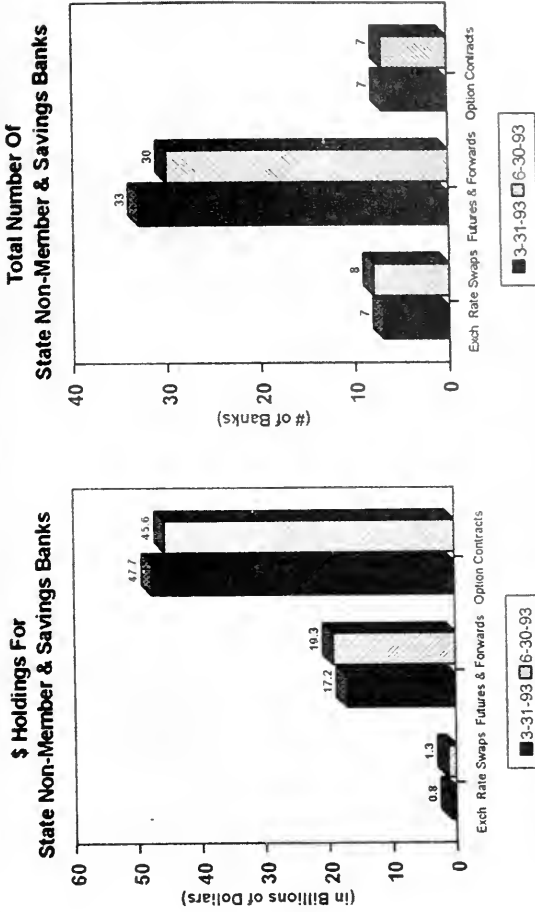


Source: FDIC Call Report data.

Holdings of Foreign Exchange Rate Contracts

National Summary

Trend from 3-31-93 to 6-30-93

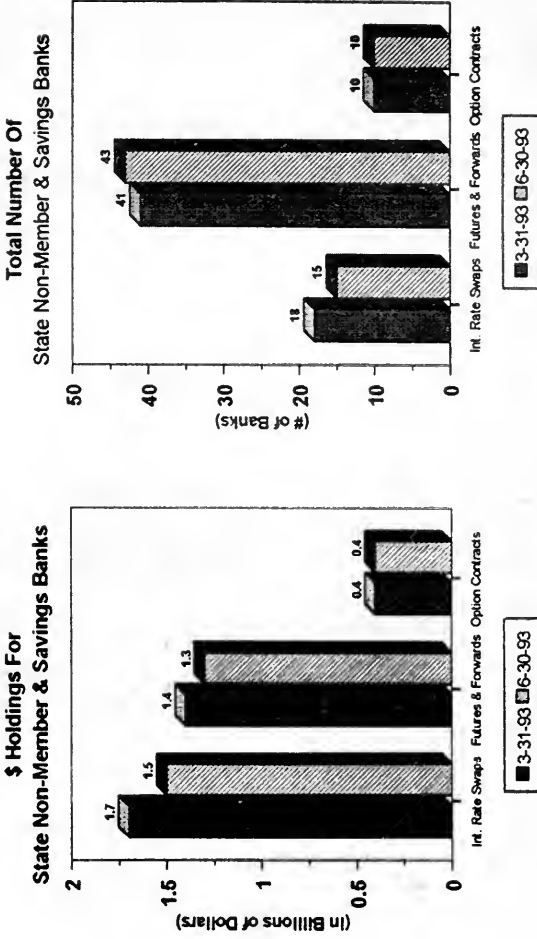


Source: FDIC Call Report data.

Holdings of Interest Rate Contracts

Atlanta Region

Trend from 3-31-93 to 6-30-93

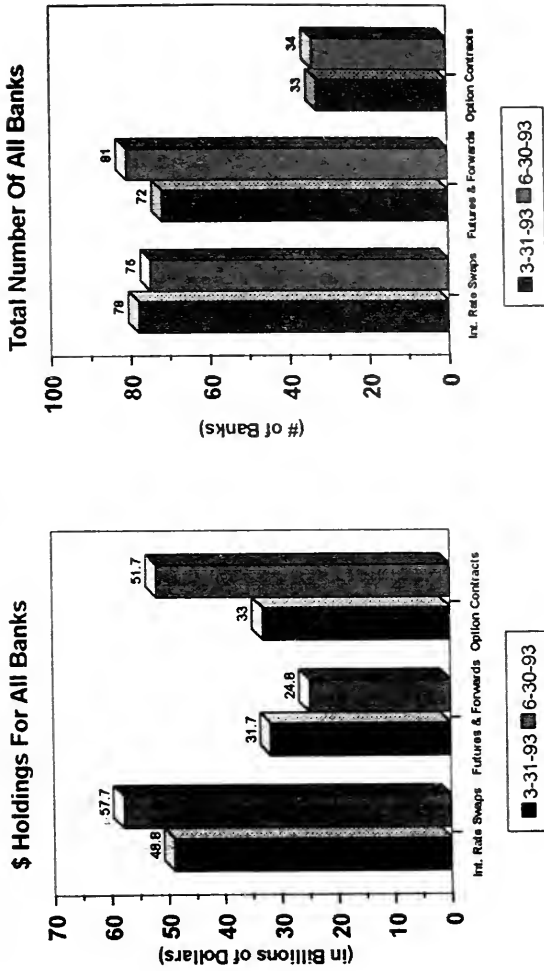


Source: FDIC Call Report data.

Holdings of Interest Rate Contracts

Atlanta Region

Trend from 3-31-93 to 6-30-93

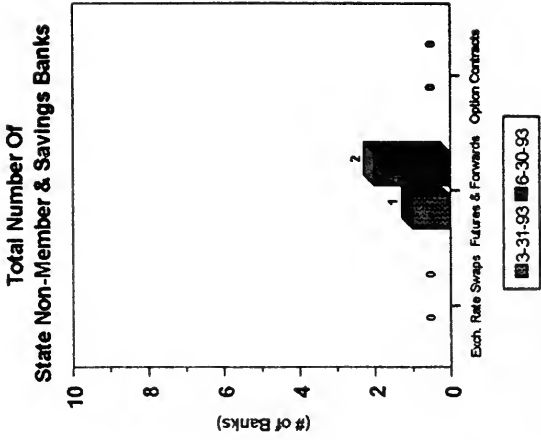
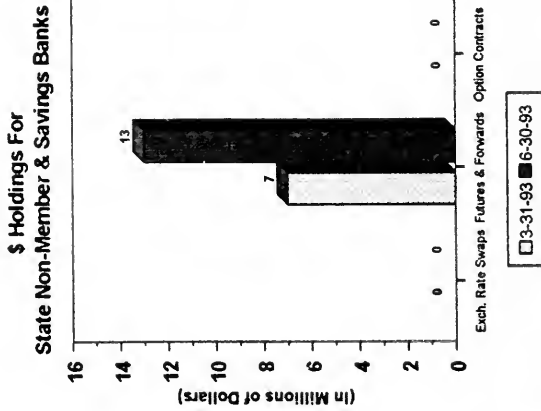


Source: FDIC Call Report data.

Holdings of Foreign Exchange Rate Contracts

Atlanta Region

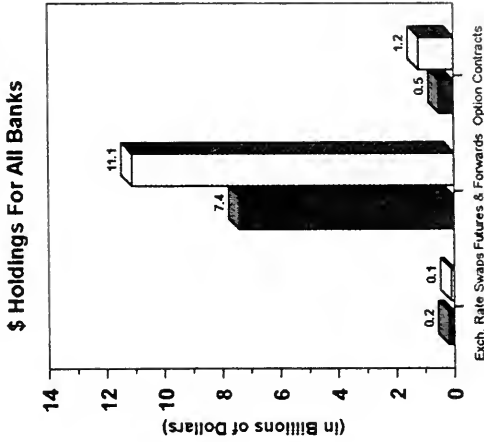
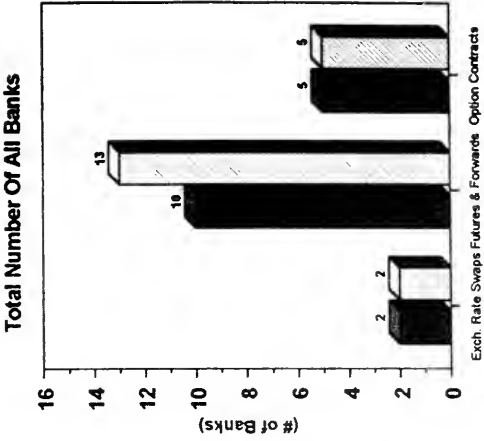
Trend from 3-31-93 to 6-30-93



Source: FDIC Call Report data.

Holdings of Foreign Exchange Rate Contracts Atlanta Region

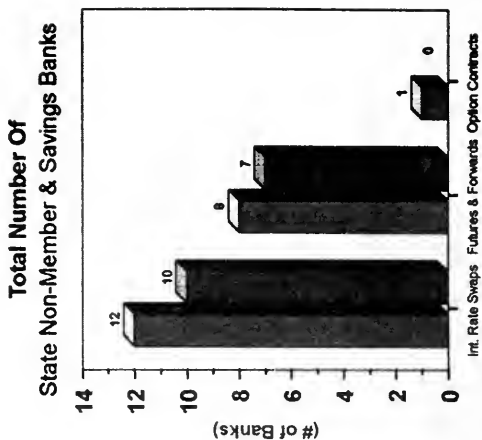
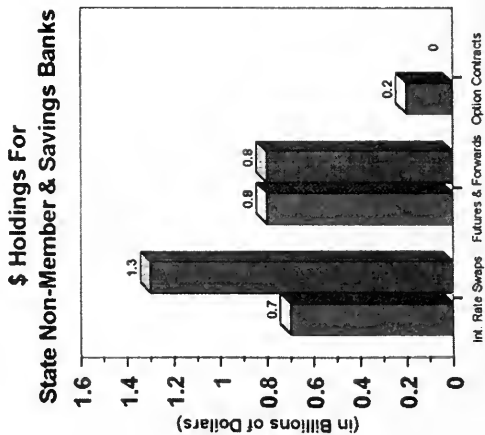
Trend from 3-31-93 to 6-30-93



Holdings of Interest Rate Contracts

Boston Region

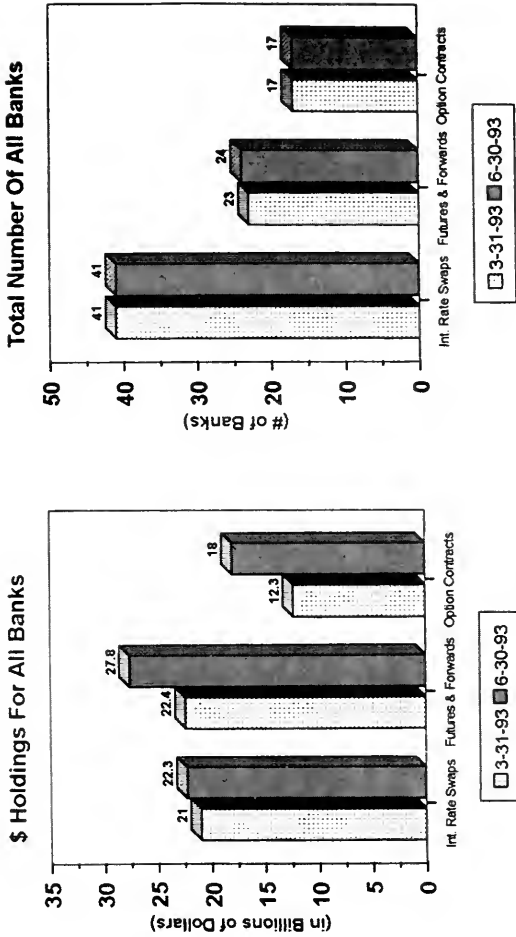
Trend from 3-31-93 to 6-30-93



Holdings of Interest Rate Contracts

Boston Region

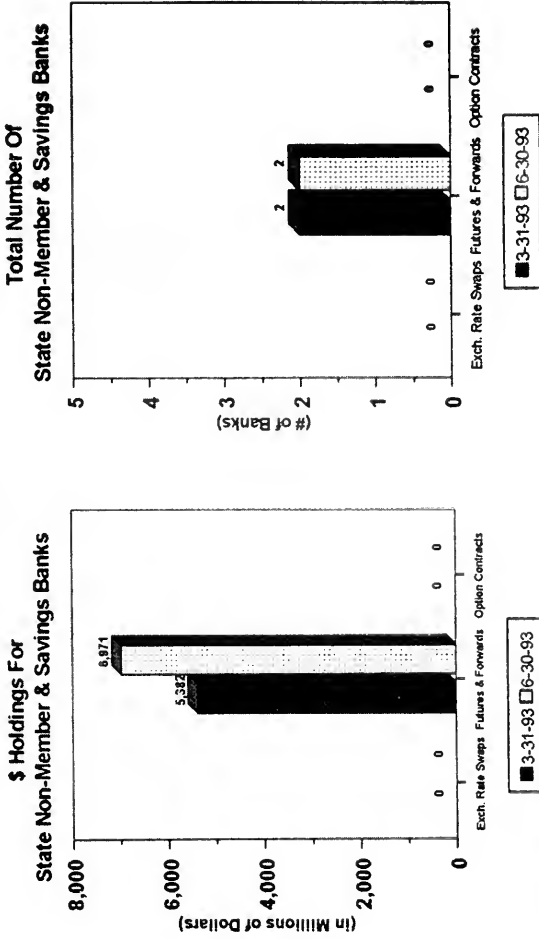
Trend from 3-31-93 to 6-30-93



Holdings of Foreign Exchange Rate Contracts

Boston Region

Trend from 3-31-93 to 6-30-93

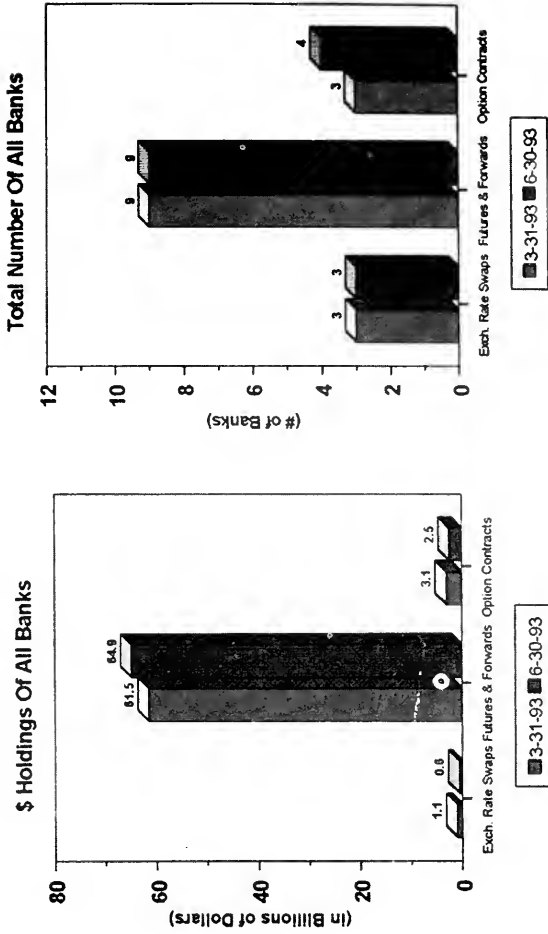


Source: FDIC Call Report data.

Holdings of Foreign Exchange Rate Contracts

Boston Region

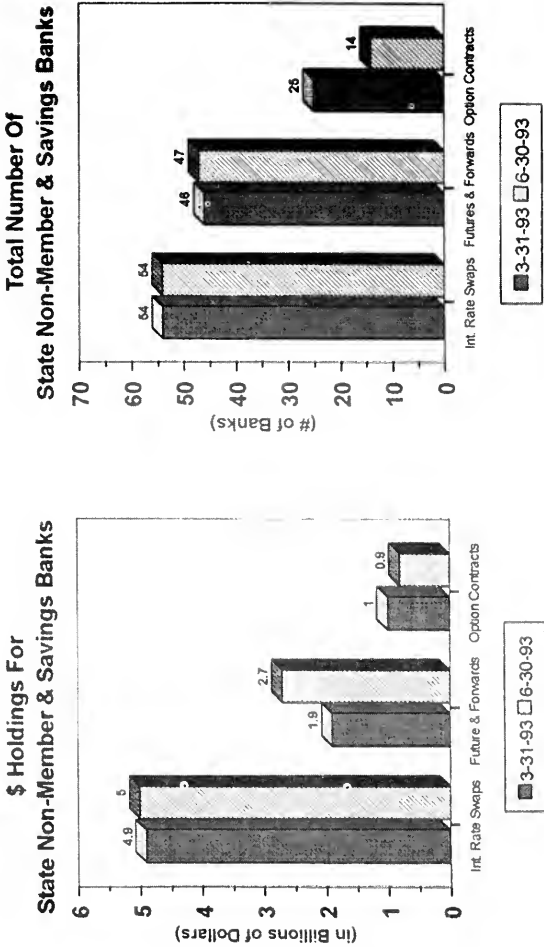
Trend from 3-31-93 to 6-30-93



Holdings of Interest Rate Contracts

Chicago Region

Trend from 3-31-93 to 6-30-93

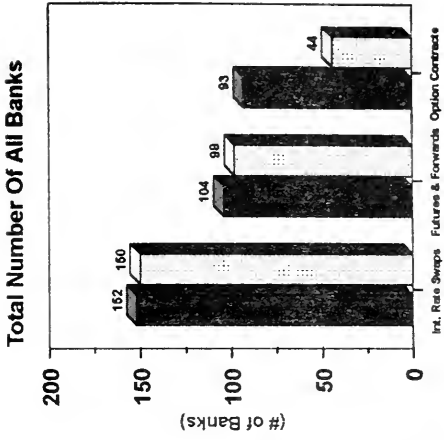
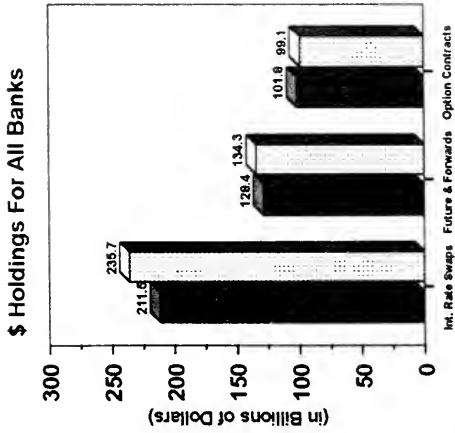


Source: FDIC Call Report data.

Holdings of Interest Rate Contracts

Chicago Region

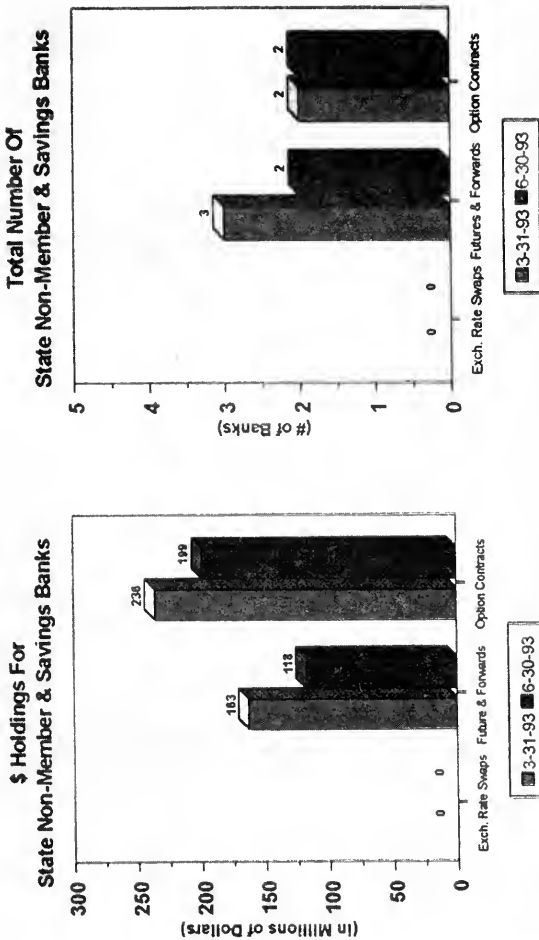
Trend from 3-31-93 to 6-30-93



Holdings of Foreign Exchange Rate Contracts

Chicago Region

Trend from 3-31-93 to 6-30-93



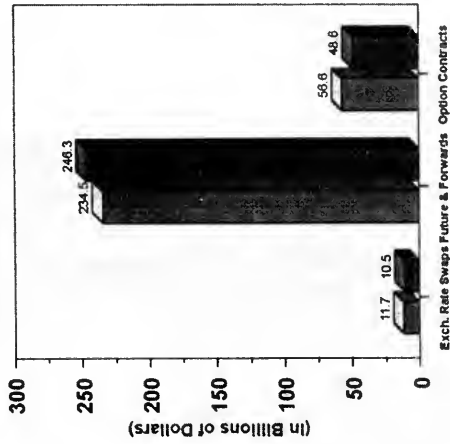
Source: FDC Report data.

Holdings of Foreign Exchange Rate Contracts

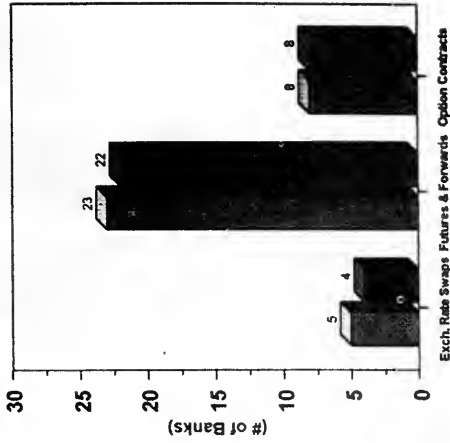
Chicago Region

Trend from 3-31-93 to 6-30-93

\$ Holdings For All Banks



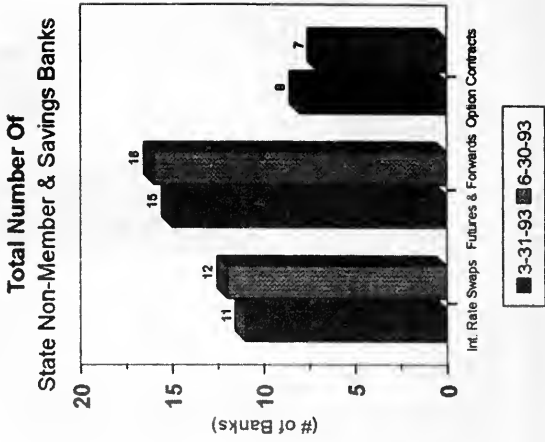
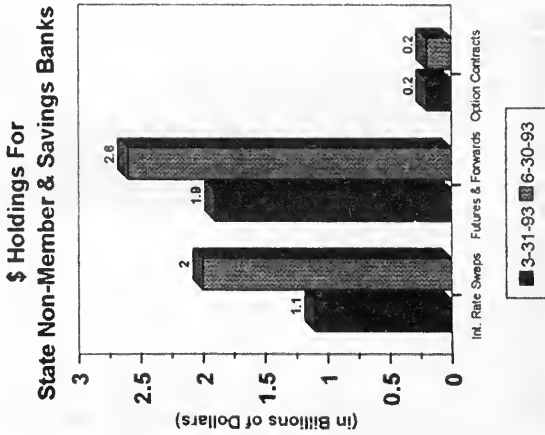
Total Number Of All Banks



Holdings of Interest Rate Contracts

Dallas Region

Trend from 3-31-93 to 6-30-93

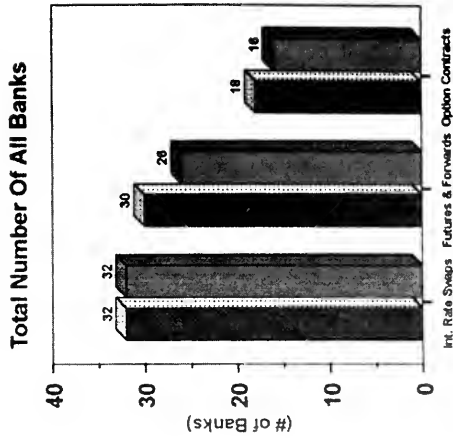
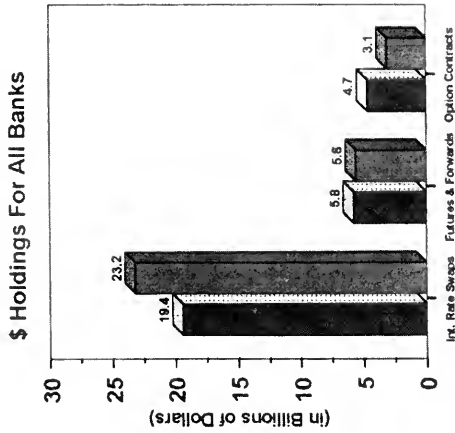


Source: FDIC Call Report data.

Holdings of Interest Rate Contracts

Dallas Region

Trend from 3-31-93 to 6-30-93

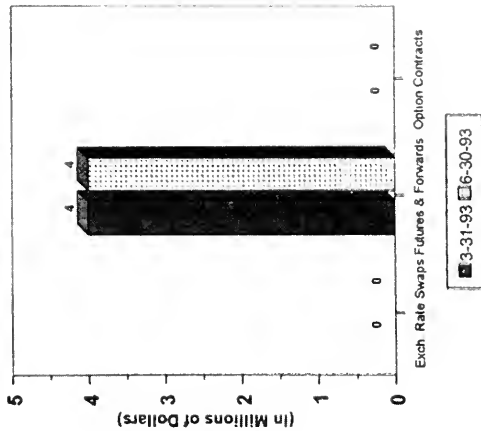


Holdings of Foreign Exchange Rate Contracts

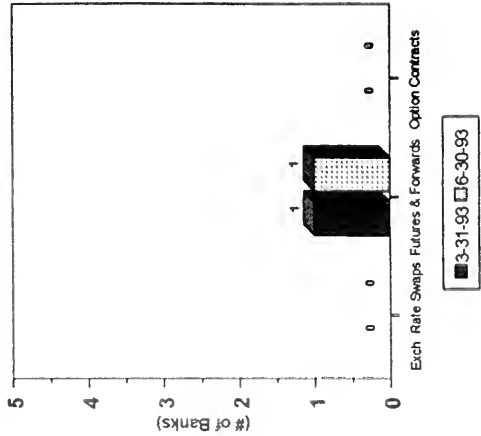
Dallas Region

Trend from 3-31-93 to 6-30-93

\$ Holdings For
State Non-Member & Savings Banks



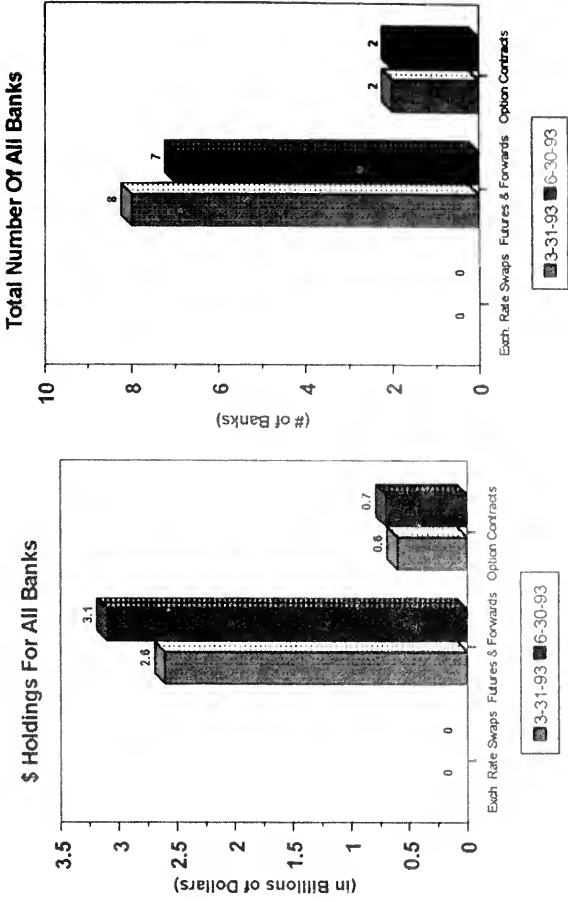
Total Number Of
State Non-Member & Savings Banks



Source: FDIC Call Report data.

Holdings of Foreign Exchange Rate Contracts Dallas Region

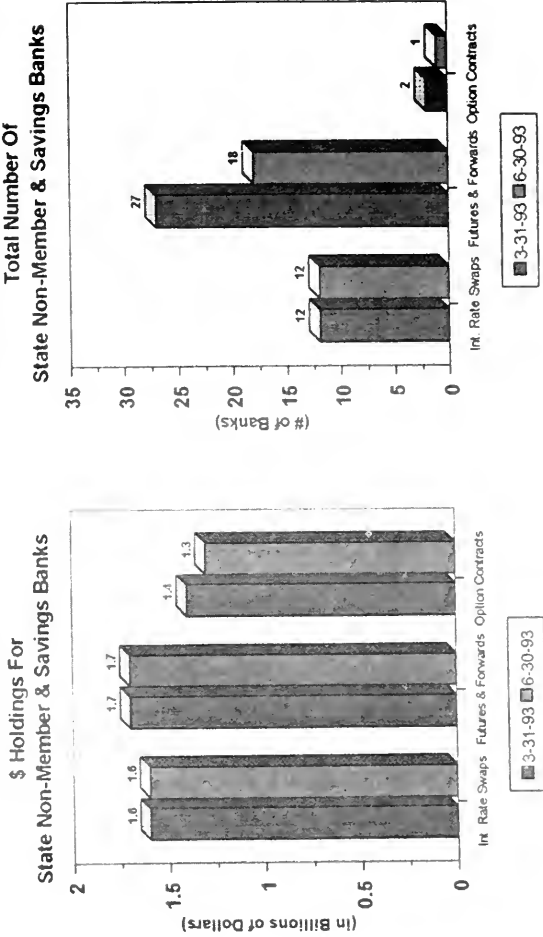
Trend from 3-31-93 to 6-30-93



Holdings of Interest Rate Contracts

Kansas City Region

Trend from 3-31-93 to 6-30-93



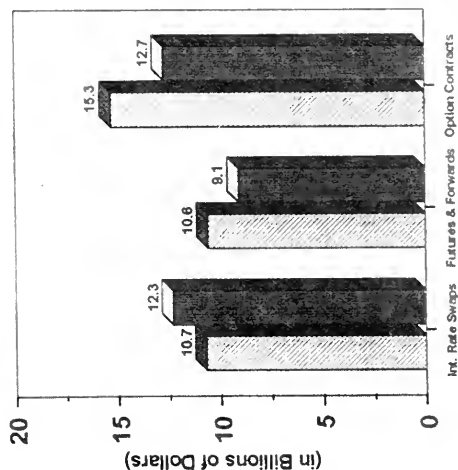
Source: FDIC Call Report data.

Holdings of Interest Rate Contracts

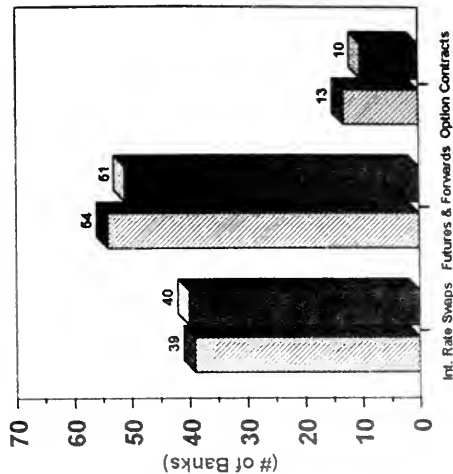
Kansas City Region

Trend from 3-31-93 to 6-30-93

\$ Holdings For All Banks



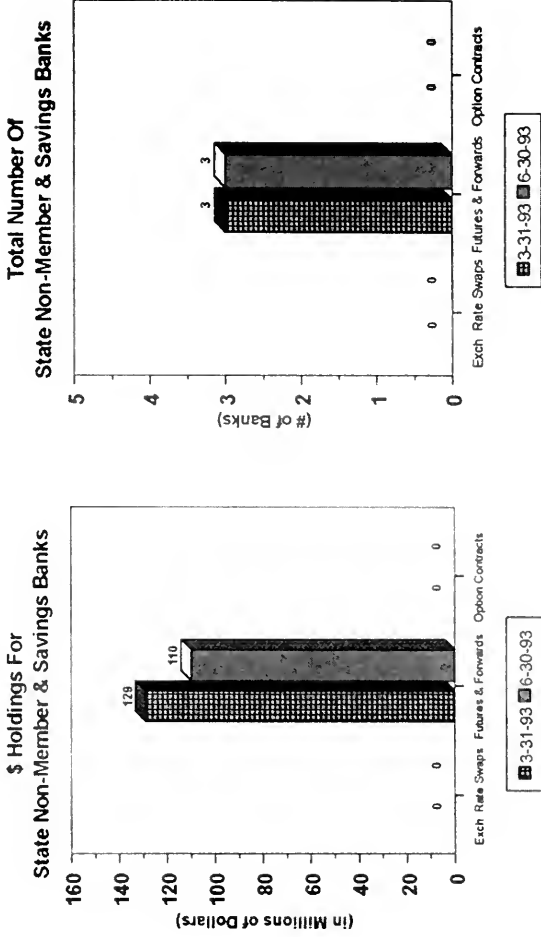
Total Number Of All Banks



Holdings of Foreign Exchange Rate Contracts

Kansas City Region

Trend from 3-31-93 to 6-30-93

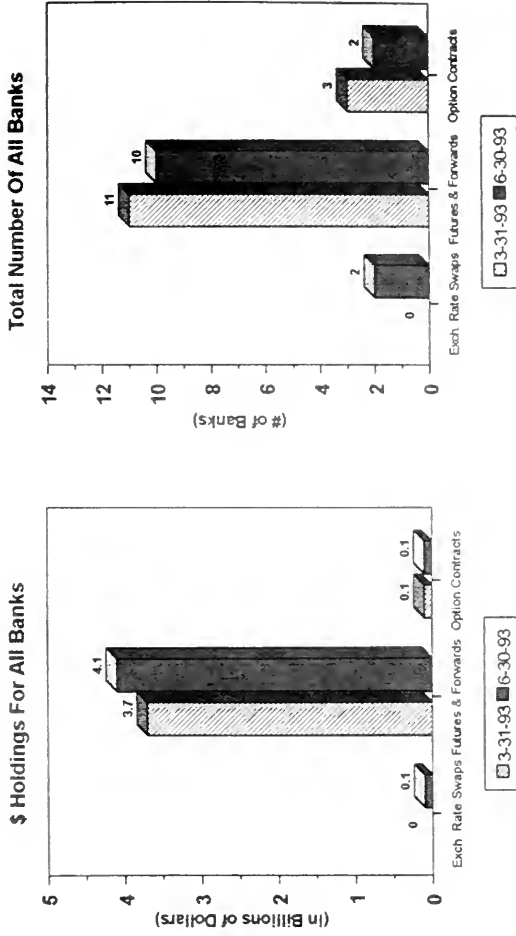


Source: FDIC Call Report data.

Holdings of Foreign Exchange Rate Contracts

Kansas City Region

Trend from 3-31-93 to 6-30-93

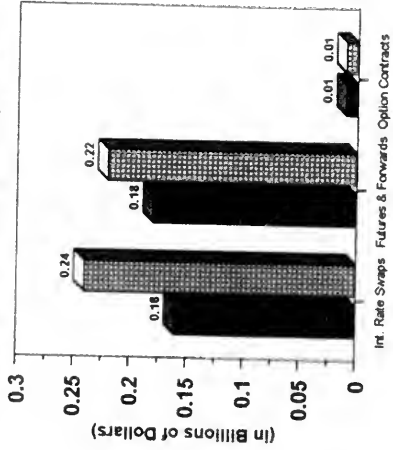


Holdings of Interest Rate Contracts

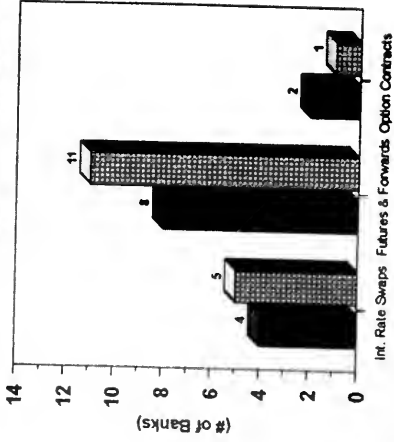
Memphis Region

Trend from 3-31-93 to 6-30-93

\$ Holdings For
State Non-Member & Savings Banks



Total Number Of
State Non-Member & Savings Banks

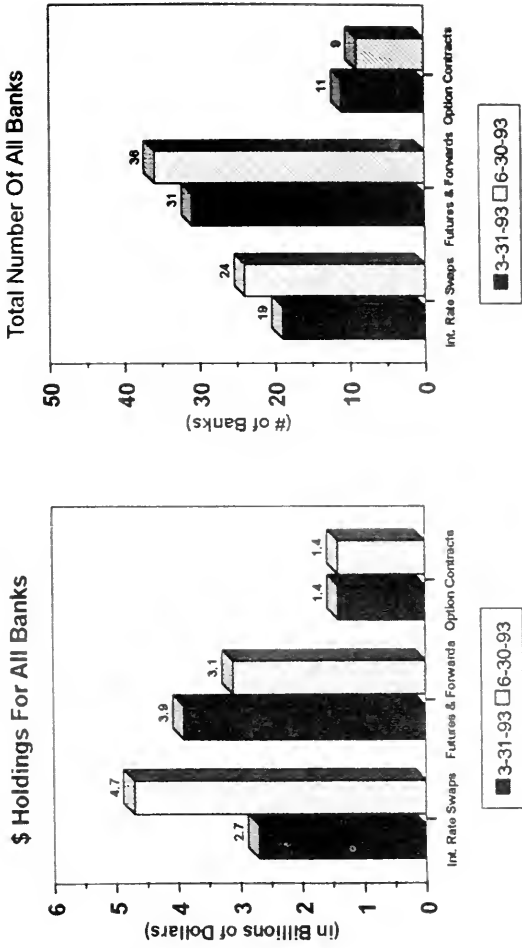


Source: FDIC Call Report data.

Holdings of Interest Rate Contracts

Memphis Region

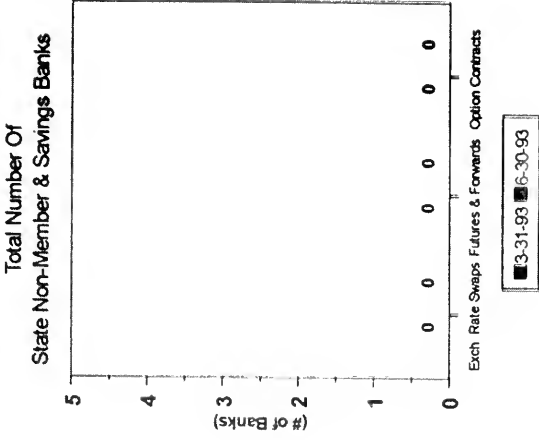
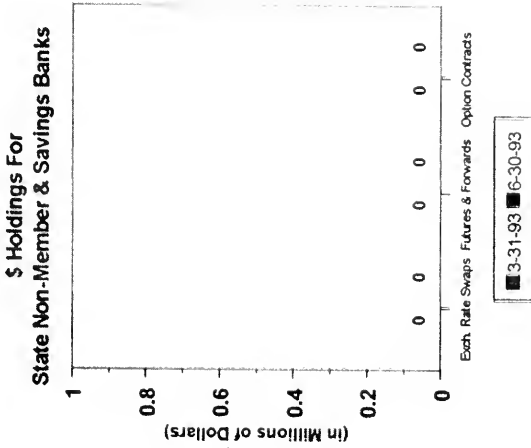
Trend from 3-31-93 to 6-30-93



Source: FDIC Call Report data.

Holdings of Foreign Exchange Rate Contracts Memphis Region

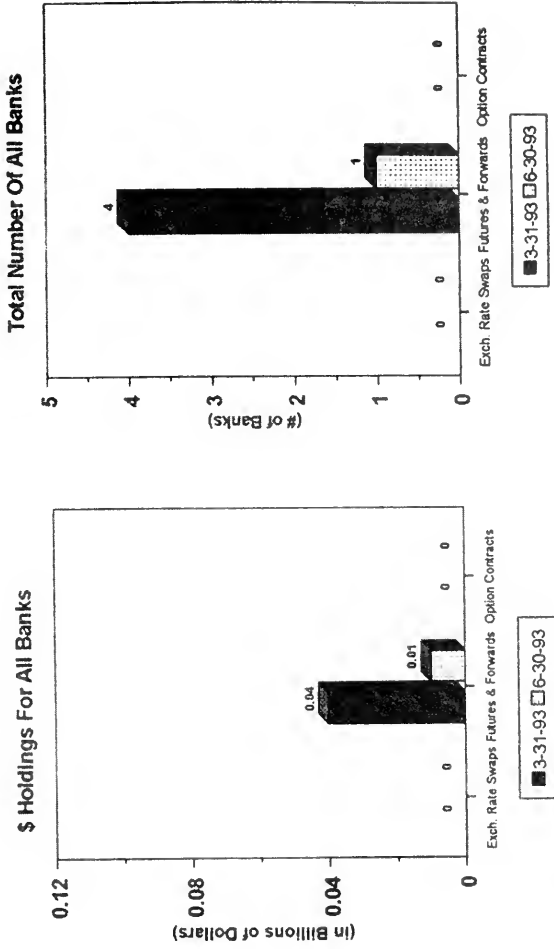
Trend from 3-31-93 to 6-30-93



Holdings of Foreign Exchange Rate Contracts

Memphis Region

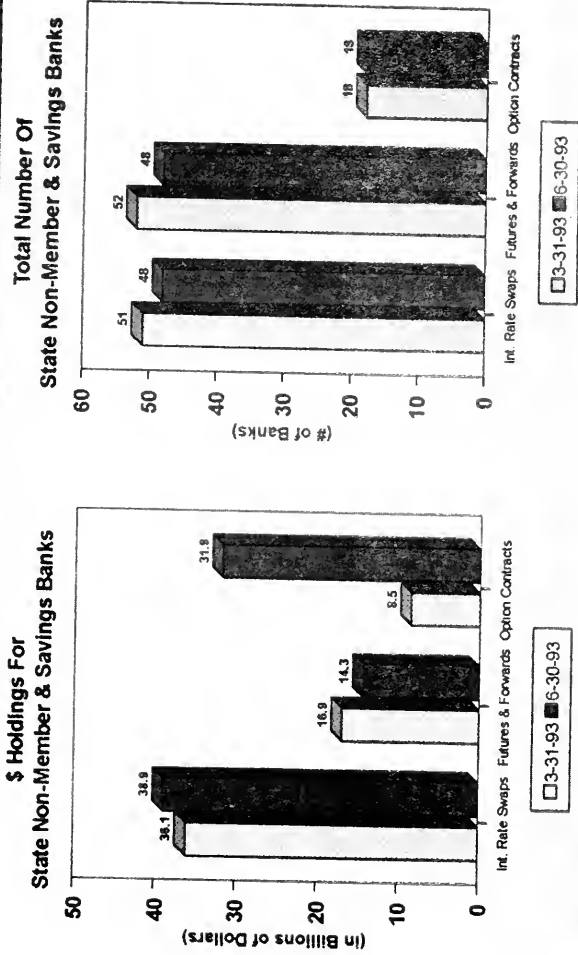
Trend from 3-31-93 to 6-30-93



Source: FDIC Call Report data.

Holdings of Interest Rate Contracts New York Region

Trend from 3-31-93 to 6-30-93

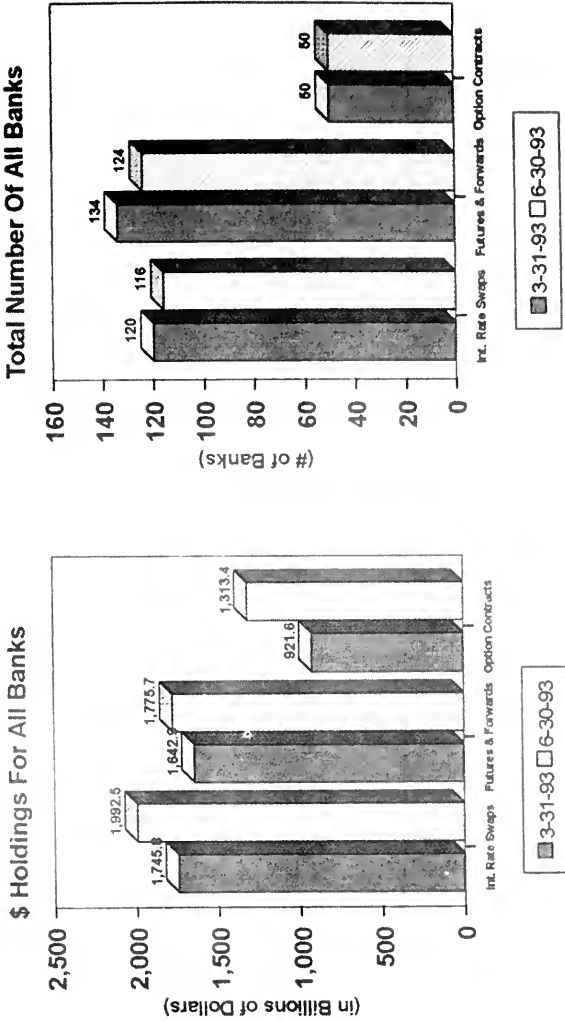


Source: FDIC Call Report data.

Holdings of Interest Rate Contracts

New York Region

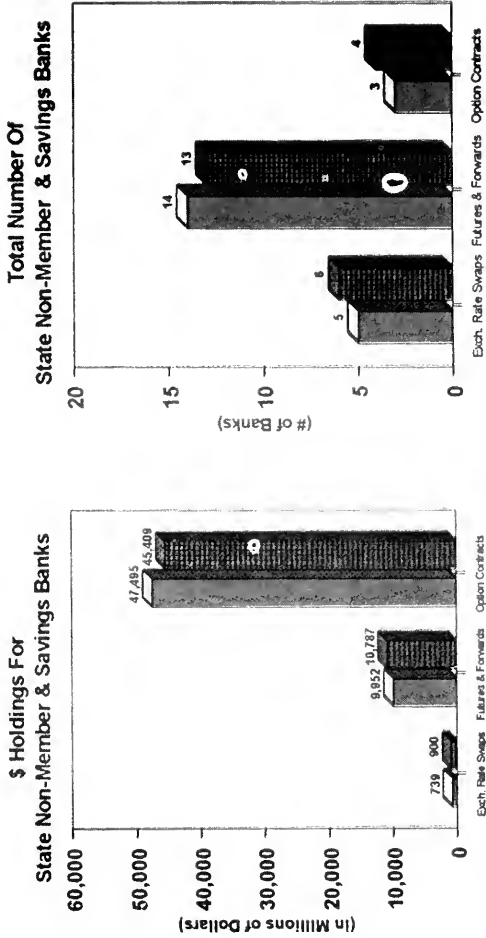
Trend from 3-31-93 to 6-30-93



Holdings of Foreign Exchange Rate Contracts

New York Region

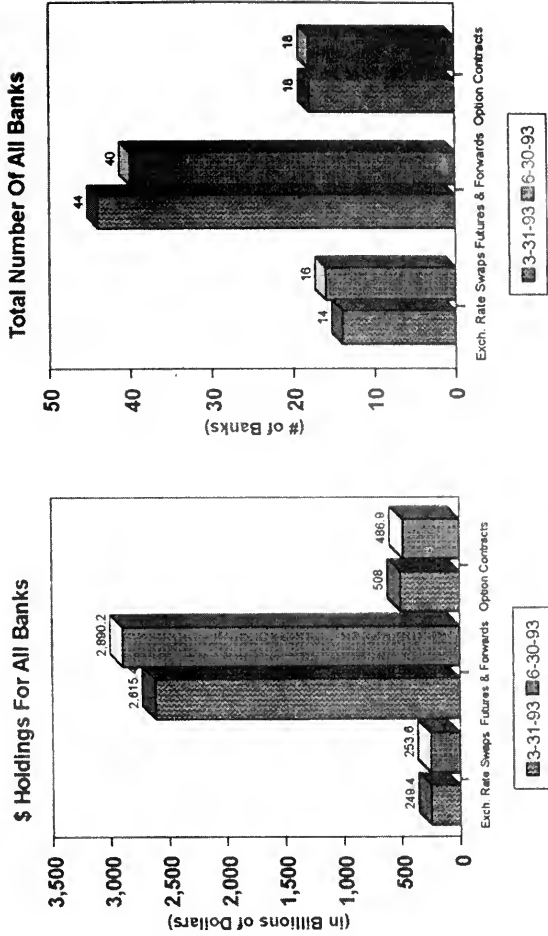
Trend from 3-31-93 to 6-30-93



Holdings of Foreign Exchange Rate Contracts

New York Region

Trend from 3-31-93 to 6-30-93

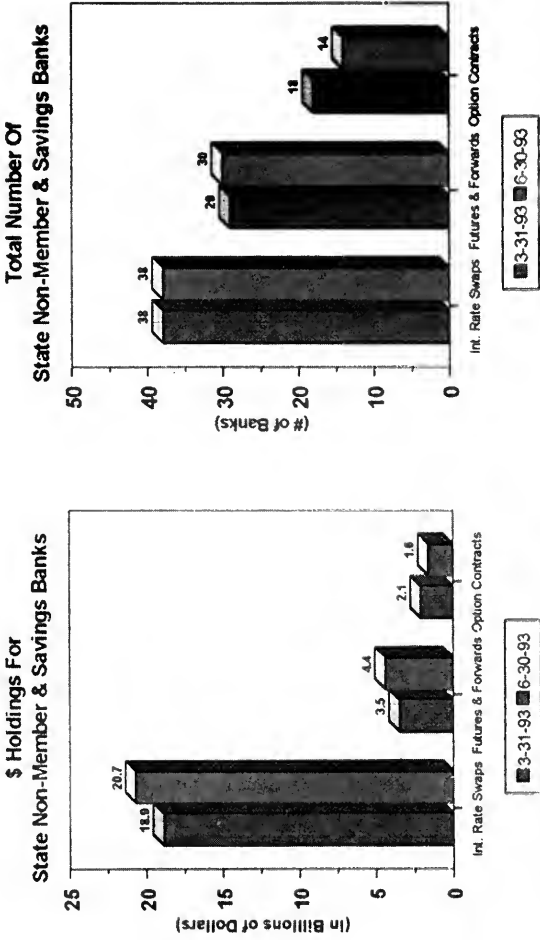


Source: FDIC Call Report data.

Holdings of Interest Rate Contracts

San Francisco Region

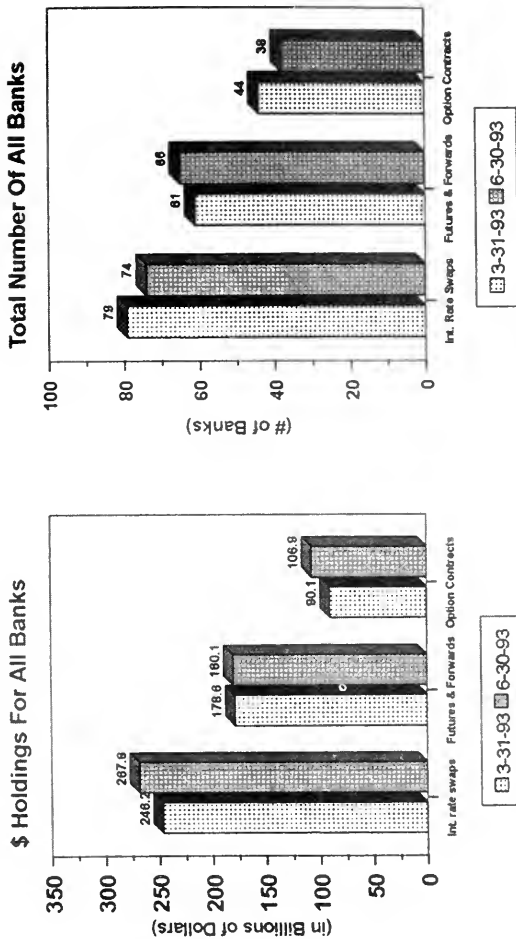
Trend from 3-31-93 to 6-30-93



Holdings of Interest Rate Contracts

San Francisco Region

Trend from 3-31-93 to 6-30-93

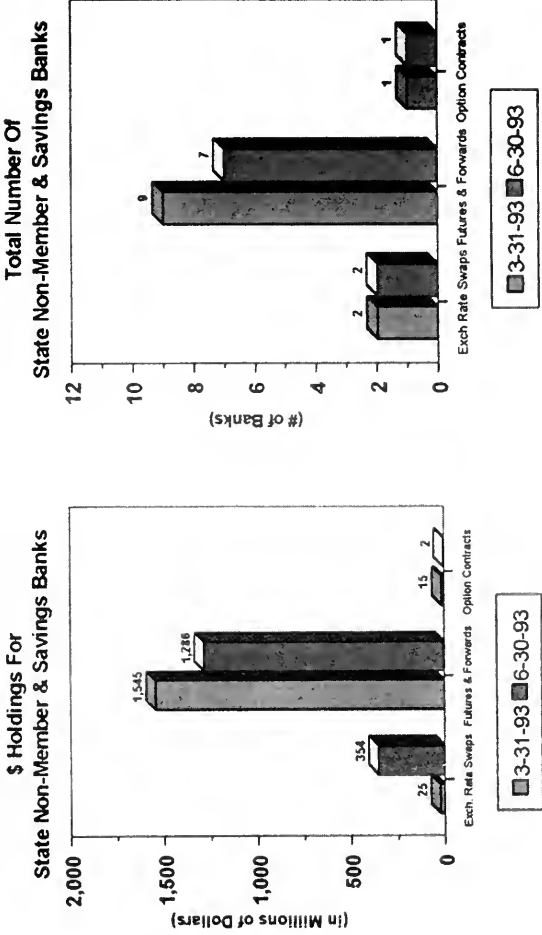


Source: FDIC Call Report data.

Holdings of Foreign Exchange Rate Contracts

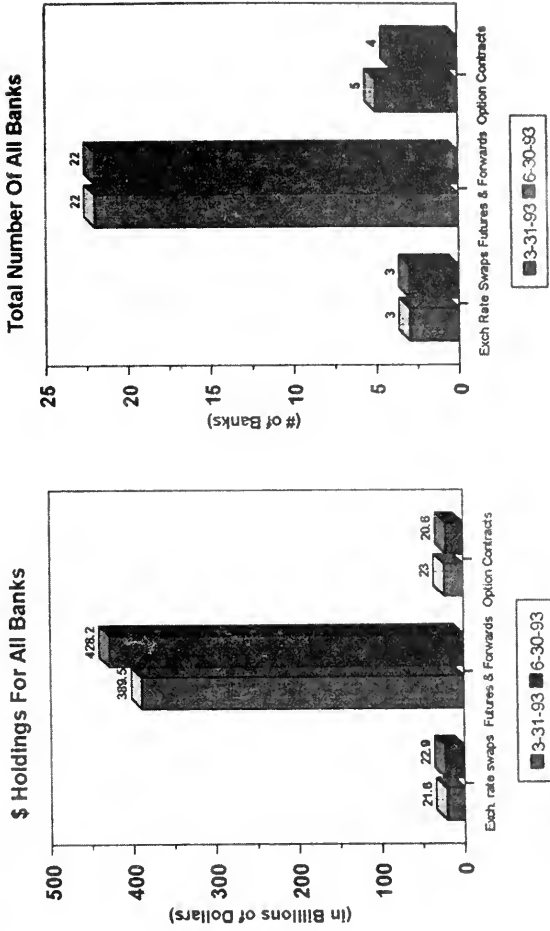
San Francisco Region

Trend from 3-31-93 to 6-30-93



Holdings of Foreign Exchange Rate Contracts

San Francisco Region Trend from 3-31-93 to 6-30-93



Source: FDIC Call Report data.

Appendix III

TABLE 1-1

NOTIONAL AMOUNT OF DERIVATIVE CONTRACTS OF 25
STATE NONMEMBER BANKS WITH MOST DERIVATIVE CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	BANK NAME	STATE	TOTAL ASSETS	TOTAL DERIVATIVES	FUTURES & FORWARDS	TOTAL SWAPS	TOTAL OPTIONS
1	1 MITSUI TR BK USA	NY	\$755	\$51,560	\$6,013	\$295	\$45,252
2	2 J P MORGAN DELAWARE	DE	6,827	31,724	8,760	16,912	6,052
3	3 BANKERS TR DE	DE	2,184	26,804	3,111	446	23,247
4	4 BOSTON SAFE DEPOSIT & TC	MA	5,884	8,224	7,424	800	0
5	5 AMERICAN EXPRSS CNTRN BK	DE	10,397	7,778	0	7,778	0
6	6 EXTEBANK	NY	804	3,275	3,275	0	0
7	7 CITIBANK NY ST	NY	5,728	2,330	0	2,330	0
8	8 CHASE MNHTN BK USA	DE	8,449	2,104	0	1,604	500
9	9 UNION BK	CA	16,096	2,083	778	841	464
10	10 SANWA BK CALIFORNIA	CA	7,175	1,847	214	1,632	0
11	11 BANK OF NY-DE	DE	4,349	1,825	0	1,825	0
12	12 FIRST USA BANK	DE	3,163	1,461	0	1,461	0
13	13 BANK OF AMERICA AZ	AZ	8,853	1,448	0	1,448	0
14	14 BANK OF TOKYO TC	NY	8,054	1,398	4	1,393	0
15	15 CORESTATES HMLTN BK	PA	2,647	1,361	6	1,355	0
16	16 UMB B&TC	NY	431	1,255	381	22	852
17	17 INDUSTRIAL BK JAPAN TC	NY	4,775	1,246	1	1,153	93
18	18 BANK OF HAWAII	HI	11,593	1,220	119	1,101	0
19	19 SUMITOMO BK OF CALIFORNIA	CA	5,327	1,199	183	976	40
20	20 BRANCH BK&TC	NC	7,307	934	9	925	0
21	21 FIRST HAWAIIAN BK	HI	5,904	838	0	538	300
22	22 COMMERCIAL BK NY	NY	775	629	476	0	153
23	23 MERRILL LYNCH B&TC	NJ	1,893	575	0	575	0
24	24 ISRAEL DISCOUNT BK OF NY	NY	3,552	496	301	195	0
25	25 LTCB TC	NY	1,137	459	0	459	0
TOP 25 STATE NON-MEMBER BANKS				154,073	31,056	46,065	76,952
OTHER 181 STATE NON-MEMBER BANKS				11,323	2,116	7,105	2,102
TOTAL NOTIONAL AMT FOR STATE NON-MEM BANKS				165,396	33,172	53,170	79,054

Notes Table includes data for state-chartered FDIC-insured commercial bank and trust companies that are members of the Federal Reserve System.
The breakout of total derivatives excludes \$22 million in commodities contracts of banks with less than \$100 million in assets

TABLE 1-2

NOTIONAL AMOUNT OF DERIVATIVE CONTRACTS OF 25
STATE NONMEMBER BANKS WITH MOST DERIVATIVE CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	BANKNAME	STATE	TOTAL ASSETS	TOTAL FUTURES & FORWARDS	FOREIGN EXCHANGE FUTURES & FORWARDS	INTEREST RATE FUTURES & FORWARDS	OTHER FUTURES & FORWARDS
1	J P MORGAN DELAWARE	DE	\$6,827	\$8,760	\$0	\$8,760	\$0
2	BOSTON SAFE DEPOSIT & TC	MA	5,884	7,424	6,969	455	0
3	MITSUI TR BK USA	NY	755	6,013	6,013	0	0
4	EXTEBANK	NY	804	3,275	3,275	0	0
5	BANKERS TR DE	DE	2,184	3,111	0	3,111	0
6	UNION BK	CA	16,096	778	778	0	0
7	COMMERCIAL BK NY	NY	775	476	474	0	2
8	UMB B&TC	NY	431	381	54	319	9
9	FIDUCIARY TC	NY	425	362	362	0	0
10	ISRAEL DISCOUNT BK OF NY	NY	3,552	301	301	0	0
11	FIRST ALABAMA BK	AL	7,218	254	1	253	0
12	SANWA BK CALIFORNIA	CA	7,175	214	128	86	0
13	BANK LEUMI TC OF NY	NY	2,322	195	175	20	0
14	SUMITOMO BK OF CALIFORNIA	CA	5,327	183	163	20	0
15	BAYBANK	MA	8,825	180	0	180	0
16	GREENE COUNTY BK	MO	19	180	0	180	0
17	BANK OF HAWAII	HI	11,593	119	119	0	0
18	FUJI B&TC	NY	2,303	117	42	75	0
19	CHICAGO-TOKYO BK	IL	457	110	110	0	0
20	BANK OF MISSISSIPPI	MS	1,808	84	0	84	0
21	DAIWA BK TC	NY	1,450	66	66	0	0
22	BANK OF THE WEST	CA	3,660	66	66	0	0
23	WASHINGTON TR BK	WA	787	65	0	65	0
24	MTB BANK	NY	181	64	38	0	26
25	COMMERCE SEC BK	CA	181	56	0	56	0
=====							
TOP 25 STATE NON-MEMBER BANKS				32,837	19,136	13,664	37
OTHER 46 STATE NON-MEMBER BANKS				335	209	125	1
TOTAL NOTIONAL AMT FOR STATE NON-MEM BANKS				33,172	19,345	13,789	38

Note: Table includes data for state-chartered FDIC-insured commercial bank and trust companies that are members of the Federal Reserve System.

Source: Call Report Schedule RC-L

TABLE 1-3

NOTIONAL AMOUNT OF SWAP CONTRACTS OF 25
STATE NONMEMBER BANKS WITH MOST SWAP CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	BANKNAME	STATE	TOTAL ASSETS	TOTAL SWAPS	INTEREST RATE SWAPS	FOREIGN EXCHANGE SWAPS	OTHER SWAPS
1	J P MORGAN DELAWARE	DE	\$6,827	\$16,912	\$16,738	\$0	\$174
2	AMERICAN EXPRESS CNTRN BK	DE	10,397	7,778	7,778	0	0
3	CITIBANK NY ST	NY	5,728	2,330	2,330	0	0
4	BANK OF NY-DE	DE	4,349	1,825	1,825	0	0
5	SANWA BK CALIFORNIA	CA	7,175	1,632	1,632	0	0
6	CHASE MHNHTN BK USA	DE	8,449	1,604	1,604	0	0
7	FIRST USA BANK	DE	3,163	1,461	1,461	0	0
8	BANK OF AMERICA AZ	AZ	8,853	1,448	1,448	0	0
9	BANK OF TOKYO TC	NY	8,054	1,393	817	577	0
10	CORESTATES HMLTN BK	PA	2,647	1,355	1,355	0	0
11	INDUSTRIAL BK JAPAN TC	NY	4,775	1,153	1,140	13	0
12	BANK OF HAWAII	HI	11,593	1,101	770	331	0
13	SUMITOMO BK OF CALIFORNIA	CA	5,327	976	953	23	0
14	BRANCH BKG&TC	NC	7,307	925	925	0	0
15	UNION BK	CA	16,096	841	841	0	0
16	BOSTON SAFE DEPOSIT & TC	MA	5,884	800	800	0	0
17	MERRILL LYNCH B&TC	NJ	1,893	575	575	0	0
18	FIRST HAWAIIAN BK	HI	5,904	538	538	0	0
19	LTGB TC	NY	1,137	459	323	136	0
20	BANKERS TR DE	DE	2,184	446	439	7	0
21	CONTINENTAL BK	PA	3,639	425	425	0	0
22	WILMINGTON TC	DE	4,163	330	330	0	0
23	BANK OF AMERICA OR	OR	3,042	305	305	0	0
24	MIITSUI TR BK USA	NY	755	295	295	0	0
25	BUCKS CTY B&TC	PA	1,227	275	275	0	0
				=====	=====	=====	=====
TOP 25 STATE NON-MEMBER BANKS				47,183	45,922	1,086	174
OTHER 123 STATE NON-MEMBER BANKS				5,987	5,821	167	0
TOTAL NOTIONAL AMT FOR STATE NON-MEM BANKS				53,170	51,743	1,253	174

Note Table includes data for state-chartered FDIC-insured commercial bank and trust companies that are members of the Federal Reserve System.

Source: Call Report Schedule RC-L

TABLE 1-4

NOTIONAL AMOUNT OF OPTION CONTRACTS OF 25
STATE NONMEMBER BANKS WITH MOST OPTION CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	BANK NAME	STATE	TOTAL ASSETS	TOTAL OPTIONS	INTEREST RATE OPTIONS	FOREIGN EXCHANGE OPTIONS	OTHER OPTIONS	
1	MITSUI TR BK USA	NY	\$755	\$45,252	\$0	\$45,252	\$0	
2	BANKERS TR DE	DE	2,184	23,247	23,247	0	0	
3	J.P. MORGAN DELAWARE	DE	6,827	6,052	6,052	0	0	
4	UMB B&TC	NY	431	852	852	0	0	
5	CHASE MHNHTN BK USA	DE	8,449	500	500	0	0	
6	UNION BK	CA	16,096	464	464	0	0	
7	RIVER FOREST ST B&TC	IL	282	370	370	0	0	
8	FIRST HAWAIIAN BK	HI	5,904	300	300	0	0	
9	PRUDENTIAL B&TC	GA	1,301	280	280	0	0	
10	CHICAGO-TOKYO BK	IL	457	198	0	198	0	
11	ONBANK TC	NY	3,424	161	161	0	0	
12	AETNA BK	IL	163	160	160	0	0	
13	BANK OF BOSTON CT	CT	2,184	159	159	0	0	
14	COMMERCIAL BK NY	NY	775	153	1	153	0	
15	ATLANTIC BK OF NEW YORK	NY	821	132	131	1	0	
16	GREENWOOD TC	DE	7,218	125	125	0	0	
17	INDUSTRIAL BK JAPAN TC	NY	4,775	93	93	0	0	
18	COMPASS BK-HOUSTON	TX	826	90	90	0	0	
19	FUJI B&TC	NY	2,303	75	75	0	0	
20	COMPASS BK	TX	941	60	60	0	0	
21	MADISON B&TC	IL	99	43	43	0	0	
22	FIRST ALABAMA BK	AL	7,218	40	40	0	0	
23	SUMITOMO BK OF CALIFORNIA	CA	5,327	40	40	0	0	
24	DELAWARE TC	DE	1,412	35	35	0	0	
25	FIRST ST BK CALUMET CITY	IL	89	33	33	0	0	
TOP 25 STATE NON-MEMBER BANKS					78,913	33,309	45,604	0
OTHER 22 STATE NON-MEMBER BANKS					141	126	6	10
TOTAL NOTIONAL AMT FOR STATE NON-MEM BANKS					79,054	33,435	45,610	10

Note Table includes data for state-chartered FDIC-insured commercial bank and trust companies that are members of the Federal Reserve System.

Source Call Report Schedule RC-L

TABLE 2

NOTIONAL AMOUNT OF DERIVATIVE CONTRACTS OF 25
STATE SAVINGS BANKS WITH MOST DERIVATIVE CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	BANK NAME	STATE	TOTAL ASSETS	TOTAL DERIVATIVES	FUTURES & FORWARDS	TOTAL SWAPS	TOTAL OPTIONS
1	MANHATTAN SVG BK	NY	\$5,816.4	\$3,525.0	\$900.0	\$2,625.0	\$0.0
2	ROCHESTER COMMUNITY SVG BK	NY	3,219.8	1,450.8	1,360.6	90.0	0.0
3	WASHINGTON MSB	WA	7,417.2	1,080.0	0.0	655.0	425.0
4	SOCIETY FOR SVG	CT	2,398.8	783.1	0.0	384.7	378.4
5	CENTERBANK	CT	2,702.7	642.4	541.4	101.0	0.0
6	BANK OF VT	VT	710.7	248.3	0.0	199.8	48.7
7	KEY SVG BK	WA	1,527.4	164.2	0.0	164.2	0.0
8	GREATER NEW YORK SVG BK	NY	2,501.4	90.0	0.0	0.0	90.0
9	CITIZENS SVG BK	RI	3,618.8	85.0	0.0	85.0	0.0
10	FARMERS & MECHANICS BK	CT	480.0	80.0	0.0	0.0	80.0
11	FIRST NH BK	NH	3,328.2	68.1	2.5	62.0	3.8
12	PLYMOUTH SVG BK	MA	548.4	66.5	66.5	0.0	0.0
13	ADVEST BK	CT	384.1	62.5	0.0	47.5	15.0
14	RIVER BK AMER	NY	1,895.3	59.0	0.0	59.0	0.0
15	WEST ONE BK OR SB	OR	423.2	53.0	38.0	0.0	15.0
16	BINGHAMTON SVG BK	NY	1,081.1	50.0	0.0	50.0	0.0
17	EASTERN BK	MA	1,258.7	40.4	39.4	0.0	1.0
18	FRANKLIN FIRST SVG BK	PA	1,346.6	34.8	34.6	0.0	0.0
19	UNIVERSITY SVG BK	WA	1,070.8	30.0	20.0	10.0	0.0
20	LIBERTY BK	CT	1,088.5	25.0	0.0	25.0	0.0
21	NEW MILFORD SVG BK	CT	285.9	22.0	0.0	22.0	0.0
22	EMIGRANT SVG BK	NY	8,451.2	22.0	22.0	0.0	0.0
23	PARKVALE SV BK	PA	886.7	15.3	15.3	0.0	0.0
24	JOHNSTOWN SB	PA	340.8	15.0	15.0	0.0	0.0
25	PEOPLES HERITAGE SVG BK	ME	2,057.6	10.0	0.0	10.0	0.0
TOP 25 STATE SAVINGS BANKS				8,701.8	3,055.2	4,589.9	1,058.7
OTHER 11 STATE SAVINGS BANKS				8,738.5	3,060.8	4,600.9	1,076.0
TOTAL NOTIONAL AMOUNT FOR ALL SAVINGS BANKS				17,440.4	6,116.0	9,190.8	2,132.7

Notes: Table includes data for state-chartered FDIC-insured savings banks.

Source: Call Report Schedule RC-L

TABLE 3-1

NOTIONAL AMOUNT OF DERIVATIVE CONTRACTS OF 25
COMMERCIAL BANKS AND TRUST COMPANIES WITH MOST DERIVATIVE CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	BANKNAME	STATE	TOTAL ASSETS	TOTAL DERIVATIVES	TOTAL FUTURES & FORWARDS	TOTAL SWAPS	TOTAL OPTIONS
1	CHEMICAL BK	NY	\$110,375	\$2,114,028	\$1,241,918	\$555,028	\$317,082
2	BANKERS TC	NY	63,853	1,802,308	846,520	390,621	565,167
3	CITIBANK NA	NY	168,567	1,789,276	1,232,449	287,206	269,621
4	MORGAN GUARANTY TC OF NY	NY	103,490	1,537,466	548,185	592,063	397,218
5	CHASE MANHATTAN BK NA	ID	79,947	1,026,141	608,189	258,086	159,867
6	BANK OF AMERICA NT&SA	CA	133,970	893,546	570,700	234,213	86,633
7	FIRST NB OF CHICAGO	IL	34,081	457,444	276,096	106,187	75,161
8	CONTINENTAL BK NA	IL	22,038	169,852	61,058	52,953	55,841
9	REPUBLIC NB OF NY	NY	28,381	167,653	80,760	49,214	37,679
10	BANK OF NEW YORK	NY	35,776	92,189	65,128	12,976	14,086
11	FIRST NB OF BOSTON	MA	25,723	70,673	49,119	9,937	11,617
12	MITSUI TR BK USA	NY	755	51,560	6,013	295	45,252
13	FIRST UNION NB NC	NC	20,745	45,956	13,347	6,983	25,626
14	NATIONSBANK OF NC NA	NC	24,549	34,908	9,692	23,650	1,567
15	HARRIS T&SB	IL	10,225	32,109	21,282	2,429	8,388
16	J P MORGAN DELAWARE	DE	6,827	31,724	8,760	16,912	6,052
17	MELLON BK NA	PA	28,553	31,189	15,785	12,668	2,736
18	NATIONAL WESTMINSTER BK USA	NY	16,457	30,580	7,467	11,100	12,013
19	CITIBANK NEVADA NA	NV	4,524	27,523	2,945	3,929	20,649
20	BANKERS TR DE	DE	2,184	26,804	3,111	446	23,247
21	STATE STREET B&T	MA	18,268	23,785	23,082	600	103
22	SEATTLE-FIRST NB	WA	15,099	20,312	11,883	8,152	277
23	PNC BANK NA	PA	36,823	19,530	775	6,977	11,778
24	BANK ONE COLUMBUS NA	OH	6,158	18,078	109	17,546	423
25	MARINE MIDLAND BK NA	NY	16,123	15,773	6,975	8,798	0
TOP 25 COMMERCIAL BANKS & TRUST CO S				10,530,409	5,711,358	2,668,969	2,150,082
OTHER 591 COMMERCIAL BANKS & TRUST CO S				418,661	106,409	226,455	85,775
TOTAL NOTIONAL AMOUNT FOR ALL BANKS & TRUSTS				10,949,070	5,817,767	2,895,424	2,235,857

Notes: Table includes data for FDIC-insured commercial banks and trust companies.

The breakout of total derivatives excludes \$22 million in commodities contracts of banks with less than \$100 million in assets.

Source: Call Report Schedule RC-L

TABLE 3-2

NOTIONAL AMOUNT OF FUTURES & FORWARD CONTRACTS OF 25
COMMERCIAL BANKS AND TRUST COMPANIES WITH MOST FUTURES & FORWARD CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	BANKNAME	STATE	TOTAL ASSETS	TOTAL FUTURES & FORWARDS	FOREIGN EXCHANGE FUTURES & FORWARDS	INTEREST RATE FUTURES & FORWARDS	OTHER FUTURES & FORWARDS
1	CHEMICAL BK	NY	\$110,375	\$1,241,918	\$618,503	\$623,270	\$145
2	CITIBANK NA	NY	168,567	1,232,449	925,077	303,666	3,706
3	BANKERS TC	NY	63,853	846,520	422,856	420,353	3,311
4	CHASE MANHATTAN BK NA	ID	79,947	608,189	467,837	134,117	6,235
5	BANK OF AMERICA NT&SA	CA	133,970	570,700	425,034	145,666	0
6	MORGAN GUARANTY TC OF NY	NY	103,490	548,185	317,553	214,509	16,123
7	FIRST NB OF CHICAGO	IL	34,081	276,096	190,878	85,099	119
8	REPUBLIC NB OF NY	NY	28,381	80,760	61,291	14,704	4,765
9	BANK OF NEW YORK	NY	35,776	65,128	46,980	18,100	48
10	CONTINENTAL BK NA	IL	22,038	61,058	21,752	39,119	187
11	FIRST NB OF BOSTON	MA	25,723	49,119	24,198	24,921	0
12	STATE STREET B&TC	MA	18,268	23,082	23,054	28	0
13	HARRIS T&SB	IL	10,225	21,292	20,099	1,193	0
14	MELLON BK NA	PA	28,553	15,785	11,201	4,384	0
15	FIRST UNION NB NC	NC	20,745	13,347	3,667	9,680	0
16	SEATTLE-FIRST NB	WA	15,099	11,883	332	11,551	0
17	NATIONSBANK OF NC NA	NC	24,549	9,692	5,846	3,846	0
18	NORTHERN TC	IL	13,115	8,924	8,519	405	0
19	J P MORGAN DELAWARE	DE	6,827	8,760	0	8,760	0
20	IBJ SCHRÖDER B&TC	NY	7,128	7,498	20	7,478	0
21	NATIONAL WESTMINSTER BK USA	NY	16,457	7,467	3,085	4,381	0
22	BOSTON SAFE DEPOSIT & TC	MA	5,884	7,424	6,969	455	0
23	MARINE MIDLAND BK NA	NY	16,123	6,975	0	6,975	0
24	MITSUI TR BK USA	NY	755	6,013	6,013	0	0
25	WELLS FARGO BK NA	CA	49,909	5,354	340	5,014	0
=====							
TOP 25 COMMERCIAL BANKS & TRUST CO.S				5,733,617	3,611,104	2,087,874	34,640
OTHER 240 COMMERCIAL BANKS & TRUST CO.S				84,150	36,916	46,984	248
TOTAL NOTIONAL AMOUNT FOR ALL BANKS & TRUSTS				5,817,767	3,648,020	2,134,858	34,888

Note: Table includes data for FDIC-insured commercial banks and trust companies.

Source: Call Report Schedule RC-L

TABLE 3-3
 NOTIONAL AMOUNT OF SWAP CONTRACTS OF 25
 COMMERCIAL BANKS AND TRUST COMPANIES WITH MOST SWAP CONTRACTS
 JUNE 30, 1993, \$ MILLIONS

RANK	BANKNAME	STATE	TOTAL ASSETS	TOTAL SWAPS	INTEREST RATE SWAPS	FOREIGN EXCHANGE SWAPS	OTHER SWAPS
1	MORGAN GUARANTY TC OF NY	NY	\$103,490	\$592,063	\$482,700	\$92,031	\$17,332
2	CHEMICAL BK	NY	110,375	555,028	533,612	21,203	213
3	BANKERS TC	NY	63,853	390,621	333,637	55,556	1,428
4	CITIBANK NA	NY	168,567	287,206	247,940	35,965	3,301
5	CHASE MANHATTAN BK NA	ID	79,947	258,086	240,946	15,274	1,865
6	BANK OF AMERICA NT&SA	CA	133,970	234,213	211,701	22,512	0
7	FIRST NB OF CHICAGO	IL	34,081	106,187	95,973	10,172	43
8	CONTINENTAL BK NA	IL	22,038	52,953	52,634	286	33
9	REPUBLIC NB OF NY	NY	28,381	49,214	17,046	31,827	342
10	NATIONS BANK OF NC NA	NC	24,549	23,650	23,650	0	0
11	BANK ONE COLUMBUS NA	OH	6,158	17,546	17,546	0	0
12	J P MORGAN DELAWARE	DE	6,827	16,912	16,738	0	174
13	BANK OF NEW YORK	NY	35,776	12,976	12,273	703	0
14	MELLON BK NA	PA	28,553	12,668	12,589	78	0
15	NATIONAL WESTMINSTER BK USA	NY	16,457	11,100	11,098	0	2
16	FIRST NB OF BOSTON	MA	25,723	9,937	9,880	57	0
17	MARINE MIDLAND BK NA	NY	16,123	8,798	8,718	80	0
18	BANK ONE TEXAS NA	TX	17,413	8,748	8,748	0	0
19	NATIONAL CITY BK	OH	8,834	8,412	8,412	0	0
20	FIRST INTERSTATE BK CA	CA	19,526	8,331	8,331	0	0
21	SEATTLE-FIRST NB	WA	15,099	8,152	8,152	0	0
22	AMERICAN EXPRESS CNTRN BK	DE	10,397	7,778	7,778	0	0
23	CORESTATES BK NA	PA	15,492	7,292	7,292	0	0
24	FIRST UNION NB NC	NC	20,745	6,983	6,861	122	0
25	PNC BANK NA	PA	36,823	6,977	6,977	0	0
				=====	=====	=====	=====
TOP 25 COMMERCIAL BANKS & TRUST CO.S				2,701,831	2,391,231	285,866	24,733
OTHER 454 COMMERCIAL BANKS & TRUST CO.S				193,593	191,547	2,028	19
TOTAL NOTIONAL AMOUNT FOR ALL BANKS & TRUSTS				2,895,424	2,582,778	287,894	24,752

Note: Table includes data for FDIC-insured commercial banks and trust companies.

Source: Call Report Schedule RC-L

TABLE 3-4
NOTIONAL AMOUNT OF OPTION CONTRACTS OF 25
COMMERCIAL BANKS AND TRUST COMPANIES WITH MOST OPTION CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	BANKNAME	STATE	TOTAL ASSETS	TOTAL OPTIONS	INTEREST RATE OPTIONS	FOREIGN EXCHANGE OPTIONS	OTHER OPTIONS
1	BANKERS TC	NY	\$63,853	\$585,167	\$445,634	\$95,582	\$23,951
2	MORGAN GUARANTY TC OF NY	NY	103,490	397,218	261,606	109,307	26,305
3	CHEMICAL BK	NY	110,375	317,082	263,081	47,205	6,796
4	CITIBANK NA	NY	168,567	269,621	167,607	90,743	11,271
5	CHASE MANHATTAN BK NA	ID	79,947	159,867	81,755	72,324	5,788
6	BANK OF AMERICA NT&SA	CA	133,970	88,633	68,042	20,591	0
7	FIRST NB OF CHICAGO	IL	34,081	75,161	45,412	29,645	103
8	CONTINENTAL BK NA	IL	22,038	55,841	40,387	13,920	1,534
9	MITSUI TR BK USA	NY	755	45,252	0	45,252	0
10	REPUBLIC NB OF NY	NY	28,381	37,679	13,970	22,138	1,571
11	FIRST UNION NB NC	NC	20,745	25,626	25,294	332	0
12	BANKERS TR DE	DE	2,184	23,247	23,247	0	0
13	CITIBANK NEVADA NA	NV	4,524	20,649	20,649	0	0
14	BANK OF NEW YORK	NY	35,776	14,086	11,382	2,704	0
15	NATIONAL WESTMINSTER BK USA	NY	16,457	12,013	11,992	19	2
16	PNC BANK NA	PA	36,823	11,778	11,768	10	0
17	FIRST NB OF BOSTON	MA	25,723	11,617	9,193	2,425	0
18	HARRIS T&SB	IL	10,225	8,388	3,622	4,766	0
19	SIGNET BK VA	VA	9,160	8,131	8,129	2	0
20	FIRST UNION NB FL	FL	26,197	7,300	7,300	0	0
21	WELLS FARGO BK NA	CA	49,909	7,045	7,017	28	0
22	CITIBANK SOUTH DAKOTA NA	SD	5,776	6,201	6,201	0	0
23	J P MORGAN DELAWARE	DE	6,827	6,052	6,052	0	0
24	HUNTINGTON NB	OH	11,710	4,190	4,190	0	0
25	SHAWMUT BK NA	MA	13,410	3,818	3,816	0	2
=====							
TOP 25 COMMERCIAL BANKS & TRUST CO S				2,181,661	1,547,347	556,991	77,323
OTHER 154 COMMERCIAL BANKS & TRUST CO S				54,196	50,564	3,587	45
TOTAL NOTIONAL AMOUNT FOR ALL BANKS & TRUSTS				2,235,857	1,597,911	560,578	77,368

Note: Table includes data for FDIC-insured commercial banks and trust companies.

Source: Call Report Schedule RC-L

TABLE 3-5

NOTIONAL AMOUNT OF DERIVATIVE CONTRACTS OF 25
NATIONAL BANKS WITH MOST DERIVATIVE CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	BANK NAME	STATE	ASSETS	TOTAL	FUTURES &	TOTAL
			DERIVATIVES	DERIVATIVES	FORWARDS	OPTIONS
1	CITIBANK NA	NY	\$168,567	\$1,789,276	\$1,232,449	\$269,621
2	CHASE MANHATTAN BK NA	ID	79,947	1,026,141	608,189	159,867
3	BANK OF AMERICA NT&A	CA	133,970	893,546	570,700	88,633
4	FIRST NB OF CHICAGO	IL	34,081	457,444	276,096	106,187
5	CONTINENTAL BK NA	IL	22,038	169,852	61,058	52,953
6	REPUBLIC NB OF NY	NY	28,381	167,653	80,760	49,214
7	FIRST NB OF BOSTON	MA	25,723	70,673	49,119	11,617
8	FIRST UNION NB NC	NC	20,745	45,956	13,347	6,983
9	NATIONSBANK OF NC NA	NC	24,549	34,908	9,692	1,567
10	MELLON BK NA	PA	28,553	31,189	15,785	2,736
11	NATIONAL WESTMINSTER BK USA	NY	16,457	30,580	7,467	11,100
12	CITIBANK NEVADA NA	NV	4,524	27,523	2,945	3,929
13	SEATTLE-FIRST NB	WA	15,099	20,312	11,883	8,152
14	PNC BANK NA	PA	36,823	19,530	775	6,977
15	BANK ONE COLUMBUS NA	OH	6,158	18,078	109	17,546
16	MARINE MIDLAND BK NA	NY	16,123	15,773	6,975	8,798
17	WELLS FARGO BK NA	CA	49,909	14,968	5,354	2,569
18	FIRST UNION NB FL	FL	26,197	13,814	2,625	3,889
19	HUNTINGTON NB	OH	11,710	12,477	2,372	5,915
20	CITIBANK SOUTH DAKOTA NA	SD	5,776	11,858	2,516	3,140
21	NATIONAL CITY BK	OH	8,834	10,865	976	8,412
22	CORESTATES BK NA	PA	15,492	10,482	2,399	7,292
23	TEXAS CMRC BK NA	TX	12,430	10,338	2,383	6,007
24	BANK ONE TEXAS NA	TX	17,413	8,963	15	8,748
25	SHAWMUT BK NA	MA	13,410	8,043	3,771	455
=====						
TOP 25 NATIONAL BANKS			4,920,243	2,969,760	1,144,026	806,457
OTHER 303 NATIONAL BANKS			181,889	45,311	109,448	27,129
TOTAL NOTIONAL AMOUNT FOR ALL NATIONAL BANKS			5,102,132	3,015,071	1,253,474	833,586

Note: Table includes data for nationally-chartered FDIC-insured commercial banks and trust companies

Source: Call Report Schedule RC-1

TABLE 3-6

NOTIONAL AMOUNT OF FUTURES & FORWARD CONTRACTS OF 25
NATIONAL BANKS WITH MOST FUTURES & FORWARD CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	BANK NAME	STATE	ASSETS	TOTAL FUTURES & FORWARDS	FOREIGN EXCHANGE FUTURES & FORWARDS	INTEREST RATE FUTURES & FORWARDS	OTHER FUTURES & FORWARDS
1	CITIBANK NA	NY	\$168,567	\$1,232,449	\$925,077	\$303,666	\$3,706
2	CHASE MANHATTAN BK NA	ID	79,947	608,189	467,837	134,117	6,235
3	BANK OF AMERICA NT&SA	CA	133,970	570,700	425,034	145,666	0
4	FIRST NB OF CHICAGO	IL	34,081	276,096	190,878	85,099	119
5	REPUBLIC NB OF NY	NY	28,381	80,760	61,291	14,704	4,765
6	CONTINENTAL BK NA	IL	22,038	61,058	21,752	39,119	187
7	FIRST NB OF BOSTON	MA	25,723	49,119	24,198	24,921	0
8	MELLON BK NA	PA	28,553	15,785	11,201	4,584	0
9	FIRST UNION NB NC	NC	20,745	13,347	3,667	9,680	0
10	SEATTLE-FIRST NB	WA	15,099	11,883	332	11,551	0
11	NATIONSBANK OF NC NA	NC	24,549	9,692	5,846	3,846	0
12	NATIONAL WESTMINSTER BK USA	NY	16,457	7,467	3,085	4,381	0
13	MARINE MIDLAND BK NA	NY	16,123	6,975	0	6,975	0
14	WELLS FARGO BK NA	CA	49,909	5,354	340	5,014	0
15	SHAWMUT BK CONNECTICUT NA	CT	12,761	4,937	4,622	15	0
16	SHAWMUT BK NA	MA	13,410	3,771	3,655	116	0
17	FIRST BK NA	MN	13,380	3,422	1,819	1,604	0
18	NATIONSBANK OF TX NA	TX	36,911	3,354	1,878	1,476	0
19	WACHOVIA BK OF NC NA	NC	18,625	3,222	1,095	2,127	0
20	FLEET BK OF MA NA	MA	7,699	2,984	2,383	601	0
21	CITIBANK NEVADA NA	NV	4,524	2,945	0	2,945	0
22	FIRST SECURITY BK IDAHO NA	ID	3,228	2,712	0	2,712	0
23	FIRST UNION NB FL	FL	26,197	2,625	0	2,625	0
24	CITIBANK SOUTH DAKOTA NA	SD	5,776	2,516	0	2,516	0
25	NBD BK NA	MI	24,400	2,466	2,309	157	0
				=====	=====	=====	=====
TOP 25 NATIONAL BANKS				2,983,529	2,158,300	810,216	15,013
OTHER 125 NATIONAL BANKS				31,542	10,644	20,739	159
TOTAL NOTIONAL AMOUNT FOR ALL NATIONAL BANKS				3,015,071	2,168,944	830,955	15,172

Note: Table includes data for nationally-chartered FDIC-insured commercial banks and trust companies.

Source: Call Report Schedule RC-L

TABLE 3-7

NATIONAL AMOUNT OF SWAP CONTRACTS OF 25
NATIONAL BANKS WITH MOST SWAP CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	BANK NAME	STATE	ASSETS	TOTAL SWAPS	INTEREST RATE SWAPS	FOREIGN EXCHANGE SWAPS	OTHER SWAPS
1	CITIBANK NA	NY	\$168,567	\$287,206	\$247,940	\$35,965	\$3,301
2	CHASE MANHATTAN BK NA	ID	79,947	258,086	240,946	15,274	1,865
3	BANK OF AMERICA NT&S	CA	133,970	234,213	211,701	22,512	0
4	FIRST NB OF CHICAGO	IL	34,081	106,187	95,973	10,172	43
5	CONTINENTAL BK NA	IL	22,038	52,953	52,634	286	33
6	REPUBLIC NB OF NY	NY	28,381	49,214	17,046	31,827	342
7	NATIONSBANK OF NC NA	NC	24,549	23,650	23,650	0	0
8	BANK ONE COLUMBUS NA	OH	6,156	17,546	17,546	0	0
9	MELLON BK NA	PA	28,553	12,668	12,589	78	0
10	NATIONAL WESTMINSTER BK USA	NY	16,457	11,100	11,098	0	2
11	FIRST NB OF BOSTON	MA	25,723	9,937	9,880	57	0
12	MARINE MIDLAND BK NA	NY	16,123	8,798	8,718	80	0
13	BANK ONE TEXAS NA	TX	17,413	8,748	8,748	0	0
14	NATIONAL CITY BK	OH	8,834	8,412	8,412	0	0
15	SEATTLE-FIRST NB	WA	15,099	8,152	8,152	0	0
16	CORESTATES BK NA	PA	15,482	7,292	7,292	0	0
17	FIRST UNION NB NC	NC	20,745	6,983	6,861	122	0
18	PNC BANK NA	PA	36,823	6,977	6,977	0	0
19	FCC NB	DE	4,040	6,707	6,707	0	0
20	SOCIETY NB	OH	18,528	6,417	6,417	0	0
21	TEXAS CMRC BK NA	TX	12,430	6,007	6,002	0	5
22	HUNTINGTON NB	OH	11,710	5,915	5,915	0	0
23	FLEET NB	RI	7,628	4,970	4,970	0	0
24	BANK ONE MILWAUKEE NA	WI	3,280	4,373	4,373	0	0
25	CITIBANK NEVADA NA	NV	4,524	3,929	3,929	0	0
TOTAL 25 NATIONAL BANKS				1,156,440	1,034,476	116,374	5,591
OTHER 242 NATIONAL BANKS				97,034	96,793	228	13
TOTAL NATIONAL AMOUNT FOR ALL NATIONAL BANKS				1,253,474	1,131,269	116,602	5,604

Note: Table includes data for nationally-chartered FDIC-insured commercial banks and trust companies.

Source: Call Report Schedule RC-L

TABLE 3-8

NOTIONAL AMOUNT OF OPTION CONTRACTS OF 25
NATIONAL BANKS WITH MOST OPTION CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	BANK NAME	STATE	ASSETS	TOTAL OPTIONS	INTEREST RATE OPTIONS	FOREIGN EXCHANGE OPTIONS	OTHER OPTIONS	
1	CITIBANK NA	NY	\$168,567	\$269,621	\$167,607	\$90,743	\$11,271	
2	CHASE MANHATTAN BK NA	ID	79,947	159,867	81,755	72,324	5,788	
3	BANK OF AMERICA INT&SA	CA	133,970	88,633	68,042	20,591	0	
4	FIRST NB OF CHICAGO	IL	34,081	75,161	45,412	29,645	103	
5	CONTINENTAL BK NA	IL	22,038	55,841	40,387	13,920	1,534	
6	REPUBLIC NB OF NY	NY	28,381	37,679	13,970	22,138	1,571	
7	FIRST UNION NB NC	NC	20,745	25,626	0	332	0	
8	CITIBANK NEVADA NA	NV	4,524	20,649	20,649	0	0	
9	NATIONAL WESTMINSTER BK USA	NY	16,457	12,013	11,992	19	2	
10	PNC BANK NA	PA	36,823	11,778	11,768	10	0	
11	FIRST NB OF BOSTON	MA	25,723	11,617	9,193	2,425	0	
12	FIRST UNION NB FL	FL	26,197	7,300	7,300	0	0	
13	WELLS FARGO BK NA	CA	49,909	7,045	7,017	28	0	
14	CITIBANK SOUTH DAKOTA NA	SD	5,776	6,201	6,201	0	0	
15	HUNTINGTON NB	OH	11,710	4,190	4,190	0	0	
16	SHAWMUT BK NA	MA	13,410	3,818	3,816	0	2	
17	MARYLAND NB	MD	11,758	3,509	3,500	9	0	
18	MELLON BK NA	PA	28,553	2,736	1,786	951	0	
19	NATIONSBANK OF GA NA	GA	14,936	2,142	1,990	152	0	
20	UNITED STATES NB	OR	10,809	2,014	2,014	0	0	
21	TEXAS CMRC BK NA	TX	12,430	1,948	1,941	6	0	
22	SHAWMUT BK CONNECTICUT NA	CT	12,761	1,889	1,888	0	0	
23	FIRST SECURITY BK OF UTAH NA	UT	4,480	1,684	1,684	0	0	
24	NATIONSBANK OF NC NA	NC	24,549	1,567	914	653	0	
25	NATIONAL CITY BK	OH	8,834	1,477	1,471	6	0	
TOP 25 NATIONAL BANKS					816,003	541,779	253,951	20,273
OTHER 78 NATIONAL BANKS					17,583	16,640	910	33
TOTAL NOTIONAL AMOUNT FOR ALL NATIONAL BANKS					833,586	558,419	254,861	20,306

Note: Table includes data for nationally-chartered FDIC-insured commercial banks and trust companies.

Source: Call Report Schedule RC-L

TABLE 4-1

NOTIONAL AMOUNT OF DERIVATIVE CONTRACTS OF 25
HOLDING COMPANIES WITH MOST DERIVATIVE CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	HOLDING COMPANY NAME	STATE	ASSETS	DERIVATIVES	TOTAL	FUTURES & FORWARDS	TOTAL SWAPS	TOTAL OPTIONS
1	CHEMICAL BANKING CORPORATION	NY	\$145,522	\$2,117,385	\$1,245,500	\$554,257	\$317,628	
2	BANKERS TRUST NEW YORK CORPORATION	NY	83,987	1,769,947	816,740	355,597	597,610	
3	CITICORP	NY	216,285	1,762,478	1,207,132	264,811	290,535	
4	J.P. MORGAN & CO. INCORPORATED	NY	132,532	1,550,680	572,897	398,563	579,219	
5	CHASE MANHATTAN CORPORATION	NY	99,085	1,125,075	666,150	258,086	200,839	
6	BANKAMERICA CORPORATION	CA	185,466	899,783	581,034	229,926	88,823	
7	FIRST CHICAGO CORPORATION	IL	49,936	452,780	276,790	100,666	75,324	
8	CONTINENTAL BANK CORPORATION	IL	22,352	170,052	61,058	52,953	56,041	
9	REPUBLIC NEW YORK CORPORATION	NY	36,205	164,979	81,707	45,504	37,768	
10	BANK OF NEW YORK COMPANY, INC. THE	NY	41,045	91,434	65,128	12,200	14,106	
11	BANK OF BOSTON CORPORATION	MA	32,766	69,479	49,254	9,092	11,133	
12	FIRST UNION CORPORATION	NC	71,959	63,794	17,867	11,672	34,255	
13	NATIONSBANK CORPORATION	NC	124,385	47,490	12,832	30,574	4,084	
14	MELLON BANK CORPORATION	PA	36,209	37,122	22,834	11,552	2,736	
15	BANC ONE CORPORATION	OH	75,413	32,289	2,610	29,349	330	
16	BANKMONT FINANCIAL CORP.	NY	16,990	32,107	21,293	2,425	8,388	
17	NATWEST HOLDINGS INC.	NY	23,681	29,755	7,717	10,225	11,813	
18	STATE STREET BOSTON CORPORATION	MA	18,170	23,785	23,082	600	103	
19	PNC BANK CORP.	PA	53,317	20,965	786	8,401	11,778	
20	MARINE MIDLAND BANKS, INC.	NY	16,736	15,773	7,055	8,718	0	
21	WELLS FARGO & COMPANY	CA	51,329	15,353	5,354	2,953	7,045	
22	SHAWMUT NATIONAL CORPORATION	CT	25,892	14,929	8,408	814	5,707	
23	SIGNET BANKING CORPORATION	VA	12,052	14,011	3,032	2,633	8,346	
24	FIRST INTERSTATE BANCORP	CA	49,488	12,964	1,304	8,166	3,494	
25	FLEET FINANCIAL GROUP INC	RI	44,871	12,599	6,733	4,861	1,006	
=====								
TOP 25 HOLDING COMPANIES			10,547,006		5,764,297	2,595,254	2,187,455	
OTHER 190 HOLDING COMPANIES			174,959		57,300	85,243	32,416	
TOTAL NOTIONAL AMOUNT FOR ALL HOLDING COMPANIES			10,721,965		5,821,597	2,680,497	2,219,871	

Note: Table includes data for companies with total assets of \$150 million or more, or with more than one subsidiary bank.

Source: Consolidated Financial Statements for Bank Holding Companies (FR Y-9 C) Schedule HC-F

TABLE 4-2

NOTIONAL AMOUNT OF FUTURES & FORWARD CONTRACTS OF 25
HOLDING COMPANIES WITH MOST FUTURES & FORWARD CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	HOLDING COMPANY NAME	STATE	TOTAL ASSETS	TOTAL FUTURES & FORWARDS	FOREIGN EXCHANGE FUTURES & FORWARDS	INTEREST RATE FUTURES & FORWARDS	OTHER FUTURES & FORWARDS
1	CHEMICAL BANKING CORPORATION	NY	\$145,522	\$1,245,500	\$619,519	\$625,836	\$145
2	CITICORP	NY	216,285	1,207,132	929,342	273,600	4,190
3	BANKERS TRUST NEW YORK CORPORATION	NY	83,987	816,740	426,282	387,164	3,294
4	CHASE MANHATTAN CORPORATION	NY	99,085	666,150	467,837	135,965	62,348
5	BANKAMERICA CORPORATION	CA	185,466	581,034	425,198	155,836	0
6	J.P. MORGAN & CO. INCORPORATED	NY	132,532	572,897	317,544	239,230	16,123
7	FIRST CHICAGO CORPORATION	IL	49,936	276,790	190,913	85,758	119
8	REPUBLIC NEW YORK CORPORATION	NY	36,205	81,707	63,125	13,782	4,800
9	BANK OF NEW YORK COMPANY, INC. THE	NY	41,045	65,128	46,980	18,100	48
10	CONTINENTAL BANK CORPORATION	IL	22,352	61,058	21,752	39,119	187
11	BANK OF BOSTON CORPORATION	MA	32,766	49,254	24,198	24,921	135
12	STATE STREET BOSTON CORPORATION	MA	18,170	23,082	23,054	0	28
13	MELLON BANK CORPORATION	PA	36,209	22,834	18,170	4,664	0
14	BANKMONT FINANCIAL CORP.	NY	16,990	21,293	20,099	1,194	0
15	FIRST UNION CORPORATION	NC	71,959	17,867	0	14,198	0
16	NATIONSBANK CORPORATION	NC	124,385	12,832	7,500	5,332	0
17	NORTHERN TRUST CORPORATION	IL	16,289	8,924	8,519	405	0
18	SHAWMUT NATIONAL CORPORATION	CT	25,892	8,408	8,277	131	0
19	NATWEST HOLDINGS INC.	NY	23,681	7,717	3,086	4,631	0
20	MARINE MIDLAND BANKS, INC.	NY	16,736	7,055	80	6,975	0
21	FLEET FINANCIAL GROUP INC	RI	44,871	6,733	2,383	603	3,747
22	NORWEST CORPORATION	MN	47,790	6,141	609	5,532	0
23	WELLS FARGO & COMPANY	CA	51,329	5,354	340	5,014	0
24	FIRST SECURITY CORPORATION	UT	8,181	5,169	10	5,159	0
25	WACHOVIA CORPORATION	NC	33,237	3,491	1,349	2,142	0
=====							
TOP 25 HOLDING COMPANIES				5,780,290	3,629,834	2,055,319	95,137
OTHER 119 HOLDING COMPANIES				41,307	15,862	25,081	364
TOTAL NOTIONAL AMOUNT FOR ALL HOLDING COMPANIES				5,821,597	3,645,696	2,080,400	95,501

Note: Table includes data for companies with total assets of \$150 million or more, or with more than one subsidiary bank.
Source: Consolidated Financial Statements for Bank Holding Companies (FR Y-9 C) Schedule HC-F

TABLE 4-3

NOTIONAL AMOUNT OF SWAP CONTRACTS OF 25
HOLDING COMPANIES WITH MOST SWAP CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	HOLDING COMPANY NAME	STATE	TOTAL ASSETS	TOTAL SWAPS	INTEREST RATE SWAPS	FOREIGN EXCHANGE SWAPS	OTHER SWAPS
1	J.P. MORGAN & CO. INCORPORATED	NY	\$132,532	\$579,219	\$468,542	\$91,799	\$18,878
2	CHEMICAL BANKING CORPORATION	NY	145,522	554,257	532,931	21,113	213
3	BANKERS TRUST NEW YORK CORPORATION	NY	83,987	355,597	298,572	55,597	1,428
4	CITICORP	NY	216,285	284,811	225,827	35,683	3,301
5	CHASE MANHATTAN CORPORATION	NY	99,085	258,086	240,946	15,274	1,865
6	BANKAMERICA CORPORATION	CA	185,466	229,926	207,179	22,747	0
7	FIRST CHICAGO CORPORATION	IL	49,936	100,666	90,451	10,172	43
8	CONTINENTAL BANK CORPORATION	IL	22,352	52,953	52,634	286	33
9	REPUBLIC NEW YORK CORPORATION	NY	36,205	45,504	13,336	31,826	342
10	NATIONSBANK CORPORATION	NC	124,385	30,574	30,562	0	12
11	BANC ONE CORPORATION	OH	75,413	29,349	29,300	49	0
12	BANK OF NEW YORK COMPANY, INC. THE	NY	41,045	12,200	11,498	703	0
13	FIRST UNION CORPORATION	NC	71,959	11,672	11,550	122	0
14	MELLON BANK CORPORATION	PA	36,209	11,552	11,473	78	0
15	NATWEST HOLDINGS INC.	NY	23,681	10,225	10,223	0	2
16	BANK OF BOSTON CORPORATION	MA	32,766	9,092	9,035	57	0
17	MARINE MIDLAND BANKS, INC.	NY	16,736	8,718	8,718	0	0
18	PNC BANK CORP.	PA	53,317	8,401	8,401	0	0
19	FIRST INTERSTATE BANCORP	CA	49,488	8,166	8,120	45	1
20	NATIONAL CITY CORPORATION	OH	28,660	6,175	6,175	0	0
21	SOCIETY CORPORATION	OH	25,964	5,712	5,712	0	0
22	HUNTINGTON BANCSHARES, INC.	OH	15,655	5,374	5,374	0	0
23	FLEET FINANCIAL GROUP INC	RI	44,871	4,861	4,844	17	0
24	CORESTATES FINANCIAL CORPORATION	PA	23,591	3,840	3,840	0	0
25	ABN AMRO NORTH AMERICA, INC.	IL	17,284	3,742	3,742	0	0
TOP 25 HOLDING COMPANIES					2,610,672	2,298,984	26,119
OTHER 128 HOLDING COMPANIES					69,825	67,410	257
TOTAL NOTIONAL AMOUNT FOR ALL HOLDING COMPANIES					2,680,497	2,87,727	26,376

Note: Table includes data for companies with total assets of \$150 million or more, or with more than one subsidiary bank.
Source: Consolidated Financial Statements for Bank Holding Companies (FR Y-9 C) Schedule HC-F

TABLE 4-4

NOTIONAL AMOUNT OF OPTION CONTRACTS OF 25
HOLDING COMPANIES WITH MOST OPTION CONTRACTS
JUNE 30, 1993, \$ MILLIONS

RANK	HOLDING COMPANY NAME	STATE	TOTAL ASSETS	TOTAL OPTIONS	INTEREST RATE OPTIONS	FOREIGN EXCHANGE OPTIONS	OTHER OPTIONS	
1	BANKERS TRUST NEW YORK CORPORATION	NY	\$83,987	\$597,610	\$478,002	\$95,652	\$23,956	
2	J.P. MORGAN & CO. INCORPORATED	NY	132,532	398,563	263,129	109,225	26,209	
3	CHEMICAL BANKING CORPORATION	NY	145,522	317,628	263,624	47,208	6,796	
4	CITICORP	NY	216,285	290,535	183,338	92,005	15,192	
5	CHASE MANHATTAN CORPORATION	NY	99,085	200,839	83,820	72,324	44,696	
6	BANKAMERICA CORPORATION	CA	185,466	88,823	68,209	20,614	0	
7	FIRST CHICAGO CORPORATION	IL	49,936	75,324	45,374	29,645	305	
8	CONTINENTAL BANK CORPORATION	IL	22,352	56,041	40,387	13,920	1,734	
9	REPUBLIC NEW YORK CORPORATION	NY	36,205	37,768	13,970	22,146	1,652	
10	FIRST UNION CORPORATION	NC	71,959	34,255	33,923	332	0	
11	BANK OF NEW YORK COMPANY, INC. THE	NY	41,045	14,106	11,402	2,704	0	
12	NATWEST HOLDINGS INC.	NY	23,681	11,813	11,792	19	2	
13	PNC BANK CORP.	PA	53,317	11,778	11,768	10	0	
14	BANK OF BOSTON CORPORATION	MA	32,766	11,133	8,708	2,425	0	
15	BANKMONT FINANCIAL CORP.	NY	16,990	8,388	3,622	4,766	0	
16	SIGNET BANKING CORPORATION	VA	12,052	8,346	8,344	2	0	
17	WELLS FARGO & COMPANY	CA	51,329	7,045	7,017	28	0	
18	SHAWMUT NATIONAL CORPORATION	CT	25,892	5,707	5,704	0	4	
19	HUNTINGTON BANCSHARES, INC.	OH	15,655	4,190	4,190	0	0	
20	NATIONSBANK CORPORATION	NC	124,385	4,084	2,576	1,508	0	
21	MNC FINANCIAL, INC.	MD	17,208	3,604	3,595	9	0	
22	FIRST INTERSTATE BANCORP	CA	49,488	3,494	3,494	0	0	
23	MELLON BANK CORPORATION	PA	36,209	2,736	1,786	951	0	
24	FIRST SECURITY CORPORATION	UT	8,181	2,494	2,494	0	0	
25	CENTRAL BANCSHARES OF THE SOUTH, INC.	AL	7,018	2,382	2,382	0	0	
					=====	=====	=====	
TOP 25 HOLDING COMPANIES					2,198,686	1,562,650	515,491	120,545
OTHER 67 HOLDING COMPANIES					21,185	20,597	520	68
TOTAL NOTIONAL AMOUNT FOR ALL HOLDING COMPANIES					2,219,871	1,583,247	516,011	120,613

Note: Table includes data for companies with total assets of \$150 million or more, or with more than one subsidiary bank

Source: Consolidated Financial Statements for Bank Holding Companies (FR Y-9 C) Schedule HC-F

TABLE 5-1

CREDIT EQUIVALENT EXPOSURE OF THE 10 LARGEST BANK DERIVATIVES DEALERS
JUNE 30, 1993, \$ MILLIONS, RATIO IN PERCENT

RANK	BANK NAME	STATE	TOTAL ASSETS	TOTAL DERIVATIVES	REPLACEMENT COST	ESTIMATED POTENTIAL	TOTAL CREDIT EQUIVALENT	CREDIT EXPOSURE TO CAPITAL RATIO
				EXPOSURE	EXPOSURE	EXPOSURE	EXPOSURE	
1	CHEMICAL BK	NY	\$110,375	\$2,114,028	\$23,947	\$7,938	\$31,885	268%
2	BANKERS TC	NY	63,853	1,802,308	21,784	7,735	29,519	571
3	CITIBANK NA	NY	168,567	1,789,276	26,466	11,684	38,150	230
4	MORGAN GUARANTY TC OF NY	NY	103,490	1,537,468	27,565	10,367	37,931	458
5	CHASE MANHATTAN BK NA	ID	79,947	1,026,141	16,679	6,362	23,041	269
6	BANK OF AMERICA NT&SA	CA	133,970	893,548	16,253	5,468	21,721	146
7	FIRST NB OF CHICAGO	IL	34,081	457,444	7,548	2,596	10,144	269
8	CONTINENTAL BK NA	IL	22,038	169,852	2,050	415	2,465	91
9	REPUBLIC NB OF NY	NY	28,381	187,653	1,892	848	2,740	104
10	BANK OF NEW YORK	NY	35,776	92,189	1,214	490	1,703	41

Notes: Replacement cost credit exposure and estimated potential credit exposure excludes exchange-traded contracts with daily margin requirements, individual contracts netted bilaterally through novation, and foreign exchange contracts with original maturities of 14 days or less.

Potential future credit exposures are estimated using the calculations in the OCC's risk-based capital standards.

Source: Call Report Schedules RC-L & RC-R

TABLE 5-2

CREDIT EQUIVALENT EXPOSURE OF THE 10 LARGEST BANKING COMPANY DERIVATIVES DEALERS
JUNE 30, 1993, \$ MILLIONS, RATIO IN PERCENT

RANK	HOLDING COMPANY NAME	STATE	TOTAL ASSETS	TOTAL DERIVATIVES	REPLACEMENT COST	ESTIMATED POTENTIAL CREDIT EXPOSURE	TOTAL CREDIT EQUIVALENT EXPOSURE	CREDIT EXPOSURE TO CAPITAL RATIO
1	CHEMICAL BANKING CORPORATION	NY	\$145,522	\$2,117,385	\$23,914	\$7,913	\$31,827	212
2	BANKERS TRUST NEW YORK CORPORATION	NY	83,987	1,769,947	22,933	7,900	30,833	439
3	CITICORP	NY	216,285	1,762,478	26,636	11,307	37,943	172
4	J.P. MORGAN & CO. INCORPORATED	NY	132,532	1,550,680	27,931	10,566	38,497	330
5	CHASE MANHATTAN CORPORATION	NY	99,085	1,125,075	16,492	6,180	22,673	196
6	BANKAMERICA CORPORATION	CA	185,466	899,783	16,885	5,555	22,440	120
7	FIRST CHICAGO CORPORATION	IL	49,936	452,780	7,544	2,578	10,122	164
8	CONTINENTAL BANK CORPORATION	IL	22,352	170,052	2,057	449	2,506	99
9	REPUBLIC NEW YORK CORPORATION	NY	36,205	164,979	1,728	832	2,560	69
10	BANK OF NEW YORK COMPANY, INC. THE	NY	41,045	91,434	1,080	484	1,564	29

Notes: Replacement cost credit exposure and estimated potential credit exposure excludes exchange-traded contracts with daily margin requirements, individual contracts netted bilaterally through novation, and foreign exchange contracts with original

Appendix IV

**Policies, Procedures,
and
Training Material**

Interest Rate Risk

RATE SENSITIVITY ANALYSIS

I. INTRODUCTION

Inflation, resulting high interest rates, and the need to be competitive were the primary impetus for development of new instruments such as the money market certificate of deposit and for phase-out of interest rate controls. These developments have significantly increased the rate sensitivity of the liability structure of the banking system. The phase-out of interest rate ceilings, new deposit-like instruments, and the offering of money market accounts on a nationwide basis are allowing banks to compete more effectively with other market rate instruments to maintain market share, but are also contributing to the shrinkage in fixed-rate and/or low-cost liabilities.

Banks no longer have the benefits of significant amounts of fixed-rate liabilities and controlled competition. Funds management decisions must reflect this factor to maintain profitability. Margins for error in funds management and pricing decisions have been greatly reduced and the need for good internal management information systems has increased. Strategies developed to compensate for increasing variable rate liabilities include:

1. Expansion of variable rate lending;
2. Shortening of maturities in the investment portfolio;
3. Generation of fees from the package and sale of fixed-rate longer term loans;
4. Use of interest rate futures to hedge against unprofitable fluctuations in interest rates when an imbalance exists in a bank's rate sensitivity position;
5. Use of interest rate swaps;
6. The development of sources of fee and non-interest income; and
7. Asset securitization.

II. IMPACT ON EARNINGS

Sound and profitable operation of a bank is dependent upon management's effectiveness in measuring and controlling risk. Given that both sides of a bank's balance sheet have been substantially deregulated with respect to interest rates, the impact of interest rate risk is more important. Consequently, management of this risk through controlling the bank's interest rate "gap," that is, the difference between rate sensitive assets and rate sensitive liabilities, is critical to sound earnings performance. There are certain considerations

which have particular significance to the analysis of bank earnings which are discussed below.

1. Rate sensitivity positions should be measured over the bank's entire range of assets and liabilities. It is conceivable that an asset sensitive posture exists at the 30-day time frame but a high liability sensitive position may be the case over a longer time period.
2. Policies should be developed setting forth tolerance ranges for interest rate risk exposure (as mentioned above). The more volatile or uncertain the interest rate environment, the smaller this tolerance generally should be.
3. It should be remembered that rate sensitivity analysis measures interest rate risk exposure, not liquidity or funding risk.
4. The investment account (including use of financial futures contracts) customarily provides greater flexibility than the loan portfolio (because of established customer relationships) in terms of making adjustments to the bank's rate sensitive position.
5. A bank which is asset sensitive ordinarily has more options when considering adjustments to its rate sensitivity posture than a liability sensitive bank. A bank in the latter position may suffer a loss of business as it attempts to move to a balanced situation, due to the fact that a bank has limited control over the volume of its fixed rate liabilities. Consequently, to achieve a balanced position would likely require a run-off of rate sensitive liabilities and a reduction in fixed rate, long-term loans or securities supported by these liabilities. Disposal of such assets during a period of rising rates would probably entail capital losses.
6. Rate sensitivity analysis provides an indication of the stability of the net interest margin (defined for purposes of this discussion as gross interest income less gross interest expense) but not the level of that margin.

Rate Sensitivity Measurement

A bank's rate sensitivity position may be measured in several ways, the most common being the ratio between a bank's rate sensitive assets and rate sensitive liabilities. An RSA/RSL ratio of 1 indicates a balanced position, a ratio greater than 1 indicates an asset sensitive position, and a ratio of less than 1 indicates a liability sensitive position. Whether a bank positions itself as asset or liability sensitive at any point, it

should be consistent with intelligent (not speculative) projections for interest rate movements.

A RSA/RSL ratio of 1 does not make the bank's earnings immune to interest rate risk. The following cause this apparent contradiction and accentuate the need for an accurate and timely management system:

1. Interest rate changes do not affect all investment/funding instruments equally. For example, the rate on Treasury bills may lag behind a federal funds rate change by one or two weeks or longer.
2. A bank's rate sensitivity report may show a balanced ratio for a three-month period. However, if most assets mature in the first 45 days, liabilities may be repriced at a higher rate if their maturities are concentrated in the second 45 days.
3. Fixed rate assets may be refinanced during periods of declining rates. Fixed rate deposits may be withdrawn during periods of rising rates.
4. A bank may use futures contracts or interest rate swaps to alter the balance sheet gap.
5. Repriceable investments and funds may roll off at rates significantly different from current rates. This would cause a change in earnings even if the bank had a balanced ratio.

As a result of these and other factors, an analysis of rate sensitivity that examines only volumes is flawed. To properly assess rate risk, the rates associated with the volumes must be incorporated into the analysis. Also, futures transactions and interest rate swaps may be used to alter rate sensitivity. The effect of those off-balance sheet items should be accounted for in the analysis. Having adjusted the RSA/RSL analysis to consider weighted average interest rates and off-balance sheet activity, the following discussion outlines the basic theory of rate sensitivity.

A bank which is liability sensitive is not in a favorable position in an environment of rising interest rates, since it will be paying increasingly higher rates to replace liabilities supporting fixed-rate assets. It is difficult to adjust a liability sensitive position to achieve a balanced position without suffering a loss of business. A bank has limited control over the volume of its fixed-rate liabilities, therefore, to achieve balance would likely require a run-off of rate sensitive liabilities and a reduction in fixed-rate/long-term loans of securities supported by these liabilities. This may be difficult since rising rates indicate the likelihood of a capital loss from the sale of fixed-rate assets. A bank which is

asset sensitive has more options to make adjustments in its rate sensitivity position.

When a proper balance between rate sensitive assets and rate sensitive liabilities exists, an incorrect forecast of interest rates by bank management should not have a significant impact on earnings. The larger the imbalance, the greater the profit potential, the greater the risk the bank assumes, and the greater the negative impact of an incorrect interest rate forecast on earnings. Management should not position the bank in such a manner that the risks assumed are untenable if interest rate forecasts prove wrong. For example, bank management may predict that interest rates will rise and adopt a posture of increasing rate sensitive assets significantly in excess of rate sensitive liabilities to take advantage of repricing those assets at the higher rates. If the projection proves wrong, earnings will suffer since asset yields will decline faster than liability costs. Management may wish to allow the RSA/RSL ratio to fluctuate within a predetermined range close to 1. When projections call for declining interest rates, the target ratio may be less than 1; when projections call for rising rates, the target ratio may be above 1.

In order to control risk, a limit should be established for the minimum imbalance in relation to assets or capital. Two measures of the degree of imbalance and the size of the risk associated with a particular rate sensitivity are $(RSA - RSL)/Assets$ and $(RSA - RSL)/Capital$.

The imbalance can be translated into probable impact on the income statement under different interest rate scenarios. For example, assume management anticipates rising rates and takes a position where $(RSA - RSL)/Assets$ is 20%. If management's interest rate predictions prove incorrect and fall by 1% (and management takes no action to adjust its position), the bank's ROA will decline on an annualized basis by .2% ($20\% \times .01$). The same 1% fall in interest rates would have less of an impact on ROA when $(RSA - RSL)/Assets$ is 5%. In this case, the 1% fall in interest rates would cause a decline in ROA on an annualized basis of only .05% ($5\% \times .01$).

III. DURATION ANALYSIS

Duration is another way to measure interest rate risk, or more precisely, duration is the time weighted average of cash flows expressed in present value terms. Duration measures the average life of a rate sensitive instrument by effectively converting periodic payments into zero coupon equivalents. The properties of duration are straightforward:

1. The duration of an instrument declines as time elapses;
2. Duration is always less than the maturity of an instrument in which payments are made before maturity; and,
3. Duration is always equal to the remaining maturity of a zero coupon instrument.

The following example illustrates a duration calculation.

A bank purchases a three-year \$1,000 bond at par that pays 10% interest annually. To calculate duration, the present value (PV) of each payment is multiplied by the time of payment (T) and then summed. This total, which in the example shown in Figure 1 equals 2,735.4, is divided by the PV of the instrument (shown as 1,000) resulting in a duration of 2.74 years.

Figure 1
Duration Calculation

Year	Payment	PV	x T	PVxT
1	\$100	90.9	1	\$ 90.9
2	100	82.6	2	165.2
3	1,100	826.4	3	2,479.3
		1,000.0		2,735.4
Duration = 2,735.4 ÷ 1,000				2.74 years

Duration can be used as a good proxy measure of interest rate risk since it closely relates changes in interest rates to percentage changes in the prices of rate sensitive instruments.

The relationship can be stated in formula form where P is the market value or present value of a financial instrument; ΔP is the change in market value; D is the financial instrument's duration; and, Δi is the change in interest rates.

$$\Delta P = - D \Delta i P$$

The relationship is a close approximation rather than linear as indicated by the = sign. Note also that the negative sign means an increase in the interest rate will translate into a decrease in the price of an instrument; the opposite would occur when the interest rate declined.

Duration for an entire portfolio can be calculated in the same manner as shown in Figure 1. For illustration purposes assume a bank has a portfolio of \$10,000 of rate sensitive assets (RSA) with a duration of 7.5 years, and \$10,000 of rate sensitive liabilities (RSL) with a duration of 2.6 years. In this case the bank is liability sensitive since the average life of assets is 4.9

years longer than the average life of the liabilities. This 4.9-year difference is also called a duration gap. Thus, for every 1% increase in interest rates there would be an approximate \$490 or 4.9% decrease in the present value of the portfolio ($\Delta P = -4.9 \times .01 \times \$10,000$). Expressed another way, the market value of the assets will change approximately 4.9% more than the liabilities for every 1% change in interest rates.

The relationship between duration and volatility in market values permits a bank to determine its interest rate exposure in any interest rate environment. Interest rate risk can be managed and reduced by maintaining asset and liability durations at approximately equal lengths since a change in rates will effect market values of both sides of the balance sheet equally. When RSA do not equal RSL, durations would be maintained at different lengths if the bank wants to make sure that a change in rates will result in an approximate equivalent dollar change to both sides of the balance sheet. For example, if the volume of RSA is greater than the volume of RSL, maintaining RSL with an appropriate longer duration than RSA can ensure that any movement in rates will have an approximate equal dollar impact on the market values of both RSA and RSL.

Duration gap analysis has significant advantages over the more traditional maturity gap analysis discussed under Part V, Rate Sensitivity. For example, duration analysis yield a single number with which to measure interest rate risk. Duration analysis matches assets and liabilities by cash flow rather than individual rate sensitive instruments. In short, duration gap analysis can be more accurate than maturity gap analysis in measuring and managing a bank's interest rate exposure.

Despite its conceptual appeal, duration gap analysis does have major practical problems that have limited its use in managing interest rate risk. Duration analysis is significantly more complex than maturity gap analysis. Sophisticated and complex accounting and management information systems are required for its use. Banks using duration gap management have to continually (perhaps even daily) update their durations and restructure their portfolios. This is because the durations of periodic payment instruments do not decline at the same rate as the maturity and, duration values change with changes in interest rates.

Another difficult problem in determining durations is choosing appropriate discount rates to use in present value calculations since the relationship between interest rates is constantly changing along the yield curve. For example, the discount rate used in determining the duration of a one-year instrument would

normally be different than the one used to determine the duration of a five-year or ten-year instrument.

Duration analysis techniques are generally employed at only the largest commercial and savings institutions. If encountered, the examiner should review the bank's liquidity and funds management policy to understand how management uses duration to limit interest rate risk. Consistency of use, control systems and costs of constant portfolio restructurings should all be evaluated. Perhaps most importantly, the examiner should ascertain the reasonableness of assumptions used in determining repricing periods and discount rates for duration calculations.

Interest Rate Swaps and Caps/Floors

INTEREST RATE SWAPS

Introduction to Interest Rate Swaps

An **interest rate swap** is an agreement between two parties to exchange interest rate payments which are based on a principal or **notional amount**. The notional amount is only used to calculate payments and is not exchanged. In a basic swap, the **fixed payor** makes fixed payments and receives floating payments. The **floating payor** makes floating payments and receives fixed payments. Fixed payments are usually determined as the sum of the yield-to-maturity on a Treasury security with a maturity equal to the swap maturity, plus a negotiated spread above that yield referred to as the **swap spread**. Floating payments are based on an **underlying index rate** (i.e., 6-month LIBOR) which resets periodically corresponding to the repricing interval of the floating rate index. For greater efficiency, fixed and floating payments may be netted at the **payment date**, and one payment is made by the party owing the balance. Typically swap maturities range between 2 to 10 years.

Variations from the basic swap have emerged as the swap market has grown, including variations to the floating and fixed payments as well as the notional amount. The most common floating rate variations are **basis swaps** which involve the exchange of two floating payments based on different underlying index rates. Sometimes these swaps require one or both swap participants to pay a spread over the floating rate. Some common fixed rate variations are **step up** and **step down** swaps. The name is derived from the fixed payment which rises (steps up) or falls (steps down) over the life of the swap. Variations of notional value include **amortizing** and **accreting swaps**. Swaps whose notional value amortizes over the term of the swap are referred to as **amortizing swaps**; when the notional value increases

over the term of the swap, the swap is referred to as an accreting swap. Swap agreements where the notional value amortization is tied to a schedule based on the level of a specific index are referred to as indexed principal swaps. One type of indexed principal swap is a mortgage swap. Its notional value amortizes according to the prepayment rate of a benchmark mortgage. Yet another swap variation is a forward swap which is like a forward interest rate contract in that the start date of the swap is deferred to an agreed upon date in the future.

Swap Derivatives

As varying types of institutions became active in the swap market, swap derivatives emerged to meet the needs of these new participants. These structures usually involve some type of option which is either an option on the swap, a swaption, or an option embedded within the swap, a cancelable swap. The former is an option to enter into a swap, and the latter is an option to cancel a swap. There are two types of swaptions, call and put swaptions. Call swaptions give the purchaser the option to enter into a swap to receive fixed and pay floating payments at some time in the future. A put swaption differs in that it gives the purchaser the option to pay fixed rate and receive floating rate payments. Cancelable swaps contain embedded options and can be either callable or puttable swaps. The callable swap gives the fixed rate payer the right to terminate the swap while a puttable swap gives the fixed rate receiver the right to terminate the swap.

Uses of Interest Rate Swaps

The primary use of a swap is to modify the cash flow stream of an asset or liability. For example, a financial institution may want to better match the cash flow streams of its fixed

rate assets and floating rate liabilities. To accomplish this, it may enter into a swap where it makes fixed payments, related to the rate on its fixed rate assets, and receives floating payments to better match the cash flow characteristics of its liabilities. In this way, the institution has converted a floating rate liability into a fixed rate liability. If the institution's floating rate liabilities move in concert with the floating rate payments it is receiving on the swap, the institution has successfully protected its net interest margin from rising and falling rates. Swaps can also be used to modify the duration of an institution's assets and liabilities.

Frequently, large commercial banks and investment banks act as intermediaries to swap transactions. By guaranteeing the performance of both sides of the swap and handling the transfer of the net swap payment, these institutions can earn fee income.

Some institutions enter into swap agreements with the intention of speculating on interest rates. Generally, this activity is not considered consistent with safe and sound practices and should not be conducted by most banks. However, when a sophisticated institution can demonstrate that it has sufficient capital, proper internal controls and expertise in the area, an exception may be made.

Risks of Interest Rate Swaps

Although typically used to reduce interest rate risk, swaps can become a source of interest rate risk if not properly managed and monitored. For example, if a swap is intended to hedge a particular position, the term of the swap should coincide with the maturity of the hedged position. If the hedged position is called away or liquidated for some reason, the swap may become a source of interest rate risk. Another form of interest rate risk associated with hedging is basis risk. It is the risk that the floating rate index on the swap and the

floating rate on the hedged asset or liability may diverge instead of moving together. Poor correlation between these floating rates could cause a loss of earnings and a reduction in the net interest margin if not properly managed.

Because the interest rate swap market is an unregulated, over-the-counter market, counterparty creditworthiness is an important consideration when entering into swap agreements. Credit exposure, however, is limited to the replacement cost of the swap because the notional value of the swap is not exchanged. Swap counterparties can require credit enhancements to a swap agreement in order to reduce their credit exposure. When the credit rating of a swap counterparty is substandard, a bank can require the counterparty to post collateral or mark the swap to market.

Swaps may also pose liquidity risk. The cost and ability to terminate or enter into a swap agreement is liquidity risk. For example, suppose an institution entered into a swap in order to hedge a callable position, and subsequently that position was called before the swap matured. The liquidity of the swap market will determine if the institution can terminate the swap agreement and at what cost. Greater market liquidity affords institutions increased flexibility in managing their swap positions.

Examination Procedures

Prior to engaging in swap agreements, a bank should consult its State banking authority or obtain an opinion of bank counsel concerning the legality of these activities under State law.

Also prior to participating in swap agreements, a bank should have in place a written policy approved by the board of directors which details the permissible strategies and contracts the bank can engage in and own, and their relationship to other banking activities. The policy should include gross and net limits pertaining to each permissible contract. Limits should be set by considering the size of the bank and its capital structure. Levels of activity should also be reasonably related to the bank's business needs and capacity to fulfill its obligations under these agreements. Trading authority should be delineated in the policy as well. This authority should be delegated only to individuals which demonstrate the specific knowledge and expertise necessary to properly transact those permissible activities and strategies in a safe and sound manner. Prior to entering into and over the term of any swap agreement, a determination should be made that the particular activity will be consistent with the overall asset/liability position of the institution. For most banks, swap agreements should be utilized to reduce interest rate exposure, however, exceptions may be made for more sophisticated institutions which have sufficient experience, capacity and controls to properly handle the use of these contracts for other purposes namely, trading and acting as an intermediary. Adequate internal controls should exist to insure adherence to the policy and to prevent unauthorized trading and other abuses.

A system of periodic reporting (at least monthly) to the board of directors, a duly authorized committee thereof, or the bank's internal auditor should be established as part of the bank's monitoring mechanism. These reports should include all swap positions and how these reported positions will affect the bank's interest rate exposure and earnings performance. A bank should also monitor and report on the credit risk associated with these agreements. The board, or a duly elected committee thereof, should approve a list of acceptable counterparties

and this list should be updated pursuant to changes in credit. Credit exposures should be combined across all on and off balance sheet categories to determine each counterparty's overall credit exposure. Depending on the level and the counterparty's financial condition, the bank should contemplate the need for a valuation reserve or possible deletion from the approved counterparty list.

Speculating with interest rate swaps is generally not permitted. However, if the institution has adequate capital, sufficient internal controls and management expertise, this type of activity may be acceptable. When a bank has undertaken a swap arrangement for speculative purposes or as an intermediary, its swap position should be marked to market on a regular basis. Speculation with swaps is only appropriate in banks with a sophisticated trading function.

Recordkeeping systems must be sufficiently detailed to permit internal auditors and examiners to determine whether operating personnel have acted in accordance with authorized objectives. Bank personnel are expected to be able to describe and document in detail how the positions taken contribute to the attainment of the bank's stated objectives. A bank should maintain general ledger memorandums or commitment registers to adequately identify and control all commitments and obligations. Such registers and supporting journals should at a minimum include: type, notional amount, floating rate index, fixed rate, and maturity of the swap. Also, the bank should report swap positions in the Report of Condition, Schedule RC-L.

Documentation of the positions in the form of confirmations or statement should be retained. The bank should also retain any analysis supporting the use a swap agreement with respect to a particular hedged position or the overall asset/liability position of the bank. Legal counsel should review contracts.

Examination Treatment

When swap agreements are utilized for hedging purposes the effect of this activity should be reflected in the interest rate sensitivity analysis. For example, if the effect of the swap is to convert floating rate liabilities to fixed rate liabilities, then the notional amount of the swap should be shown as a reduction to rate sensitive liabilities. Any adverse affect on the interest rate risk of the institution created by the interest rate swap should be noted in the comment section of the interest rate sensitivity analysis. Any inappropriate speculative positions or positions which do not adhere to the institution's policy should be criticized on the examiner comments and conclusions page. Consideration of the potential credit risk arising from swap positions should be considered when evaluating the overall adequacy of the bank's capital accounts.

Division of Bank Supervision

MEMORANDUM SYSTEM

Classification Number	6920 (I-S)
Date	June 23, 1987
Issuing Office	DBS/P&PD
Contact	S.G. Pfeifer, 6894
<input type="checkbox"/> Notice	<input checked="" type="checkbox"/> Memorandum

TO: Regional Directors

FROM: *for* Paul G. Fritts *[Signature]*
DirectorSUBJECT: Interest Rate Swaps

1. Purpose. To provide examiners with additional guidance on the accounting and supervisory implications of interest rate swap activity.

2. Background. Interest rate swaps continue to be used by financial institutions as a mechanism for reducing interest rate risks associated with asset/liability rate sensitivity imbalances. In some situations, these transactions have also been used for speculative purposes. In addition, larger banks and investment banking firms may enter into swap arrangements for the express purpose of generating fee income by developing, trading and selling interest rate swap products for their customers and clients. In any event, the volume of interest rate swap transactions continues to rise at a rapid pace. Based on Call Report information, the notional amount of outstanding swaps involving U.S. commercial banks increased from approximately \$100 billion at mid-year 1985 to over \$300 billion by year-end 1986.

If inappropriately utilized, interest rate swaps can subject a bank to additional interest rate risk. Furthermore, since there is a possibility that a counterparty could default on its interest payment obligations under the swap arrangement, a certain degree of credit risk also exists. In order to address this potential credit risk in a more formalized manner, the Board of Governors of the Federal Reserve System has issued for public comment a proposal that would impose a risk-based capital requirement for the counterparty credit risks arising from interest rate swaps (and from foreign exchange contracts).

The FDIC plans to carefully review any comments received under this Federal Reserve proposal. In the interim, examiners should carefully consider the potential credit risks arising from swap transactions, as well as the impact of such swap activity on the bank's overall level of interest rate risk. Consideration should also be given to the accounting methods used by banks to reflect interest rate swap transactions and to the policies and procedures established by bank management to monitor and control the risks associated with swap activities. The attached discussion paper has been provided to further aid examiners in their review of the supervisory and accounting implications of interest rate swaps. In addition, a discussion of interest rate swaps will also be incorporated in a future revision to Section H of the Manual of Examination Policies.

Transmittal No. 87-111

5

3. Action Required. This memorandum and its attachment should be provided to all examiners. In those banks that engage in interest rate swap transactions, examiners should consider the impact of such transactions on the bank's overall interest rate risk, as well as the potential credit risks that are associated with such activities. The accounting methods used to reflect swap activity should also be reviewed. If material, the impact of such transactions may require special consideration when preparing the Examiner's Comments and Conclusions page and the related schedules in the Report of Examination. Furthermore, the use of improper accounting methods to report swap transactions may also necessitate the filing of amended Call Reports. This memorandum replaces and rescinds the DBS memorandum dated December 11, 1984, Transmittal No. 236.

Attachment

ACCOUNTING AND SUPERVISORY CONSIDERATIONS
RELATING TO INTEREST RATE SWAP TRANSACTIONS

An interest rate swap is an arrangement whereby two parties agree to exchange the interest payment streams on a specified principal (or "notional") amount of assets or liabilities over a specified period of time. The notional amount can be established by reference to specific assets or liabilities that are to be hedged or the amount can be separately determined by the swap participants. The notional amount does not represent a liability of a swap participant to a counterparty but rather is used to calculate the amount of the interest payments that the swap participants have committed to exchange. Settlement between the parties is usually effected on a quarterly, semiannual, or annual basis with the party owing a net amount of interest under the swap arrangement making a net payment to the counterparty. The terms for interest rate swap agreements generally range from three to ten years.

Purpose of Interest Rate Swaps

The purpose of the swap arrangement can vary but two of the primary reasons are to allow the swap participants to obtain (1) a more preferable type of interest rate (e.g., fixed vs. floating) when raising funds or (2) a more stable net interest margin on assets and liabilities with different maturities and interest rate structures. Larger banks and investment banking firms also enter into swap arrangements for the express purpose of generating additional fee income by developing, trading, and selling interest rate swap products for their customers and clients. In many cases, these swap transactions allow the banks' borrowing customers to obtain interest rate terms that are more favorable than would otherwise be available. Swap arrangements are used not only by banks and other financial institutions but also by nonfinancial corporations and government-sponsored agencies as well.

Types of Swaps

The most common form of swap is the exchange by the participants of variable and fixed rate interest payments. For example, a party with floating rate obligations might agree to swap its interest payment stream for that of another institution with fixed rate obligations. Example 1 in Appendix A illustrates the mechanics of such a swap arrangement. However, many variations of the basic interest rate swap are possible and swap agreements could also specify that interest payments are to be denominated in more than one currency, based on more than one floating rate, or subject to a maximum interest rate ceiling or a minimum floor. Although the notional amount of most swaps remains unchanged over the term of the swap agreement, it is also possible that the notional amount of the swap could increase or decrease over time.

Intermediaries vs. End-Users

A bank can be involved in an interest rate swap either as a direct end-user or as an intermediary. Larger banks and investment banking firms frequently serve as intermediaries by arranging swaps between other parties and handling the interest payment settlements. In many instances, these intermediaries also act as a principal and thereby effectively guarantee the performance by the counterparties.

Risk Assumed by Intermediary. Intermediaries function as a counterparty to a swap arrangement and generally provide an informal secondary market for interest rate swaps. These intermediaries assume interest rate risk in conjunction with swap transactions and normally will attempt to minimize this risk by entering into offsetting swap transactions with other parties. In addition to interest rate risk, the possibility that a counterparty will fail to perform exposes the intermediary to a certain degree of credit risk.

Intermediaries originally functioned simply as brokers in arranging swap contracts with no financial liability attached to their role. More recently, they have become principals with much greater responsibilities and now effectively guarantee the performance of the participants to the swap agreement by initiating separate contracts with each counterparty. Example 2 in Appendix A provides an illustration of such a swap arrangement. Consequently, if the counterparty which has a net payment obligation defaults, the intermediary remains obligated on the offsetting swap contract and the intermediary is therefore effectively responsible for meeting the obligations of the defaulting party under the swap arrangement. In effect, what the intermediary might view as a contingent liability is actually a direct obligation in the event of a counterparty default. In essence, the amount of the obligation would be measured by (1) the cost to the intermediary in assuming the unfavorable side of the swap arrangement or (2) the replacement cost incurred by the intermediary in obtaining an offsetting swap contract. This potential liability might be reduced if the intermediary requires the pledge of collateral to protect its position or if it takes other action to minimize the level of potential credit risk.

Risk Assumed by End-Users. Even for end-users, interest rate swaps entail credit risk and may increase interest rate risk if not appropriately used for hedging purposes. The credit risk on a swap arrangement would consist of the possibility of default on the part of a counterparty in meeting any payments required under the swap agreement. This counterparty could be a financial institution acting as an intermediary bank or a nonfinancial corporation or other entity that is involved as a direct end-user. Consequently, the potential credit risk associated with swap transactions can vary greatly from case to case.

Accounting

Uniform accounting principles for interest rate swaps have not been established by the Financial Accounting Standards Board or by the accounting profession in general. Furthermore, the AICPA banking industry audit guide, Audits of Banks, does not address the accounting for interest rate swaps. Although certain accounting methods have evolved as experience has been gained by swap participants, there is some diversity in the handling of certain swap transactions. The following discussion analyzes some of the important aspects of accounting for interest rate swap arrangements.

Accrued Settlement Amounts. The periodic net settlement amount for each swap contract — that is, the difference between the periodic interest payment streams payable and receivable under the swap arrangement — should be accrued on a regular basis. Arguably, the net accrued receivable or payable under the swap might not be considered "interest" from a purely technical viewpoint since the swap arrangement does not represent the lending or borrowing of actual funds.

However, if the interest rate swap is used for hedging purposes, the net payment stream receivable or payable under the swap does synthetically modify the terms of an interest-bearing asset or an interest-bearing liability, or of a group of such assets or liabilities. Consequently, for Call Report purposes, the net accrued settlement amount under such a swap is generally reflected as an adjustment to the interest income of the hedged asset(s) or to the interest expense of the hedged liability(ies) with an offsetting entry to interest receivable or to interest payable, as appropriate. On the Report of Condition, any such receivables are reported as "other assets" and any payables are reflected as "other liabilities."

If the swap arrangement is undertaken in an intermediary capacity or is purely speculative in nature, with simply an exchange of cash flows unrelated to an asset or liability position, the net settlement amount that is accrued for each swap would still be shown on the balance sheet as an other asset or other liability. However, for income statement purposes, the accrued settlement amounts should be reflected in either "noninterest income" or "noninterest expense," as appropriate.

Market Valuation. When a bank has undertaken a swap arrangement for speculative purposes or as an intermediary, its swap positions should be marked to market on a regular basis. An informal secondary market has developed for interest rate swaps and a swap dealer, such as a large bank or an investment banking firm, may be a source for current market value quotations for pricing purposes. If not readily available, the market value can be estimated based on the present value of the estimated net settlement amounts over the remaining life of the swap contract. The unrealized gain or loss from changes in market value on a swap that is not used for hedging purposes should be taken currently into income rather than deferred since there is no underlying asset or liability position related to the swap arrangement. For swaps that are not used as hedges, any unrealized net gains or losses (i.e., market appreciation or depreciation) applicable to the current period should be reported in "noninterest income" or "noninterest expense," as appropriate. In addition, for those swaps where the cumulative mark-to-market adjustments constitute net receivables from the counterparties, the bank should reflect the receivables as "other assets." For those swaps where the cumulative market value adjustments result in net payables to counterparties, the bank should reflect the payables as "other liabilities." For Report of Condition purposes, swap adjustments representing receivables should not be netted against swap adjustments representing payables.

Termination of a Swap Position. The accounting for interest rate swap terminations also warrants careful consideration. In essence, whether gains or losses on the termination of interest rate swaps should be deferred depends upon whether a liability or an asset position had been hedged via the swap contract. If the interest rate swap was entered into for hedging purposes, any gain or loss on the termination of the swap contract should be deferred (unless the underlying asset or liability position that was being hedged is:

also disposed of at the time the swap position is terminated) and the deferred amount should be reflected as an adjustment to the carrying amount of the asset(s) or liability(ies) that had been hedged. Deferral of gains and losses on swap terminations is appropriate in such circumstances because the net position of the swap participant, from an economic viewpoint, remains unchanged. That is, the net gain (loss) on the termination of the swap would tend to offset the unrealized market value loss (gain) on the assets or liabilities that were being hedged.

The amortization period for deferred gains and losses arising from hedged swap terminations normally would be over the remaining term to maturity of the original swap arrangement. However, if the particular assets or liabilities that were being hedged have an expected remaining life that is shorter than that of the swap contract, the gain or loss on the swap termination should be amortized over the shorter remaining life of the hedged item. The amortization would be reflected as an adjustment to "interest income" or "interest expense," depending on whether the swap had been used to hedge an asset or a liability position. If there had been no identifiable underlying asset or liability position related to the swap agreement (i.e., the swap represents a speculative position or a separate trading activity), the gain or loss on a swap termination should be taken currently into income and recorded as either "noninterest income" or "noninterest expense." A gain or loss on the termination of a swap should be adjusted for the remaining unamortized balance of any prepaid or deferred fees related to the inception of the swap agreement.

Fees. The accounting for the payment and receipt of fees in connection with interest rate swaps has not been standardized. Some banks reflect the receipt or payment of up-front fees as a current income or expense item while others use a deferred approach. In addition, some institutions recognize part of the fee received or paid as an income or expense item immediately and defer the balance. For swaps that are used to hedge an underlying asset or liability position, it is usually appropriate to defer and amortize over the term of the swap agreement any up-front direct costs incurred by the bank. Furthermore, in view of the potential credit risk undertaken in conjunction with most interest rate swap transactions, any up-front fees received should normally be deferred and amortized over the term of the swap agreement.

Instead of receiving an up-front fee, a yield adjustment payment could be made by a counterparty on an ongoing basis and reflected in the net settlement amounts that are periodically exchanged by the swap participants. The party locking in a fixed rate on the swap, for example, might be liable for an additional amount, over and above the fixed rate that the intermediary passes through to the other counterparty. An intermediary usually sets an interest rate differential at the inception of an agreement as compensation for incurring the credit risk and handling the settlement payments associated with the swap arrangement. Therefore, the payment received by the intermediary at each settlement period would exceed the amount which it pays to the counterparty with the favorable swap position. Example 2 in Appendix A provides a basic illustration of such a transaction. In essence, the intermediary requires the fixed rate obligor to pay a rate in excess of what is owed to the fixed rate recipient, thereby retaining part of the payment to compensate for services rendered and the credit risk undertaken. Many interest rate swap transactions handled by intermediaries involve the receipt of a periodic yield adjustment payment, or basis spread, over the term of the swap agreements rather than the receipt of any up-front fee.

Use of Swaps for Speculative Purposes

In general, speculation in interest rate movements via the use of interest rate swaps should not be conducted by banks. However, trading or intermediary activities involving swap contracts may be appropriate for those institutions with expertise in trading and actively managing interest rate swap positions, provided they institute and enforce appropriate limits and internal controls. Speculation through swap transactions might be difficult to determine in certain cases. However, if the rate sensitivity position of a bank is being managed with only a minimal interest rate mismatch, the bank's involvement in an interest rate swap would have to be questioned as to its underlying purpose.

A bank with more rate sensitive assets than liabilities could conceivably exchange a variable rate under a swap arrangement in return for receipt of a fixed rate in order to reduce the interest rate sensitivity imbalance. However, if the bank agreed to pay a fixed rate in exchange for a variable rate, speculation on an upward movement in rates would appear to be the reason for the bank's interest rate swap transaction and bank management's reasons for entering into the swap transaction would need to be further evaluated.

Examination Procedures

When reviewing a bank's interest rate swap activities, the following aspects warrant careful consideration.

Bank Policies. If a bank intends to engage in swap transactions, bank management should develop written guidelines covering interest rate swaps that are set forth in a separate interest rate swap policy or as part of the bank's overall asset/liability management policy. Regardless of the form, the policy should be approved by the bank's board of directors. The guidelines should be explicit in covering the circumstances under which a swap can be employed. Speculation should be prohibited, although trading or intermediary activities involving swaps could be acceptable if the bank has the experience, capacity and controls to properly handle such swap activities. Limitations should be placed on the gross and net volume of swap positions that can be undertaken at any one time. Authority for initiating swap transactions should be designated and those with whom swap transactions can be undertaken should be specified. Periodic reports should be required that measure the overall risk exposure arising from interest rate swap activities.

Bank's Evaluation of Credit Risk and Interest Rate Risk. A careful evaluation of a bank's overall interest rate sensitivity position should be made prior to entering into any swap transaction to ensure that the swap will in fact act as an effective hedge of an interest rate exposure. In addition, the review of pertinent financial information should be required prior to the acceptance of any contemplated swap partner. Periodic reports to the board of directors or to an appropriate committee should be required on the swap positions taken by the bank and these reports should cover the overall effect of swap activity on the interest rate sensitivity and earnings performance of the bank, especially since interest rate movements subsequent to the initiation of the swaps may affect the bank's rate sensitivity position and earnings in a manner that was not originally anticipated. The underlying credit risk associated with interest rate swaps should not be ignored and the estimated credit exposure to the counterparty should be combined with direct borrowings by the counterparty for purposes of establishing and monitoring internal lending limits for individual customers.

In addition, when evaluating the credit risk of swap counterparties, consideration should be given as to whether a valuation reserve should be established to adequately provide for these risks. In any event, individual credit files should appropriately document the potential credit risks arising from swap transactions with the bank's various counterparties.

Bank Records. The bank's general ledger should separately reflect the accrued amount of interest receivable by the bank and interest payable to counterparties under swap arrangements. Receivables and payables arising from mark-to-market valuations should also be similarly reflected. Subsidiary records should be sufficiently detailed so that the accrued settlement amounts and mark-to-market valuations under individual swap contracts can be reconciled to the general ledger. In addition, adequate documentation should be available to support those swap transactions that are being utilized for hedging purposes. Adequate supporting information should also exist for any deferred fees or costs associated with swap contracts. A memorandum account should reflect the notional amount of all swap arrangements and such amounts should also be incorporated into the bank's overall analysis of its interest rate sensitivity position and appropriately reported in Schedule RC-L of the Report of Condition.

Examination Report Treatment. For examination report purposes, the notional amount of swaps used for hedging purposes should also be included in the interest rate sensitivity analysis. For example, if the effect of the swap is to reduce rate sensitive assets by exchanging a variable rate in return for a fixed rate, the notional amount can be viewed as a reduction in the level of rate sensitive assets. On the other hand, if a fixed rate was exchanged in return for a variable rate as a means for converting fixed rate assets into variable rate assets, the notional amount should be reflected as an addition to the level of rate sensitive assets. Alternatively, a decrease would occur for rate sensitive liabilities if the purpose of the swap was to convert the variable rate on existing liabilities into a fixed rate. Consideration of the potential credit risk arising from interest rate swap transactions should also be considered when evaluating the overall adequacy of the bank's capital accounts.

Speculative Transactions. For more sophisticated institutions, the undertaking of swap positions as an intermediary or for trading purposes may be appropriate provided that acceptable policies, controls, and limits are in place. However, in other situations where it is determined that the bank is simply swapping payment streams with no asset or liability hedge involved, the potential effect of such a speculative practice on income in future periods should be considered when preparing the examination report comments that address interest rate sensitivity. The use of interest rate swaps for other than hedging purposes may constitute an unsafe or unsound practice and should be discussed on the Examiner's Comments and Conclusions page if the bank does not have the expertise, capacity and ability to properly manage a portfolio of interest rate swaps.

Legal Documentation. The bank should have written swap contracts on file detailing the rights and responsibilities of the parties to the swap arrangements. The notional amount should be indicated along with the fixed rate, if applicable, and the method to be used in determining the variable rate(s). If settlement is to be made in different currencies, the manner of determining these settlement amounts should also be indicated and the

settlement periods should be specified along with the conditions of default. Swap contracts should also contain provisions addressing the voluntary termination of the contract and the procedure to be used in determining the amount of the settlement. Banks contemplating a swap arrangement should also have the proposed contracts reviewed by legal counsel. As a reference source for use in developing interest rate swap agreements, bank management may wish to refer to the master interest rate swap agreement that was released in early 1987 by the International Swap Dealers Association (ISDA), as well as to the Code of Standard Wording, Assumptions and Provisions for Swaps (1986 Edition), which was also published by ISDA.

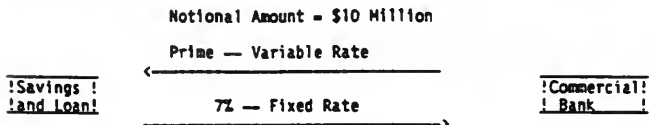
Attachment

Appendix A — Interest Rate Swap Examples

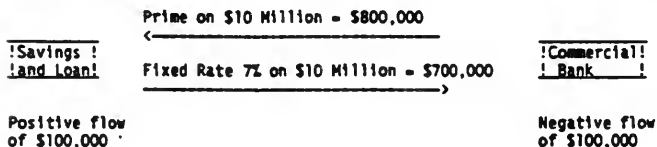
APPENDIX A

Example 1

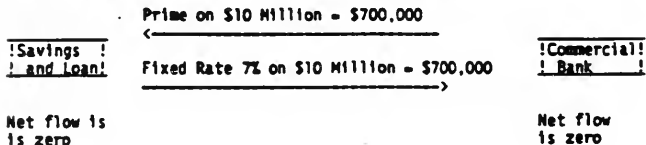
A savings and loan association with fixed rate real estate mortgages and variable rate money market deposit accounts wishes to convert its liabilities into a fixed rate payment stream. On the other hand, a commercial bank with variable rate commercial loans and a sizable amount of longer term, fixed rate certificates of deposit wishes to convert those liabilities into a variable rate payment stream. In order to accomplish their mutual objectives, these institutions enter into the following interest rate swap transaction:



If the prime rate stayed at 8% during the entire first year of the swap, the commercial bank would have made a net payment of \$100,000 to the savings and loan association.



If the prime rate was at 7% during the entire second year of the swap, there would be no net payment due or receivable during year 2.



A-2

If the prime rate was at 5% during the entire third year of the swap arrangement, the savings and loan association would make a net payment of \$200,000 to the commercial bank for that year.

	Prime on \$10 Million = \$500,000	
!Savings! !and Loan!	←	!Commercial! !Bank!
	Fixed Rate 7% on \$10 Million = \$700,000	
	→	
Negative flow of \$200,000		Positive flow of \$200,000

Example 2

A manufacturing firm has issued fixed rate debt but believes that interest rates will decline over the next several years. Furthermore, due to the existence of a sizable amount of assets that are held in short-term investments, the company wishes to convert this fixed rate debt to a floating rate. The company's commercial banker was informed of this intent and the bank has located a savings and loan association that is willing to pay a fixed rate to the manufacturing firm in return for a floating rate. Since neither the manufacturer nor the savings and loan association wants to rely on the creditworthiness of the other party, the bank acts as intermediary and enters into a swap contract with each party, thereby assuming credit risk and the responsibility for handling the settlement payments in return for an annual basis spread equal to 10 basis points (or 0.1%) of the swap's notional amount. In the example below, this fee is effectively paid by the fixed rate obligor (the savings and loan association) since the savings and loan pays a fixed rate of 7.1% while the intermediary bank passes through a fixed rate of only 7.0% to the manufacturing firm. Assuming that the prime rate remains at 8% during the entire first year of the swap arrangement, the following example illustrates the payment flow during year 1.

Notional Amount — \$10 Million
Prime Rate During First Year — 8%

!Savings! !and !Loan!	Prime on \$10 Million = \$800,000 ←	!Intermediary! !Bank!	Prime on \$10 Million = \$800,000 ←	!Manufacturing! !Firm!
	Fixed Rate 7.10% on \$10 Million = \$710,000		Fixed Rate 7% on \$10 Million = \$700,000	
	→		→	
Positive Flow of \$90,000		Intermediary Retains Fee of \$10,000		Negative Flow of \$100,000

The above example does not reflect any up-front fee. However, such fees could also be charged by intermediaries to offset the administrative and origination costs associated with the initiation of the swap arrangement.



Futures and Options

**DRAFT CALL REPORT GLOSSARY ENTRY
FUTURES CONTRACTS**

6/4/90

Futures contracts are commitments for delayed delivery of specified financial instruments in which the buyer agrees to purchase and the seller agrees to deliver, at a specified future date, a specified instrument at a specified price or yield, or to settle for an equivalent amount in cash. Futures contracts are standardized and are traded on organized exchanges. Futures exchanges in the U.S. are registered with and regulated by the Commodity Futures Trading Commission.

All futures contracts, except for foreign currency futures contracts, shall be reported in Reports of Condition and Income in accordance with Financial Accounting Standards Board (FASB) Statement No. 80, Accounting for Futures Contracts. Foreign currency futures contracts shall be reported in accordance with the guidance contained in FASB Statement No. 52, Foreign Currency Translation.

The Glossary entry for "Foreign Currency Transactions and Translation" contains a summary of the provisions of FASB Statement No. 52. The rest of this Glossary entry generally summarizes the reporting criteria for futures contracts that are reported in accordance with the provisions of Statement No. 80. Statements No. 52 and 80 should be referred to for more detailed accounting guidance in these areas.

Report of Condition treatment of open contracts

Contracts are outstanding (i.e., open) until they have been terminated by acquisition or delivery of the underlying financial instruments, by cash settlement, or by offset. ("Offset" is the purchase and sale of an equal number of futures contracts on the same delivery month executed through the same clearing member on the same exchange.)

Transactions in futures contracts generally involve a deposit of funds representing a margin deposit. As indicated in the discussion below, this amount should be reported in "other assets" in the Report of Condition. Also as discussed below, changes in the market values of open positions may affect balance sheet amounts. However, open positions shall not otherwise be reflected in any asset or liability account on the balance sheet of the Report of Condition. Furthermore, open contracts to sell securities or other assets shall not be treated as a sale of all, or any part, of the underlying assets, nor be netted against recorded asset values. Neither shall open contracts to purchase securities or other assets be treated as a purchase of such assets, nor be added to recorded asset values. Only if and

When termination of an open position in a futures contract results in the acquisition or disposition of the underlying asset, such asset shall be recorded in, or removed from, the balance sheet. Open positions in futures contracts are to be reported in Schedule RC-L, Commitments and Contingencies.

Performance Bonds under futures contracts

When the reporting bank, as either buyer or seller of futures contracts, has posted a performance bond in the form of a margin account deposited with a broker or exchange, the current balance (as of the report date) of that margin account shall be reported in the Report of Condition in Schedule RC-F, Other Assets. The balance in the margin account includes:

- (1) The original margin deposit, plus (less),
- (2) Any additions (deductions) as a result of daily fluctuations in the market value of the related contracts (i.e., "variation margin"), plus,
- (3) Any additional deposits made to the account to meet margin calls or otherwise (i.e., "maintenance margin"), less
- (4) Any withdrawals of excess balances from the account.

When the performance bond takes the form of a pledge of assets with a broker rather than a margin account, the pledged assets shall be maintained on the books of the pledging bank and no other balance sheet entry is made for the performance bond. In this case, gains and losses resulting from daily fluctuations in the market value of the related contracts are generally settled with the broker in cash. However, if the pledging bank also maintains a working balance with the broker against which recognized daily market gains and losses are posted, the working balance should be reported in Schedule RC-F, Other Assets, and treated in the same manner as a margin account.

Valuation of open positions

All open positions in futures contracts must be reviewed at least monthly (or more often, if material) and their current market values determined. The market value of a futures contract is to be based on published price quotations. These futures positions must be revalued at their current market values on these valuation dates and any changes in these values reported in accordance with the guidance presented below for hedge or nonhedge contracts, as appropriate.

Criteria for hedge accounting treatment

A futures contract shall be accounted for as a hedge when the following conditions are met:

- (1) The bank must have determined that the item or group of items to be hedged (that is, the identifiable assets, liabilities, firm commitments, or anticipated transactions) will expose it to price or interest rate risk.
- (2) The futures contract must reduce the exposure to risk. This will be demonstrated if, at the inception of the hedge and throughout the hedge period, high correlation is expected to exist between the changes in the prices of both the contract and the hedged item or group of items.¹ In other words, the bank must periodically monitor the price movements of both the hedge contract and the hedged items to determine that it continues to be probable that changes in the market value of the futures contract will offset the effects of price changes on the hedged items.²
- (3) The futures contract must be designated in writing as a hedge by management at the inception of the hedge.

In order for a futures contract to qualify as a hedge of an anticipated transaction, the following two additional criteria must be met:

- (a) The significant characteristics and expected terms

¹Generally, banking practice maintains that correlation in the changes in the market value of the futures contract and the hedged item must be at least 80 percent for the "high correlation" criteria in FASB Statement No. 80 to be met.

²This ongoing assessment of hedging transactions must be performed at least quarterly and should include a determination regarding whether high correlation has occurred during the most recent quarterly period and since the inception of the hedge. This analysis should consider the actual cumulative dollar amount of offset; that is, whether the dollar amount of changes in the value of the futures contract(s) during these periods have substantially offset the amount of price or interest rate or interest rate changes on the hedged item(s).

- of the anticipated transaction must be identified:
and
(b) the occurrence of the anticipated transaction must
be probable.

³It will be particularly difficult to meet this criteria when an anticipated transaction is not expected to take place in the near future. Therefore, management should particularly scrutinize these transactions and should generally not report futures contracts as hedges of anticipated transactions that are not expected to occur in the near future.

Gains and losses from monthly contract valuations of futures contracts that qualify as hedges

If the hedge criteria are met, the accounting for the futures contract shall be related to the accounting for the hedged item so that changes in the market value of the futures contract are recognized in income when the effects of related changes in the price or interest rate of the hedged item are recognized. If a bank must include unrealized changes in the fair value of a hedged item in income, a change in the market value of the related futures contract shall be recognized in income when the change occurs. Otherwise, a change in the market value of a futures contract that qualifies as a hedge of an existing asset or liability shall be recognized as an adjustment of the carrying amount of the hedged item. A change in the market value of a futures contract that is a hedge of a firm commitment shall be included in the measurement of the transaction that satisfies the commitment. A change in the market value of a futures contract that is a hedge of an anticipated transaction shall be included in the measurement of the subsequent transaction.

Once the carrying amount of an asset or liability has been adjusted for the change in the market value of a futures contract, the adjustment must be recognized in income in the same manner as other components of the carrying amount of that asset or liability (e.g., using the interest method). If the item being hedged is an interest-bearing financial instrument otherwise reported at amortized historical cost, then the changes in the market value of the hedge contract that have been reflected as adjustments in the carrying amount of the financial instrument shall be amortized as an adjustment of interest income or expense over the expected remaining life of the hedged item.

If a futures contract that has been accounted for as a hedge of an anticipated transaction is closed before the date of the related transaction, the accumulated change in value of the contract shall be carried forward (assuming high correlation continues to exist) and included in the measurement of the related transaction. When it becomes probable that the quantity of the anticipated transaction will be less than that originally hedged, a pro rata portion of the futures results that would have been included in the measurement of the transaction shall be recognized as a gain or loss.

When futures contracts that are hedges are terminated, the gain or loss on the terminated contracts must be deferred and amortized over the remaining life of the hedged item.

Gains and losses from monthly contract valuations of futures contracts that do not qualify as hedges

For futures contracts that are not accounted for as hedges, the change that has occurred in the market value of open positions since the last call report date shall be reflected in current income, either as "other noninterest income" for net gains or "other noninterest expense" for net losses.

If high correlation ceases to exist, the bank should discontinue accounting for a futures contract as a hedge. When this occurs, the portion of the change in the market value of the contract that has not offset the market value changes of the hedged item since the inception of the hedge must be reflected in the Report of Income as "other noninterest income" or "other noninterest expense," as appropriate. The contract should thereafter be accounted for as a nonhedge contract with subsequent changes in the contract's market value reflected in current period income.

When futures contracts that are not hedges are terminated, the gain or loss on the terminated contract must be recognized currently in the Report of Income as "other noninterest income" or "other noninterest expense," as appropriate.

Documentation and review

Management must maintain appropriate policies, procedures, and controls to ensure that all futures transactions are adequately documented, monitored, and reported. The documentation for futures contracts treated as hedges must be sufficient for management, internal and external auditors, and bank examiners to verify that all hedge criteria have been met, that the compliance of such transactions with these hedge criteria has been subject to periodic review, and that the transactions continue to qualify for hedge accounting treatment.

Bank examiners will review the futures activities of banks. This review will generally include an assessment of the adequacy of management's policies, operating systems, and internal controls, including the documentation of transactions, in order to determine that these activities are being reported appropriately and conducted in a safe and sound manner. Examiners will particularly scrutinize the amount of deferred losses, and related deferral periods, associated with futures contracts reported as hedges and may require write-offs when these loss amounts or related deferral periods are excessive. Futures contracts ostensibly hedging anticipated transactions that are not expected

-7-

to take place in the near future will also be subject to examiner scrutiny.

**STATEMENT OF POLICY CONCERNING INTEREST RATE FUTURES
CONTRACTS, FORWARD CONTRACTS AND STANDBY CONTRACTS**

The following is a Board of Directors policy statement relating to insured State non-member bank participation in the futures and forward contract markets to purchase and sell U.S. government and agency securities as well as to the futures contract market to purchase and sell certificates of deposit issued by domestic banks ("bank C D's"). Information contained below is applicable specifically to activities of commercial and mutual savings banks. An additional statement of policy applicable to trust department activities of State non-member banks may be issued at a later time.

The staff of the Treasury Department and the Board of Governors of the Federal Reserve System recently completed a study of the markets for Treasury futures. In part the study notes that there is evidence that financial futures can be used by banks effectively to hedge portions of their portfolios against interest rate risk. However, the study also cautions that improper use of interest rate futures contracts will increase rather than decrease interest rate risk. In addition, various participants have advised that certain supervisors are attempting to suggest inappropriate futures transactions for banks such as taking futures positions to speculate on futures interest rate movements. Furthermore, some banks and other financial institutions have recently issued standby contracts (giving the contra party the option to deliver securities to the bank at a predetermined price) that were extremely large given their ability to absorb interest rate risk. In so doing, these institutions have been exposed to potentially large losses that could (and sometimes did) significantly affect their financial condition.

Banks that engage in futures, forward¹ and standby² contracts should only do so in accordance with safe and sound banking practices. Levels of activity should be reasonably related to the bank's business needs and capacity to fulfill its obligations under these contracts. In managing their investment portfolios, banks should evaluate the interest rate risk exposure resulting from their overall activities to ensure that the positions they take in futures, forward and standby contract markets will reduce their risk exposure and policy objectives should be formulated in light of the bank's entire asset and liability mix. The following are minimal guidelines to be followed by banks eligible under State law to participate in these markets.

1. Prior to engaging in these transactions, a bank should consult its State banking authority or obtain an opinion of bank counsel concerning the legality of these activities under State law.

2. The board of directors should consider any plan to engage in these activities and should endorse specific written policies authorizing these activities. Policy objectives must be specific enough to outline permissible contract strategies and their relationship to other banking activities. Record keeping systems must be sufficiently detailed to permit internal auditors and examiners to determine whether operating personnel have acted in accordance with authorized objectives. Bank personnel are expected to be able to describe

¹ **Forward Contracts:** These are standardized contracts traded on organized exchanges to purchase or sell a specified security or a bank C D on a future date at a specified price. Futures contracts on GNMA mortgage-backed securities and Treasury bills were the first interest rate futures contracts. Several other interest rate futures contracts have been developed, and it is anticipated that new and similar interest rate futures contracts will continue to be proposed and adopted for trading on various exchanges.

² **Forward Contracts:** These are over-the-counter contracts for forward placement or assured delivery of securities in which one party agrees to purchase and another to sell a specified security at a specified price for future delivery. Contracts specifying settlement in excess of 30 days following trade date shall be deemed to be forward contracts. Forward contracts are not traded on organized exchanges, generally have no required margin payments, and can only be terminated by agreement of both parties to the transaction.

³ **Standby Contracts:** These are over-the-counter contracts for forward placement or assured delivery of securities arranged between securities dealers and customers and do not currently involve trading on organized exchanges. The buyer of a standby contract (the option purchaser) does not pay a fee, the right to sell securities to the other party at a stated price at a future date. The seller of a standby (the issuer) reserves the bid, and must stand ready to buy the securities at the other party's option.

and document in detail how the positions they have taken in futures, forward and standby contracts contribute to the attainment of the bank's stated objectives.

3 The board of directors should establish limitations applicable to futures, forward and standby contract positions, and the board of directors, a duly authorized committee thereof, or the bank's internal auditors should review periodically (at least monthly) contract positions to ascertain conformance with such limits.

4 The bank should maintain general ledger memorandum accounts or commitment registers to adequately identify and control all commitments to make or take delivery of securities. Such registers and supporting journals should at a minimum include:

- (a) The type, nature of position (long or short) and amount of each contract.
- (b) The maturity date of each contract.
- (c) The current market price and cost of each contract, and
- (d) The amount of money held in margin accounts.

5 With the exception of contracts described in guideline 6, all open positions should be reviewed and market values determined at least monthly or more often, depending on volume and magnitude of positions, regardless of whether the bank is required to deposit margin in connection with a given contract. All futures and forward contracts should be valued on the basis of either market or the lower of cost or market, at the option of the bank.⁷ Standby contracts should be valued on the basis of the lower of cost or market.⁸ Market basis for forward and standby contracts should be based on the market value of the underlying security, except where publicly quoted forward contract price quotations are available. All losses resulting from standby contract valuations should be recognized as a current expense item; those gains that value contracts on a market basis would recognize gains as current income items. In the event the above described futures and forward contracts result in the acquisition of securities, such securities should be recorded on a basis consistent with that applied to the contracts (market or lower of cost or market). Acquisition of securities arising from standby contracts should be recorded on the basis of lower of adjusted cost (see item 7(c)) or market.

6 Futures or forward contracts associated with bonafide hedging of mortgage banking operations, i.e., the origination and purchase of mortgage loans for resale to investors or the issuance of mortgage-backed securities, may be accounted for in accordance with generally accepted accounting practices applicable to such activity.

7 For income received by a bank in connection with a standby contract should be deferred at initiation of the contract and accounted for as follows:

(a) Upon expiration of an unexercised contract, the deferred amount should be reported as income.

(b) Upon a negotiated settlement of the contract prior to maturity, the deferred amount should be accounted for as an adjustment to the expense of such settlement, and the net amount should be transferred to the income account; or

(c) Upon exercise of the contract, the deferred amount should be accounted for as an adjustment to the basis of the acquired securities. Such adjusted cost basis should be compared to market value of securities acquired. See guideline 5.

8 Bank financial reports should disclose in an explanatory note any futures, forward and standby contract activity that materially affects the bank's financial condition.

9 To ensure that banks minimize credit risk associated with forward and standby contract activity, banks should implement a system for monitoring credit risk exposure associated with the customers and dealers with whom operating personnel are authorized to transact business.

⁷ Underlying security commitments relating to open futures and forward contracts should not be reported on the balance sheet. Margin deposits and any unrealized losses (and in certain instances, unrealized gains) are usually the only items to be recorded on the books. See "General Instructions" to the Reports of Condition and Income for additional details.

⁸ Futures and forward contracts eligible for trading account purposes should be valued on a bid-ask commitment with other trading positions.

⁹ Losses on standby contracts need be computed only in the case of the bank's commitment to purchase under the contract, and only where the market value of the security is below the contract price adjusted for deferred fee income.

10. To assure adherence to bank policy and prevent unauthorized trading and other abuses, banks should establish other internal controls including periodic reports to management, segregation of duties, and internal audit programs.

The issuance of long-term standby contracts, i.e., those for 150 days, which give the other party to the contract the option to deliver securities to the bank will ordinarily be viewed as an inappropriate practice. In almost all instances where standby contracts specified settlement in excess of 150 days, regulatory authorities have found that such contracts were related not to the investment or business needs of the institution, but primarily to the curbing of fee income or to speculating on future interest rate movements. Accordingly, the Board of Directors concludes that insured State nonmember banks should not issue standby contracts specifying delivery in excess of 150 days, unless special circumstances warrant.

The Board of Directors intends to monitor closely insured State nonmember bank transactions in futures, forward and standby contracts to ensure that any such activity is conducted in accordance with safe and sound banking practices. In light of that continuing review, it may be found desirable to establish common limits applicable to insured State nonmember banks. This policy statement is issued pursuant to the Financial Institutions Supervisory Act, 12 U.S.C. 1818, and the supervisory authority of the Federal Deposit Insurance Corporation with respect to nonmember insured banks.

By order of the Board of Directors, March 12, 1980

[Source: 44 Fed. Reg. 66673, November 20, 1979, effective January 1, 1980; as amended at 45 Fed. Reg. 18716, March 20, 1980; 46 Fed. Reg. 51302, October 19, 1981]

[The page following this is 5073.]

INTEREST RATE FORWARD AND FUTURES CONTRACTS**Introduction to Interest Rate Futures**

An interest rate futures contract is an agreement to take or make delivery or cash settle a specified position at a specified price at a future date. A long position refers to a purchased futures contract while a short position refers to the sale of a futures contract. Future contracts are standardized contracts which trade on organized exchanges and settle through a clearing corporation. The clearing corporation stands between the buyer and the seller, thereby reducing some counterparty credit risk. Futures prices are determined competitively via an open outcry auction system. Some of the most widely traded futures contracts are 3-month Eurodollar, 1-month LIBOR, Treasury bills, 30-day interest rate, and the 2-, 5-, 10- and 30-year Treasury notes and bond contracts.

For many longer term futures contracts, the price is quoted on a hypothetical security, and parameters are set which specify the maturity range of Treasuries which are acceptable for delivery on the contract. For example, the 30-year Treasury bond futures contract calls for the delivery of an 8%, 20-year Treasury bond. Any Treasury bond with at least 15 years to maturity or first call qualifies for delivery. An adjustment is made which accounts for the difference in coupon and/or maturity called a conversion factor. It effectively converts all bonds which fall within the delivery parameters to an 8%, 20-year Treasury bond.

Because futures contracts are traded on organized exchanges, price, volume and open interest

are readily available on pricing systems. Also, the *Wall Street Journal* contains the previous day's closing price for most interest rate futures contracts as well as the volume and open interest. **Open interest** is the number of contracts that are outstanding and have not been offset, delivered or exercised. Open interest and volume information give participants an indication of the liquidity in each particular contract.

The Commodity Futures Trading Commission is the federal regulatory agency which regulates the futures and options exchanges. Also providing regulatory oversight is the Futures Industry Association, which is the futures industry's self regulatory body. The clearing corporations, regulatory oversight and margin accounts serve to reduce much of the credit risk associated with the futures market. A **margin account** is an initial cash or collateral deposit which serves to guarantee the fulfillment of contractual obligations. As the futures price fluctuates, creating a profit or loss on a position, the margin account is debited or credited accordingly. If the account falls below a prescribed level, additional funds must be added to the account referred to as **variation margin**.

Commonly, delivery of the underlying instrument is not taken. Instead the futures position is closed out by purchasing or selling the offsetting futures contract. A few contracts, such as those based on short term interest rates, are cash settled and no delivery of a financial instrument takes place. The difference between the market (cash) price of the underlying instrument and the futures price is the **basis**. At expiration the cash and futures price will be equal. This is referred to as **convergence** of cash and futures prices.

Many financial instruments which banks own do not have corresponding futures contracts. In this situation a bank would determine which futures contract's price sensitivity most closely tracked that of the financial instrument. This is known as cross hedging. An adjustment is calculated, known as the hedge ratio, which accounts for the differing price volatility between the hedged position and hedging instrument. The hedge ratio aids in determining how many futures contracts should be purchased or sold in relation to the hedged instrument. It is calculated by dividing the relative price volatility of the hedged position by that of the futures contract. An adjustment may also need to be made to account for the changing yield spread relationship between the two instruments.

Over-the-Counter (OTC) Interest Rate Forward Contracts

Interest rate forward contracts are conceptually the same as interest rate futures; however, a forward contract is not standardized or traded on an exchange. Instead, these securities trade in the over-the-counter (OTC) market which is primarily dominated by large investment banks and commercial banks. Transactions are negotiated in terms of contract specifications and price. Forward contracts are usually held to term when delivery of the underlying instrument is made or taken. Counterparty creditworthiness is a major consideration in transacting forward contracts. No regulatory agency or exchange controls are present in this market, therefore participation in this market requires diligent analysis and monitoring of credit exposure.

Margin accounts are not a part of the forward market process; however, market makers may require collateral in some form to ensure the fulfillment of the obligation. This collateral account may be structured similar to a margin account in that more collateral could be secured depending on the performance of the forward position.

Uses of Futures and Forwards

Financial institutions use forward and futures contracts for a number of reasons. One reason is to hedge the interest rate risk involved with anticipatory positions. For example, suppose an institution, believing that interest rates are favorable, decides to borrow \$5 million of 3-month CDs with a rate tied to LIBOR; however, the borrowing can not be completed immediately because the bank must attract these funds. Estimated time to complete the \$5 million borrowing is 3 months. The institution can sell a 3-month Eurodollar futures contract and lock in current rates. As depositors begin moving money into these 3-month CDs the institution can buy back a proportional amount of Eurodollar futures contracts until the entire amount of Eurodollar futures contracts are offset, leaving the 3-month CDs on the bank's books.

An institution can hedge the interest rate risk of an asset or liability or group of assets or liabilities with futures and forward contracts. For example, if an institution wanted to protect against rising interest expense on a particular liability, it would sell an appropriate futures contract. In this way, if interest rates rose, causing the interest expense to rise, the institution would have an offsetting gain on the futures contract. An institution could also

protect the yield on a floating rate asset from declining rates by purchasing an appropriate futures contract which would gain in value as interest rates declined. The value of the hedged asset and liability position is protected by the offsetting gains or losses on the futures position.

Another use of forward and futures contracts is to reduce the duration gap between assets and liabilities. For example, if an institution wanted to increase the duration of its liabilities to more closely match its assets, it could sell futures contracts with longer durations.

Conversely, to reduce the duration of its liabilities, the institution could purchase a longer duration futures contract.

Forward and futures contracts can also be used for speculation. If an institution wants to bet that interest rates will decline, it would purchase, for example, 30-year Treasury bond futures contracts instead of purchasing the underlying security outright. Should the interest rate forecast change, the institution can sell the futures contract before delivery must be made.

Speculation in most cases is not an acceptable strategy although there are some cases -- where the bank has adequate capital, internal controls and management expertise -- in which exceptions may be made.

Risks of Interest Rate Forward and Futures Contracts

If not properly established and monitored, an interest rate hedge using futures contracts may

increase rather than reduce interest rate risk. If the hedge ratio is not calculated properly, for example, the hedged liability or asset could be under or over hedged. Hedge ratios are dynamic, and each hedge must be monitored and adjusted over time to ensure that the hedge ratio remains correct. An improper hedge ratio can directly affect the effectiveness of the hedge in reducing interest rate risk.

Market liquidity may pose risks for hedges using futures and forward contracts. As contract delivery dates go further out in time, the liquidity of these contracts shrinks. This declining liquidity can affect the bank's ability to offset the futures contracts at an optimal price. The forward market is, in general, less liquid than the futures market, and it may be more difficult and costly for an institution to offset a forward position.

Basis risk may also be present in interest rate hedges using futures contracts. It is more likely to be present in cross hedges. The cash price of the instrument underlying the futures contract is only guaranteed to equal the futures price on delivery date. Institutions desiring to close out positions before delivery date must closely monitor the cash/futures basis and consider basis risk before entering into a hedge using futures contracts.

Credit exposure on futures contracts is relatively low due to the clearing corporation structure, the regulatory oversight of the CFTC, and daily margining by futures exchanges. However, counterparty creditworthiness is a major risk of OTC forward contracts. A bank which enters into a transaction to lock in current borrowing rates and protect its net interest margin could see its earnings affected if rates rise and the counterparty defaults. As

mentioned, some institutions require collateral from a counterparty before entering into forward transactions. If the counterparty defaults, the sale of the collateral will serve to defray losses which result from the default.

Examination Procedures

Prior to engaging in these transactions, a bank should consult its State banking authority or obtain an opinion of bank counsel concerning the legality of these activities under State law.

Also prior to participating in futures activities, a bank should have in place a written policy approved by the board of directors which details the permissible strategies and contracts of which the bank can engage in and own. The policy should include gross and net limits pertaining to each permissible contract. Limits should be set by considering the size of the bank and its capital structure. Levels of activity should also be reasonably related to the bank's business needs and its capacity to fulfill its obligations under these contracts. Trading authority should be delineated in the policy as well. This authority should be delegated only to individuals which demonstrate the specific knowledge and expertise necessary to properly transact those permissible activities and strategies in a safe and sound manner. Prior to engaging in futures and forward contracts, determination should be made that the particular activity will be consistent with the overall asset/liability management strategy of the institution.

A system of periodic reporting to the board of directors, or a duly authorized committee thereof, should be established as part of the bank's monitoring mechanism. These reports should include all futures and forward contract positions and how these reported positions affect the bank's interest rate risk and earnings. Adequate internal controls should exist to insure adherence to the policy and to prevent unauthorized trading and other abuses. (These internal control systems should also monitor the risks associated with the allowable strategies to determine the impact on the bank under different interest rate scenarios.) A bank should also monitor and report the credit risk associated with its forward contracts. The board, or a duly authorized committee thereof, should approve a list of acceptable counterparties and this list should be updated pursuant to changes in credit. Credit exposures for each counterparty should be combined across all on and off balance sheet categories to determine a counterparty's overall credit exposure. Depending on the level of credit exposure and the counterparty's financial condition, the bank should contemplate the need for reserves.

Speculation in futures contracts is generally not permitted. However, if an institution with a sophisticated trading function has adequate capital, sufficient internal controls and management expertise, this type of activity may be acceptable.

Recordkeeping systems must be sufficiently detailed to permit internal auditors and examiners to determine whether operating personnel have acted in accordance with authorized objectives. Bank personnel are expected to be able to describe and document in detail how the positions taken contribute to the attainment of the bank's stated objectives. A bank should maintain general ledger memorandums or commitment registers to adequately identify

and control all commitments and obligations. Such registers and supporting journals should at a minimum include: type (i.e., Eurodollar), nature of position (purchased/sold), underlying instrument, delivery date, current price, purchase/sale price, and amount of initial margin if applicable. Also, the bank should report positions of futures and forward contracts in the Report of Condition, Schedule RC-L.

Documentation of the positions in the form of confirmations or statements should be retained. The bank should also retain any analysis supporting the use of futures and forward contracts with respect to a particular hedged position or the overall asset/liability position of the bank. Legal counsel should review contracts.

Examination Treatment

When futures are utilized for hedging purposes the effect of this activity should be reflected in the interest rate sensitivity analysis. For example, if the effect of a futures hedge is to lengthen liabilities, then the par value of the futures contracts should be subtracted from rate sensitive liabilities. Any adverse affect futures and forward contracts have on the interest rate risk of the institution should be noted in the comment section of the interest rate sensitivity analysis. Any inappropriate speculative positions or positions which do not adhere to the institution's policy should be mentioned on the examiner comment and conclusion page. Consideration of the potential credit risk arising from forward positions should be considered when evaluating the overall adequacy of the bank's capital accounts.

Division of Supervision
MEMORANDUM SYSTEM

Classification Number	6320 & 6920 (1-5)
Date	AUGUST 9, 1990
Issuing Office	DOS/DCP
Control	W. Stark x6972/R. Storgel
<input type="checkbox"/> Notice	<input checked="" type="checkbox"/> Memorandum

MEMORANDUM TO: Regional Directors

FROM: Paul C. Fritze
Director

SUBJECT: Review of Pertinent Securities and Accounting Matters

- Purpose.** To provide information regarding financial institution examination approach, documentation and basis for conclusions when encountering a large investment in mortgage derivative securities and/or hedged positions using financial futures contracts.
- Background.** Since the passage of FIRREA and the additional regulatory responsibility that has been assigned to the FDIC, bank examiners have encountered many situations where a material amount of the assets of the examined financial institution is centered in mortgage loans and/or mortgage-backed securities. In addition, situations have been encountered where financial futures contracts have been utilized to hedge either assets, liabilities or anticipated transactions. Because of the high risk associated with these relatively sophisticated investments, safety and soundness considerations have been an area of grave concern when conducting examinations.

This concern has led to numerous inquiries regarding how to best apply current FDIC guidelines, and where appropriate, how the examination staff should interpret FASB No. 80 (futures).

This memorandum has been organized in two sections, mortgage securities and financial futures.

- Mortgage Securities.** As you are aware, in April 1988, the FDIC Board of Directors adopted the Federal Financial Institutions Examination Council's Policy Statement entitled "Selection of Securities Dealers and Unsuitable Investment Practices." This document became the basis for three subsequent Regional Director memorandums dealing with stripped mortgage-backed securities, residuals and long-term zero bonds issued in

Transmittal No. 90-105

April 1988, December 1989, and June 1990, respectively. The purpose of the aforementioned Regional Director memorandums was to provide supervisory guidance on the examination treatment for stripped mortgage-backed securities, residuals and long-term, zero-coupon securities.

Although these documents stand on their own, a brief review of some of the key elements is appropriate.

A. FIEEC Policy -- April 1988 (FDIC's Law, Regulations, and Related Acts, pps. 5292-97)

- When considering investing in stripped mortgage-backed securities and residuals, the depository institution is responsible for considering the liquidity, marketability, pledgeability and price volatility of each instrument.
- As a general rule, stripped mortgage-backed securities are not considered suitable investments for the majority of financial institutions.
- These instruments may be appropriate for highly-sophisticated and well-managed security portfolio functions; but in these cases, there should be carefully developed and documented plans prescribing specific position limits and control arrangements for enforcing these limits. Further, these plans should be approved by the Board of Directors and vigorously enforced.
- The purchase of residuals should be supported by in-house evaluations of possible rate of return ranges based on different prepayment assumptions.
- It may be considered unsuitable for a depository institution to commit significant amounts of funds to stripped mortgage-backed securities, residuals or zero-coupon bonds.

B. Regional Director Memorandum -- April 29, 1988
(Transmittal No. 88-061)

- When held as stand-alone investments, residuals and stripped mortgage-backed securities are considered highly speculative because of their substantial prepayment risk characteristics and volatile market values; thus, such investments may be contrary to safe and sound banking practices.
- It is possible to own these securities in an investment portfolio for the purpose of managing interest rate risk on mortgages, mortgage-backed securities or a mortgage servicing portfolio. If the assets are purchased for these reasons, there must be in place a written policy, approved by the Board of Directors. This policy should include a limit on the amount of funds invested, authority and responsibility levels for designated personnel, adequate management information systems, procedures for periodic valuation and acceptable internal controls.

- Management must be able to demonstrate prior to purchase, and updated throughout the life of the security, how the specific instrument is being used to manage interest rate risk.

- Finally, if the examiner concludes the above criteria are not being met, the aforementioned securities should be considered unsuitable investments; thus, the investments should be classified adversely. In addition, the examiner should seek a commitment to dispose of the assets.

C. Regional Director Memorandum -- December 22, 1989
(Transmittal No. 89-174)

- This memorandum reinforces the position that if a financial institution cannot meet the interest rate risk management criteria, adverse classification and a commitment from management to dispose of the assets at an appropriate time should be sought.

- The balance of the memorandum deals with classification issues and concludes that depreciation for those residuals not meeting the interest rate management criteria, should be classified as "loss" with market value "substandard." For interest-only (I/O) strips, depreciation should be classified as "doubtful" with the balance classified as "substandard" for those securities held as investments not meeting the interest rate management criteria. On I/O strips held for sale, depreciation would be classified "loss" instead of "doubtful." For principal-only (P/O) strips, special mention is warranted. The P/O treatment has been subsequently changed in a Regional Director memorandum dated June 12, 1990 (Transmittal No. 90-080), indicating that government-backed and other investment quality P/Os may not be special mentioned, but that significant holdings should nonetheless be criticized because of their effect on interest rate risk, liquidity, earnings, etc.

4. CURRENT ISSUES. The following is a summary of questions which have been received from the regions and related responses.

Should I/Os, P/Os, residuals and zero-coupon bonds be aggregated into like subgroups when classified, or should they be listed issue by issue?

Response: Once a decision has been made to adversely classify the securities in question, the examiner should seek a commitment to dispose of the assets. If management refuses and indicates the plan is to hold the securities to maturity, then the securities should be individually classified. On the other hand, if management agrees to the disposition of the securities, the securities should be aggregated into like subgroups and the lower of cost or market classification approach should be applied to each subgroup.

When an institution makes its LOCOM adjustment, should the "bid," "ask" or some price in between be used?

Response: When securities are marked to market (as versus cost), the best indicator of market value is what an independent second party will "bid" for the given security. If a security is consistently selling above the "bid" price, a concern should arise regarding the quality of information the institution is using to arrive at the carrying value of its securities on its books and records. When there does not appear to be a market "bid" available, the examiner should take into account recent similar transactions and the estimated economic value arrived at by the financial institution. Based on a review and determination that the assumptions used to arrive at economic value by the institution are reasonable and consistent with current market conditions, this value can be substituted after estimating a liquidity "premium" and brokers' commission only in those cases where a market "bid" is not available.

When an institution is purchasing residuals and stripped mortgage-backed securities, is it crucial that the institution specify the particular asset whose interest rate risk the instrument is intended to limit?

Response: As a general rule, when residuals or stripped securities are purchased, the specific instrument whose interest rate risk is being limited should be clearly identified. In more sophisticated institutions, the purchase of a residual or stripped security might occur to reduce the interest rate risk of a well-defined group of identifiable assets. In either case, appropriate interest sensitivity analysis, with and without the residual or stripped security, should be performed prior to purchase and on a regular basis throughout the life of the asset(s) to ensure that the residual or stripped security is performing effectively.

5. Use of Futures Contracts.

A. Supervisory Policy. The FDIC's "Statement of Policy Concerning Interest Rate Futures Contracts, Forward Contracts and Standby Contracts" (pages 5067 through 5069 of the FDIC's Law, Regulations, and Related Acts) sets forth policy guidance for institutions engaging in transactions involving these types of contracts. The Office of the Comptroller of the Currency (OCC) and the Federal Reserve Board (FRB) have adopted essentially the same policy as ours for the banks under their supervision. Although the FDIC's policy statement was adopted by the Board of Directors at a time when our supervisory responsibilities extended only to insured state nonmember banks, examiners should likewise apply its provisions (other than those establishing regulatory reporting standards for banks) when making judgments concerning thrift institutions. Thus, as indicated in the policy statement, banks and thrift institutions that engage in futures, forward, and standby (i.e., option) transactions

should only do so in accordance with safe and sound banking practices. Levels of activity should be reasonably related to the bank's (or thrift's) business needs and capacity to fulfill its obligations under these contracts. In managing their investment portfolios

[and other portions of their balance sheets], banks [and thrifts] should evaluate the interest rate risk exposure resulting from their overall activities to ensure that the positions they take in futures, forward and standby contract markets will reduce their risk exposure and [each institution's] policy objectives should be formulated in light of the bank's [or thrift's] entire asset and liability mix.

The policy statement then describes the minimum guidelines with which institutions entering into futures, forward, and standby transactions should comply. A thrift institution's failure to follow these guidelines (other than those establishing regulatory reporting standards for banks) would normally mean that the institution is engaging in unsafe or unsound practices. Examiners should review a thrift's policies and procedures relating to its involvement with futures, forward, and standby contracts for compliance with the guidance contained in the policy statement and express the FDIC's views as to appropriate corrective action when deficiencies are encountered.

B. Applicable Accounting Standards. Thrift institutions must account for futures contracts in accordance with generally accepted accounting principles (GAAP) for regulatory reporting purposes. The applicable authoritative standard in this area is Financial Accounting Standards Board Statement No. 80, "Accounting for Futures Contracts" (FASB 80), which was issued in August 1984. On the other hand, the supervisory policies of the three banking agencies have to date generally not permitted banks to use FASB 80 hedge accounting in connection with financial futures contracts. Instead, the banking agencies require mark-to-market accounting for such contracts (except those used to hedge mortgage banking activities).¹

FASB 80 requires that a change in the market value of an open futures contract be recognized as a gain or loss in the period of the change unless the contract qualifies as a hedge of certain exposures to price or interest rate risk. Gains and losses on futures contracts that satisfy the hedge criteria specified in the standard can be deferred and amortized

.....

¹As part of the ongoing interagency effort to eliminate differences between GAAP and bank regulatory reporting requirements, the Federal Financial Institutions Examination Council's Reports Task Force is drafting revised Call Report instructions and recommended changes to the banking agencies' current supervisory policies on futures, forward, and standby contracts that will permit banks to follow FASB 80 for regulatory reporting purposes. The revision would also include safeguards to set appropriate safety and soundness bounds on the range of acceptable practice in accounting for futures contracts. Any revised supervisory policy statement must be approved by the FDIC's Board of Directors (and similar action must be taken by the OCC and the FRB) before the adoption of FASB 80 for Call Report purposes can take effect.

over certain future periods (unless the contract hedges an item reported at fair value, in which case the gain or loss should be recognized immediately). These criteria are specified in paragraph 4 of FASB 80, which in part states that

[i]n applying this Statement, both of the following conditions shall be met for a futures contract to qualify as a hedge:

- a. The item to be hedged exposes the enterprise to price (or interest rate) risk. . . . [and]
- b. The futures contract reduces that exposure and is designated as a hedge. At the inception of the hedge and throughout the hedge period, high correlation of changes in (1) the market value of the futures contract(s) and (2) the fair value of, or interest income or expense associated with, the hedged item(s) shall be probable so that the results of the futures contract(s) will substantially offset the effects of price or interest rate changes on the exposed item(s). In addition to assessing information about the correlation during relevant past periods, the enterprise also shall consider the characteristics of the specific hedge, such as the degree of correlation that can be expected at various levels of higher or lower market prices or interest rates. A futures contract for a commodity or financial instrument different from the item intended to be hedged may qualify as a hedge provided there is a clear economic relationship between the prices of the two commodities or financial instruments, and provided high correlation is probable.

In addition, there are situations when a futures contract is intended to be used to hedge an anticipated transaction. Paragraph 9 of FASB 80 describes an anticipated transaction as one which an institution "expects, but is not obligated, to carry out in the normal course of business." In order to apply hedge accounting to an anticipated transaction, the two preceding conditions as well as both of the following two conditions must be satisfied:

- a. The significant characteristics and expected terms of the anticipated transaction are identified. . . . [and]

- b. It is probable that the anticipated transaction will occur. Considerations in assessing the likelihood that a transaction will occur include the frequency of similar transactions in the past; the financial and operational ability of the enterprise to carry out the transaction; substantial commitments of resources to a particular activity . . . ; the length of time to the anticipated transaction date; the extent of loss or disruption of operations that could result if the transaction does not occur; and the likelihood that transactions with substantially different characteristics might be used to achieve the same business purpose

Thus, paragraphs 4 and, for anticipated transactions, 9 of FASB 80 describe the prerequisites to the use of hedge accounting largely in terms of probability assessments that must be made before entering into the intended hedging transaction. Moreover, in situations where hedge accounting is being used, the initial assessment of the probability of future correlation of changes in the value of the futures contract and the hedged item must thereafter be followed by regular historical evaluations of correlation. In discussing the need for both an initial and ongoing assessment of hedge effectiveness, paragraph 59 of the "Background Information and Basis for Conclusions" section of FASB 80 explains that

In many cases the actual results of a hedge transaction may be approximately what was expected. However, even though high correlation may be probable at inception, it is not certain; actual price relationships over the hedge period may be significantly different from what was expected. Several respondents confirmed that fact. The Board concluded that the continuation of hedge accounting must be justified by what has actually happened rather than on the basis of expectations formed at an earlier date.

Paragraph 11 of FASB 80 therefore provides that

[a]n enterprise regularly shall assess the results of a futures contract designated as a hedge to determine if the high correlation required by paragraph 4(b) is being achieved. If that assessment indicates high correlation has not occurred, the enterprise shall cease to account for the futures contract as a hedge and shall recognize a gain or loss to the extent the futures results have not been offset by the effects of price or interest rate changes on the hedged item since inception of the hedge.

However, FASB 80 itself provides little specific guidance on the meaning of the term "high correlation" and on the procedures that should be followed in measuring correlation. In this regard, the June 1985 issue of "FASB Highlights," which provides FASB staff responses to FASB 80 implemen-

tation questions, notes in response to an inquiry on how high "high correlation" should be that

[t]he Board intentionally did not specify any specific measure of correlation and left that matter for judgment and evolution in practice. Because of the requirement for a "clear economic relationship" between the item being hedged and the item underlying the futures contract, correlation should be substantially higher than that which would occur due to mere chance.

Generally, accounting practice has come to maintain that correlation in the changes in the value of the futures contract and the hedged item (the cash position) must be at least 80 percent in order for "high correlation" to be achieved. This is sometimes expressed as a range of 80 to 125 percent. (Percentages over 100 percent can be converted to percentages between 0 and 100 percent by taking their reciprocal. The reciprocal of 125 percent is 80 percent, i.e., $1/1.25 = 80$ percent.) Thus, if correlation is less than 80 percent, it would not normally be acceptable to apply hedge accounting. From a supervisory standpoint, we do not take exception to the use of an 80 percent threshold (an 80 to 125 percent range) for high correlation. It is our understanding that the staffs of the other federal banking and thrift regulators share this view.

C. Initial Assessment of Correlation. As for the initial assessment of the probability of correlation, consideration must be given to the degree of correlation in "relevant past periods." The June 1985 "FASB Highlights" indicates that this means that correlation should be tracked at least "for a number of past periods that are longer than the intended duration of the hedge." In any case, because paragraph 4(b) of FASB 80 requires the assessment of correlation to cover various levels of interest rates, this analysis period should normally cover at least the preceding 12 months in order to demonstrate how the futures contract(s) will reduce the institution's exposure to price or interest rate risk. The probability of correlation can be tested by examining the actual dollar amount of offset during the analysis period (i.e., the extent to which the dollar amount of changes in the market value of futures contracts during this period have offset the change in the fair value of, or the net income or expense associated with, the item or group of items to be hedged), or through a "regression and correlation analysis" of these changes during the analysis period.

²These statistical methods for studying the relations between variables, such as changes in futures contract market values and changes related to items to be hedged. In regression analysis, "estimates are made of the values of a variable from a knowledge of the values of one or more other variables, and to the measurement of the errors involved in this estimation process," while correlation analysis measures "the strength of the association (correlation) among these variables" (Morris Hamburg, Statistical Analysis for Decision Making, 1970, page 460).

Adequate written documentation of the initial correlation assessment must be prepared not later than the time when the hedging transaction is entered into. This documentation must also clearly identify the item or group of items intended to be hedged, must show how this item or group of items exposes the institution to price or interest rate risk, and (assuming that high correlation has been shown to be probable) must designate the futures contract(s) as a hedge. The absence of such written documentation precludes the use of hedge accounting, thereby requiring futures gains or losses to be recognized currently through the income statement. After-the-fact initial assessment documentation is also an unacceptable means of justifying the use of hedge accounting.

More importantly, such documentation deficiencies would represent unsafe and unsound practices because, contrary to the FDIC's policy statement addressing futures contracts, the institution would not be in a position to show that its futures positions are reducing its risk exposure. As that policy further indicates, an institution's "personnel are expected to be able to describe and document in detail how the positions they have taken . . . contribute to the attainment of the bank's [or thrift's] stated objectives." In other words, if an institution itself cannot adequately demonstrate how its risk is being reduced, its use of futures contracts is essentially a speculation on future interest rate movements and should be regarded as an unacceptable practice. Institutions may not rely on brokers or other parties to do their analyses for them.

D. Ongoing Assessment of Correlation. Once a hedge using futures is in place, FASB 80 requires an institution to regularly assess the correlation of its futures results with those of its hedged cash position. According to the June 1985 "FASB Highlights," "regularly" is "[a]t least as often as financial results are reported. Due to the risks inherent in the futures markets, most companies monitor their positions continuously." In practice, hedge effectiveness is assessed at least monthly. More frequent assessments (i.e., weekly or daily) are warranted in certain circumstances such as for hedges for relatively short time periods (e.g., three months, six months). Such a frequency is consistent with the provisions of the FDIC's policy statement on interest rate futures, forward, and standby contracts that call for reviews and valuations of futures contract positions at least monthly.

The historical tests of hedge effectiveness required on a regular basis by paragraph 11 of FASB 80 should cover the period since inception of the hedge through the date of the test and should begin the first month (or week or day, if more appropriate for the specific hedge). The use of "grace periods" before the effectiveness of a hedge is evaluated is not an appropriate practice in light of FASB 80's prerequisite that high correlation must be probable at the inception of the hedge in order for hedge accounting to be used. Thus, in order to demonstrate that high correlation has occurred, the change in the market value of the futures contract(s) since the inception of the hedge must substantially offset the change in the fair value of, or the interest income or expense associated

with the hedged item(s). In measuring such changes, the actual dollar amount of the changes on a cumulative basis should be used. Methodologies that do not consider the actual price relationships of the futures contract(s) and hedged item(s) since the inception of the hedge are not acceptable means of determining whether high correlation has been achieved. As with the initial assessment of correlation discussed above, adequate written documentation of the ongoing assessments of hedge effectiveness must be prepared and maintained by each institution itself.

As stated above, to be high, correlation of at least 80 percent (80 to 125 percent) on a cumulative basis must have been achieved. If the cumulative correlation in a particular month (week, day) drops below this level, the reason for this occurrence should be determined, if possible. If a reason can be identified and it is an isolated, unusual event that is not expected to recur, the futures contract(s) can continue to be accounted for as a hedge. Then, if the next month's (week's, day's) cumulative correlation measurement remains below the 80 percent level for essentially the same reason, hedge accounting for that futures contract(s) should normally cease. In this regard, when cumulative correlation falls below 80 percent because of a change in the level of long-term interest rates that differs significantly from the change in the level of short-term interest rates (a so-called nonparallel shift in the yield curve), such an event cannot be considered an isolated, unusual event that is not expected to recur.

On the other hand, there may on occasion be situations when the correlation on a cumulative basis is found to be less than 80 percent, but the actual dollar amounts of the cumulative changes in value of the futures position and the cash position are both nominal in relation to the amount of the cash position being hedged. At the same time, the actual changes in value of the futures and cash positions on a monthly (weekly, daily) basis will normally have been at or above the 80 percent level of correlation, and those in the most recent period(s) will usually have been large in amount. For example:

	Futures Gain (Loss)	Cash Gain (Loss)	Ratio
Month 1	37	(40)	93%
Month 2	<u>38</u>	<u>(32)</u>	119%
Cumulative	75	(72)	104%
Month 3	<u>33</u>	<u>(27)</u>	122%
Cumulative	108	(99)	109%
Month 4	<u>(118)</u>	<u>102</u>	116%
Cumulative	(10)	3	333%

Appropriate documentation of this phenomenon (which is sometimes referred to as the "whipsaw" effect) is necessary to support the continued use of hedge accounting under these circumstances.

In any case, as a general rule, there is a presumption that hedge accounting should be terminated when there is a lack of high correlation (less than 80 percent on a cumulative basis). When this occurs, the amount by which the change in the market value of the futures contract(s) was not offset by the change associated with the hedged item(s) since the inception of the hedge, should be recognized immediately as a gain or loss.

E. Anticipated Transactions. Anticipated transactions should be expected to take place in the near future in order for changes in the market value of futures contracts intended to hedge such transactions to be eligible for deferral and amortization. Periods in excess of, say, one year are not consistent with the notion of occurring in the near future. This position is based on the consensus reached by the FASB's Emerging Issues Task Force in Issue No. 86-34, "Futures Contracts Used As Hedges of Anticipated Reverse Repurchase Transactions." That consensus indicates, in part, that it will be difficult to meet the conditions specified in FASB 80 for applying hedge accounting to anticipated transactions when the "transactions are expected to take place over a relatively long period of time."

INTEREST RATE OPTIONS

Introduction to Interest Rate Options

An interest rate option is an agreement between two parties which gives one party the right, but not the obligation, to buy or sell a security or contract. There are two types of options: call and put options. A **call option** gives the purchaser, for a fee or premium which is paid to the seller of the call, the right to buy a specific security or contract (underlying instrument) at a specified price (strike price) and a specified date (expiration date). If the call purchaser decides to buy the security (exercise his option), the call seller (writer) must deliver the underlying instrument at the strike price. Conversely, a **put option** gives the buyer, for a premium, the right to sell the underlying instrument to the put writer at the strike price. There are two types of exercise provisions: American and European. An **American option** can be exercised at any time up to and including the expiration date. A **European option** is exercised only on the expiration date.

The relationship between the strike price and the price of the underlying instrument determines whether the option is in-the-money, at-the-money or out-of-the-money. A purchased call option is **in-the-money** when the market price of the underlying security is above the strike price, and it is **out-of-the money** when the price of the underlying security is below the strike price. When the relationship between the strike price and the price of the underlying security is reversed, the same terms apply to put options. Both call and put options are **at-the-money** when the strike price equals the market price of the underlying instrument.

Over-the-Counter (OTC) Interest Rate Options

Some common OTC interest rate options are options on mortgage and Treasury securities. OTC options do not trade on a centralized exchange; they are not standardized contracts, and are not settled through a clearing house. Instead, market makers are typically large investment banks and commercial banks, and contracts are settled directly with the option counterparty. These institutions may also act as intermediaries between offsetting transactions. Brokers facilitate the matching of buyers and sellers in this decentralized market; contract specifications are negotiated between the buyer and seller. Counterparty creditworthiness is a major consideration in transacting OTC options and these options require diligent analysis and monitoring of credit exposure. OTC options are not transferable without the consent of the buyer, making these options less liquid than exchange-traded options.

Exchange-Traded Interest Rate Options

Exchange-traded interest rate options are similar to OTC options with regard to terminology and the basic mechanics. There are a few exchange-traded options where the underlying instrument is a fixed income instrument or index, but most are options on futures contracts or futures options. Some of the most widely traded are options on Eurodollar and Treasury bond futures. Exchange-traded options have a central marketplace, contracts are standardized, and trades are cleared through clearing corporations. The clearing

corporation interposes itself between buyers and sellers, acting as a third-party guarantor and eliminating the need for credit analyses on counterparties. Option premiums are determined competitively through an open outcry auction system. This organized, centralized system provides participants with readily available price information. The *Wall Street Journal* provides a futures options section which details the previous day's closing premium prices for various contract expiration months and strike prices, as well as the open interest and contract volume. **Open interest** is the number of contracts that are outstanding and have not been offset, delivered or exercised. Open interest and volume numbers give participants an indication of the liquidity in each particular contract. Exchange-traded options benefit from regulatory oversight which is not present in the OTC options market. The Commodity Futures Trading Commission regulates exchange-traded options and futures contracts.

An initial cash deposit, called a **margin account**, must be established by participants in the futures options market; this type of structures account does not exist in the OTC option markets. For example, when options on futures contracts are sold, the seller must establish a **margin account** which is commensurate with the position taken. A daily debit or credit is made to the account which corresponds to the price movement of the option. Also, if the account falls below a prescribed level due to position losses, additional funds are required. Failure to comply with margin requirements will lead to the closing out of the position via an offsetting transaction.

A call option on a futures contract gives the purchaser the right to buy the underlying futures contract (take a long futures position). Conversely, a put option gives the purchaser the right

to sell the underlying futures contract (take a short futures position). As an alternative to buying or selling a futures contract, the option holder may sell the option or let it expire if it has no value. Call writers stand ready to take a short position in a futures contract, or they may execute a trade offsetting the futures position once the contract is exercised. Put writers stand ready to take a long position in a futures contract or execute an offsetting transaction.

Several factors affect option valuation and are commonly considered when engaging in exchange-traded options: delta, gamma, vega and theta. Delta measures the amount the option premium changes with a one point change in the underlying instrument. Delta value is used in determining how many option contracts are necessary in effective hedging strategies. In this context, the delta value is referred to as the hedge ratio. Gamma is a measure of how much the option's delta will change, for a given change in the price of the underlying instrument. Vega measures how much the option's premium will change for a given change in volatility, and theta measures the amount of premium lost as one day passes.

Uses of Options

Some common interest rate option strategies are writing covered calls and buying protective puts. When an institution writes, or sells, a call option on a held position, the strategy is referred to as covered call writing. This strategy enhances the yield on the position if rates remain stable; provides limited protection, equalling the premium received, when rates rise and prices fall; and diminishes the upside potential if rates decline because the writer is subject to the sale of his position at the agreed upon strike price. Covered call writing is

addressed in the 1992 Supervisory Policy Statement on Securities Activities: "In an effort to obtain higher yields, some portfolio managers have mistakenly relied on the theoretical hedging benefits of covered call writing, and have purchased extended maturity U.S. government or Federal agency securities. This practice can significantly increase risks taken by the depository institution by contributing to a maturity mismatch between its assets and its funding."

Another strategy frequently used is buying protective puts. This enables an institution to insulate a particular position from unlimited price declines or increases in interest rates. It entails purchasing a put option on a held position. For example, an institution owns \$25 million of 8%, 30-year Treasury bonds with a book value of 98, it and purchases a European, OTC put option on that security with a strike price of 98 which expires in 3-months. Restated, this institution has purchased the right to sell \$25 million of 8%, 30-year Treasury bonds to the put writer at 98 at the expiration date. If rates rise in the next 3 months and the bond price declines to 92, the institution owns the right to sell the Treasury bonds at 98. If rates decline, the institution can fully participate in the price appreciation of its position, however this is offset slightly by the put premium paid.

Institutions which use duration to manage their balance sheets may use interest rate options to effectively lengthen or shorten assets or liabilities by purchasing calls or puts.

When an institution participates in option contracts which have no connection with its main business, the institution may be engaging in speculation. There are many ways to speculate-

using interest rate options, one of which is writing **naked calls and puts**--writing options without ownership of the underlying instrument. This type of activity can pose substantial risk. When a naked call option is exercised, the writer must purchase the underlying instrument, at then prevailing rates, to deliver to the option buyer. The market price will always be higher than the strike price which the option writer will receive for the instrument. When a naked put option is exercised, the writer must purchase the underlying security at the strike price which will be above the then prevailing market price.

Risks of Interest Rate Options

Counterparty creditworthiness is a major risk of OTC options. An institution holding a protective put with a counterparty who has defaulted is not protected from rising interest rates and has also lost the premium paid for the put. To reduce credit risk, some institutions deal only with highly rated institutions or require that some type of collateral is pledged when the financial condition of the counterparty is unacceptable. This pledged collateral serves to defray any losses in the event of counterparty default.

Options associated with the greatest risk are the naked options described above. However, institutions which purchase puts and write calls on held positions are also subject to interest rate risk. For example, depending on the strike price, a covered call writer will not participate fully in price rallies. If a position is called away, there is the risk that the institution's net interest margin will be reduced because the asset must be replaced at a higher price.

OTC options may be subject to liquidity risk because they are traded in a decentralized market and because these option contracts are not transferable to third parties unless there is consent from both counterparties. Some exchange-traded options written on longer-dated futures contracts are also subject to liquidity risk because there are fewer participants buying and selling those options.

Examination Procedures

Prior to engaging in OTC or exchange-traded options, a bank should consult its state banking authority or obtain the opinion of bank counsel concerning the legality of these activities under state law.

Also prior to participating in OTC or exchange-traded options, a bank should have in place a written policy approved by the board of directors which details the permissible strategies and contracts the bank can engage in and own, and their relationship to other banking activities. The policy should include gross and net limits pertaining to each permissible contract. Limits should be set by considering the size of the bank and its capital structure. Levels of activity should also be reasonably related to the bank's business needs and capacity to fulfill its obligations under these agreements. Trading authority should be delineated in the policy as well. This authority should be delegated only to individuals which demonstrate the specific knowledge and expertise necessary to properly transact those permissible activities and strategies in a safe and sound manner. Prior to entering into and over the term of any option contract, a determination should be made that the particular activity will be consistent with

the overall asset/liability position of the institution.

For most banks, option contracts should be used to reduce interest rate exposure.

Speculation with option contracts is generally not permitted. Exceptions may be made for more sophisticated institutions which have sufficient management expertise, capital and internal controls to properly use these contracts in a trading or intermediary capacity.

Adequate internal controls should exist to insure adherence to the established policies and to prevent unauthorized trading and other abuses.

A system of periodic reporting (at least monthly) to the board of directors, a duly authorized committee thereof, or the bank's internal auditor should be established as part of the bank's monitoring mechanism. These reports should include all option contract positions and how these reported positions will affect the bank's interest rate exposure and earnings performance. A bank should also monitor and report on the credit risk associated with its OTC option contracts. The board, or a duly elected committee thereof, should approve a list of acceptable counterparties, and this list should be updated pursuant to changes in credit. Credit exposures should be combined across all activities with the bank to determine each counterparty's overall credit exposure level. Depending on the level and the counterparty's financial condition, the bank should contemplate the need for reserves from the counterparty or possible deletion from the approved counterparty list.

Recordkeeping systems must be sufficiently detailed to permit internal auditors and examiners to determine whether operating personnel have acted in accordance with authorized

objectives. Bank personnel are expected to be able to describe and document in detail how the positions taken contribute to the attainment of the bank's stated objectives. A bank should maintain general ledger memorandums or commitment registers to adequately identify and control all commitments and obligations. Such registers and supporting journals should at a minimum include: option type (call/put), nature of position (purchase/sale), description of underlying instrument, exercise (American or European), contractual amount, premium paid, strike rate, and expiration date. Also, the bank should report purchased and written option positions in the Report of Condition, Schedule RC-L.

Documentation of option positions in the form of confirmations or statements should be retained. The bank should also retain any analysis supporting the use of option contracts with respect to a particular hedged position or the overall asset/liability position of the bank.

Legal counsel should review contracts.

Examination Treatment

When options are used for hedging purposes the effect of this activity should be reflected in the interest rate sensitivity analysis. Purchased calls and written puts should be shown as a reduction to rate sensitive assets. Purchased puts and written calls should be shown as a reduction to rate sensitive liabilities. Options should be slotted using delta equivalent values. The notional or par amount of the option contract should be multiplied by the option's current delta, and this delta equivalent value should be slotted as described above. Any adverse effect on the interest rate sensitivity of the institution arising from option positions should be

noted in the comment section of the interest rate sensitivity analysis. Any inappropriate speculative positions or positions which do not adhere to the institution's policy should be mentioned on the examiner comment and conclusion page. Consideration of the potential credit risk arising from option positions should be considered when evaluating the overall adequacy of the bank's capital accounts.

FORWARD RATE AGREEMENTS

Introduction to Forward Rate Agreements

A forward rate agreement (FRA) is a contract between two parties in which one party agrees to pay the difference between the market rate of interest on the contract's effective date and a pre-agreed fixed rate or contract rate. A principal or notional amount is used to calculate the payment, but it is never itself exchanged. Typically, the market interest rate in an FRA is the London Interbank Offered Rate (LIBOR). The contracts are quoted according to the beginning and ending dates of the interest period or contract period. For example, a "twos against fives" FRA would have a settlement date or value date two months forward. The contract period would commence at the value date and extend for three months, ending in month five. The first number ("twos") indicates the number of months to the value date, and the second number ("fives") represents the end of the interest period. At the value date, the difference between the market rate and the contract rate is calculated. If the market rate is above the contract rate, the buyer of the FRA receives a payment. If the market rate is below the contract rate, the seller of the FRA receives a payment. This payment or settlement sum is discounted because the payment is received at the beginning of the contract period rather than at maturity.

FRAs cover only one interest period, usually 3, 6 or 12 months, and this period can be fixed up to 18 months ahead. FRAs are not standardized instruments. No margin account is established, and no premium is paid to either party of the agreement. They are traded in an

over-the-counter (OTC) market with market makers primarily being commercial banks.

Uses of Forward Rate Agreements

Suppose a commercial bank wanted to raise money by issuing 3-month CDs, 6 months from now. Believing that interest rates are low and that they will steadily increase, the bank wants to lock in current rates. In order to do this, the bank buys a "sixes against nines" FRA for a notional amount equal to the amount of CDs it will issue. If market rates do, in fact, rise by the value date of the FRA, the contract rate on the FRA would be lower than the prevailing market rate. The bank would then receive a payment from the counterparty which represents the difference between the two rates. This settlement sum would be discounted from the end of the contract period back to the value date. By entering into the FRA six months before issuing the CDs, the bank could lock in low rates while still being able to offer its customers the current market rate on 3-month CDs.

Just as a bank can lock in borrowing costs by buying an FRA, it can also obtain downside protection for its assets by selling FRAs. For example, a bank determines in May, in order to reduce its interest rate gap, that it will originate some short-term variable rate loans which will settle in August and will roll off in November. The bank sells "three against sixes" FRAs to protect the variable rate loans from interest rate declines. By August, interest rates have declined, but the contract rate on the FRA is higher than current market rates. The loan value will decline with lower rates, but the bank will receive a payment for the FRA which will offset the loss on the loan.

As with most off-balance sheet instruments, banks can utilize FRAs to speculate on rate movements. If a bank is an FRA market maker, it can also earn fee income from this activity. Speculation in most cases is not an acceptable strategy, although exceptions may be made when a sophisticated institution has adequate capital, internal controls and management expertise to engage in such activities.

Risks of Forward Rate Agreements

Because FRAs are traded in a decentralized, over-the-counter market, counterparty creditworthiness is a major risk. An institution which has entered into an FRA agreement to protect the return on a floating rate asset or to lock in a borrowing cost, accomplishes neither of objective if the counterparty defaults. This could lead to a loss of earnings and reduction of the bank's net interest margin and capital.

Liquidity risk also exists largely due to the decentralized nature of this market and because these contracts are not transferable to third parties unless there is consent from each original counterparty.

Examination Procedures

Prior to engaging in these transactions, a bank should consult its State banking authority or

obtain an opinion of bank counsel concerning the legality of these activities under State law.

Also prior to engaging in FRAs, a bank should have in place a written policy approved by the board of directors which details the permissible strategies and agreements of which the bank can engage in and own. The policy should include gross and net limits pertaining to each permissible agreement. Limits should be set by considering the size of the bank and its capital structure. Levels of activity should also be reasonably related to the bank's business needs and capacity to fulfill its obligations under these agreements. Trading authority should be delineated in the policy as well. This authority should be delegated only to individuals which demonstrate the specific knowledge and expertise necessary to properly transact those permissible activities and strategies in a safe and sound manner. Prior to engaging in any FRAs, a determination should be made that the particular activity will be consistent with the overall asset/liability position of the institution.

A system of periodic reporting to the board of directors, or a duly authorized committee thereof, should be established as part of the bank's monitoring mechanism. These reports should include all FRA positions and how these reported positions will affect the bank's interest rate risk and earnings. Adequate internal controls should exist to insure adherence to the policy and to prevent unauthorized trading and other abuses. (These internal control systems should also monitor the risks associated with the allowable strategies to determine the impact on the bank under different interest rate environments.)

Although FRAs are generally short-term in nature, a bank should also monitor and report on

the credit risk associated with its FRA positions. The board or a duly elected committee thereof should approve a list of acceptable counterparties and this list should be updated pursuant to changes in credit. Credit exposures for each counterparty should be combined across all activities with the bank to determine an overall exposure level. Depending on the level of credit exposure and the counterparty's financial condition, the bank should contemplate the need for reserves from the counterparty or possible deletion from the approved counterparty list.

Speculation in FRAs is generally not permitted. However, if the institution has adequate capital, sufficient internal controls and management expertise, this type of activity may be acceptable for some sophisticated banks.

Recordkeeping systems must be sufficiently detailed to permit internal auditors and examiners to determine whether operating personnel have acted in accordance with authorized objectives. Bank personnel are expected to be able to describe and document in detail how the positions taken contribute to the attainment of the bank's stated objectives. A bank should maintain general ledger memorandums or commitment registers to adequately identify and control all commitments and obligations. Such registers and supporting journals should at a minimum include: value date, ending date, nature of position (purchase/sale), notional amount, contract rate, and market reference rate. The bank should report FRA positions in the Report of Condition, Schedule RC-L.

Documentation of the positions in the form of confirmations or statement should be retained.

The bank should also retain any analysis supporting the use of FRAs with respect to a particular hedged position or the overall asset/liability position of the bank. Legal counsel should review agreements.

Examination Treatment

When FRAs are utilized for hedging purposes, the effect of this activity should be reflected in the interest rate sensitivity analysis. Purchased FRAs should be shown as a reduction to rate sensitive liabilities. Sold FRAs should be shown as a reduction to rate sensitive assets. Any adverse effect on the interest rate risk of the institution arising from FRA positions should be noted in the comment section of the interest rate sensitivity analysis. Any inappropriate speculative positions or positions which do not adhere to the institution's policy should be mentioned on the examiner comment and conclusion page. Consideration of the potential credit risk arising from FRA positions should be considered when evaluating the overall adequacy of the bank's capital accounts.

INTEREST RATE CAPS AND FLOORS

Introduction to Interest Rate Caps and Floors

Interest rate caps are over-the-counter (OTC) instruments which give the purchaser, for a premium, the right to receive a payment if a specified index rate (i.e., LIBOR) rises above a designated strike rate. The frequency with which the index rate is compared with the strike rate is known as the settlement frequency and usually occurs monthly, quarterly or semiannually. Payments are based on the principal amount or notional amount of the cap, although no exchange of principal takes place. Interest rate floors are similar to caps, however, except that they allow the purchaser to receive a payment when the specified index rate falls below the strike rate. Typical cap and floor maturities range are between 3 months and 12 years.

A cap can be thought of as a series of put options on the price of a short-term security, and a floor as a series of call options on a short-term security. As such, option terminology is used to describe the value of a cap or floor. A cap or floor with a strike rate equal to the underlying index rate is considered at-the-money. A cap is in-the-money when the index rate exceeds the strike rate, and a floor is in-the-money the when the index rate declines below the strike rate. When the relationship between the strike rate and index rate is reversed, the cap and floor are out-of-the-money. The delta of a cap or floor measures the relative degree to which it is in or out of the money.

Uses of Interest Rate Caps and Floors

Interest rate caps can be referred to as interest rate ceilings because they allow the purchaser to cap the contractual rate associated with a floating rate liability. For example, when rates rise an institution which has purchased a cap to hedge a liability will receive payments, assuming rates rise above the strike rate, which will offset the increase in interest expense on the hedged liability. Interest rate floors allow the purchaser to protect the rate of return on a floating rate asset. Other strategies combine caps and floors. One such strategy involves purchasing a cap and selling a floor, which is referred to as a collar. A collar allows an institution to protect against rising rates while reducing the net cost of the cap by the floor premium received. An interest rate corridor is another strategy an institution may use to protect against rising rates while reducing its net premium cost. This is effectuated by purchasing a cap at a lower strike rate and selling a cap at a higher strike rate.

Banks can also speculate on interest rates by purchasing or selling caps and floors.

Speculation in most cases is not an acceptable strategy although there are some cases -- where the bank has adequate capital, internal controls and management expertise -- in which exceptions may be made. Exceptions of this nature are consistent with a sophisticated trading function.

Some financial institutions act as intermediaries in cap and floor agreements. A cap or floor may be sold and an offsetting cap or floor may be purchased in order to earn fee income.

Risks of Interest Rate Caps and Floors

Interest rate caps and floors are over-the-counter instruments and therefore are subject to counterparty credit exposure. When a counterparty to a cap or floor which was part of a hedging strategy defaults, the institution may become subject to interest rate risk and possible earnings losses. To reduce these risks, some institutions only deal with highly rated institutions or require that some type of collateral is pledged when the financial condition of the counterparty is substandard. This pledged collateral serves to defray any losses in the event of counterparty default.

Although these instruments may be used effectively to reduce interest rate risk, they may also expose an institution to increased interest rate risk. For example, an institution using an interest rate corridor strategy to protect its interest expense from rising rates may wind up with increased interest expense if interest rates rise above the strike rate on the sold cap.

Because these instruments are traded in an over-the-counter market, liquidity risk may be inherent in these instruments. Also, price information may not be as readily available to participants as it would be in a centralized market.

Examination Procedures

Prior to engaging in caps and floors, a bank should consult its State banking authority or obtain an opinion of bank counsel concerning the legality of these activities under State law.

Also prior to participating in caps and floors, a bank should have in place a written policy approved by the board of directors which details the permissible strategies and contracts the bank can engage in and own, and their relationship to other banking activities. The policy should include gross and net limits pertaining to each permissible contract. Limits should be set by considering the size of the bank and its capital structure. Levels of activity should also be reasonably related to the bank's business needs and capacity to fulfill its obligations under these agreements. Trading authority should be delineated in the policy as well. This authority should be delegated only to individuals which demonstrate the specific knowledge and expertise necessary to properly transact those permissible activities and strategies in a safe and sound manner. Prior to entering into and over the term of any cap or floor agreement, a determination should be made that the particular activity will be consistent with the overall asset/liability position of the institution. For most banks, cap and floor agreements should be utilized to reduce interest rate exposure, however, exceptions may be made for more sophisticated institutions which have sufficient experience, capacity and controls to properly handle the use of these agreements for other purposes namely, trading and acting as an intermediary. Adequate internal controls should exist to insure adherence to the policy and to prevent unauthorized trading and other abuses.

A system of periodic reporting (at least monthly) to the board of directors, a duly authorized committee thereof, or the bank's internal auditor should be established as part of the bank's monitoring mechanism. These reports should include all cap and floor agreements and how these reported positions will affect the bank's interest rate exposure and earnings performance.

A bank should also monitor and report on the credit risk associated with its cap and floor agreements. The board, or a duly elected committee thereof, should approve a list of acceptable counterparties and this list should be updated pursuant to changes in credit. Credit exposures should be combined across all on and off-balance sheet categories to determine each counterparty's overall credit exposure level. Depending on the level of credit exposure and the counterparty's financial condition, the bank should contemplate the need for a valuation reserve or possible deletion from the approved counterparty list.

Speculation with caps and floors is generally not permitted. However, if the institution has adequate capital, sufficient internal controls and management expertise, an exception may be made.

Recordkeeping systems must be sufficiently detailed to permit internal auditors and examiners to determine whether operating personnel have acted in accordance with authorized objectives. Bank personnel are expected to be able to describe and document in detail how the positions taken contribute to the attainment of the bank's stated objectives. A bank should maintain general ledger memorandums or commitment registers to adequately identify

and control all commitments and obligations. Such registers and supporting journals should at a minimum include: type (cap or floor), nature of position (purchased/sold), notional amount, underlying index rate and agreed upon source, strike rate, settlement frequency and reset dates. The bank should report cap and floor positions in the Report of Condition, Schedule RC-L.

Documentation of the positions in the form of confirmations or statements should be retained. The bank should also retain any analysis supporting the use of caps and floors with respect to a particular hedged position or the overall asset/liability position of the bank. Legal counsel should review master agreements between counterparties.

Examination Treatment

When caps or floors are used for hedging purposes the effect of this activity should be reflected in the interest rate sensitivity analysis. Purchased caps essentially convert a floating rate liability to a fixed rate liability and should be shown as a reduction to rate sensitive liabilities. Purchased floors convert a floating rate asset to a fixed rate asset and should be shown as a reduction to rate sensitive assets. Caps and floors may be slotted on the interest rate exposure report in one of two ways. The notional amount of the cap or floor can be multiplied by the delta of the cap or floor and the delta weighted notional amount can be slotted as described above. Alternatively, the strike rate on the cap or floor can be compared to the underlying index. If the index rate is within 100 basis points of the strike rate (or in-

the-money), the notional value of the cap or floor is slotted as described above.

Any adverse effect on the interest rate risk of the institution caused by cap or floor positions should be noted in the comment section of the interest rate sensitivity analysis. Any inappropriate speculative positions or positions which do not adhere to the institution's policy should be mentioned on the examiner comments and conclusions page. Consideration of the potential credit risk arising from cap and floor positions should be considered when evaluating the overall adequacy of the bank's capital accounts.

Foreign Exchange

FOREIGN EXCHANGE**READINGS**

	Page(s)
"Foreign Exchange", DOS Manual of Examination Policies	1-20

FDIC MANUAL OF EXAMINATION POLICIES**Section 7.1 - 12****IV. FOREIGN EXCHANGE**

Foreign exchange trading is a complex and highly specialized field and is usually performed by specialists. It is an integral part of international trade and can be an important activity of a bank's international department. This section is intended to present only the basic fundamentals of foreign exchange in order to provide the examiner a minimum basis for evaluating a bank's activities. Examiners are encouraged to study the subject in more detail. A number of books about foreign exchange are available and several major U.S. banks have published books or pamphlets on the subject. The examiner should also be familiar with the FDIC's policy concerning minimum standards for various aspects of foreign exchange operations. This policy is reviewed later in this section.

Foreign Exchange Market

The simplest definition of foreign exchange is that it is the exchange of money of one country for money of another. Foreign exchange transactions arise out of

international trade or the movement of capital between countries. Market activity takes place between banks (interbank trading) and between banks and their customers (corporate trading), who are the ultimate users and suppliers of foreign currencies. The volume of foreign exchange activity varies widely among banks. The degree of involvement is largely dictated by customer demand and the bank's own needs. Multinational banks are the most active in terms of both trading volume and the number of currencies traded. Some banks may trade actively in only a few currencies while other banks will have only limited overall activity. In any case, the examiner should possess some basic knowledge of the foreign exchange market and the risks involved.

Exchange Rates

When currencies of different countries are exchanged, it is done at an exchange rate which is simply the price of one currency in terms of another. Many political and economic factors influence exchange rates. A government may attempt to fix the rate of exchange for its currency or allow it to fluctuate freely or within established limits. Trade and investment flows affect the supply and demand for currencies which in turn influence exchange rates. Banks also quote different rates based upon the amount of time required to exchange currencies. For example, the British Pound Sterling is quoted at a certain rate for immediate (spot) transactions and another rate is quoted on the same day for future (forward) transactions. In general, rates vary depending on

the agreed payment date (value date) of the transaction, e.g., overnight, one week, one month, etc. Also, banks quote a different exchange rate for a given transaction when they are buyers or sellers of currency. This applies to both spot and forward transactions and the two rates are usually referred to as bid (buy) and offer (sell). The spread between the bid and offered rates represents the bank's profit margin.

Exchange rates can be quoted either as direct rates or cross rates. Direct rates are simply the value of a currency in terms of another, i.e., the value of the German Mark in U.S. Dollar terms. A cross rate is defined as the price of one currency in terms of another currency in the market of a third country. For example, a German Mark rate in Sterling terms calculated from the respective U.S. Dollar rates.

Spot and Forward Exchange

Customers buying or selling foreign exchange may ask their bank to provide that service for immediate delivery (spot transaction) or they might contract to buy or sell a specified amount of foreign currency for delivery at a future date (forward transaction). The date on which payment is effected is referred to as the value date. The value date for a spot transaction is generally two working days after the date the transaction originated. For example, a spot contract originating on Monday would have a value date of Wednesday.

The market for foreign exchange for future delivery is called the future or forward market as opposed to trading for two-day delivery which takes place in the spot market. A forward contract for foreign exchange is a transaction in which one currency is bought or sold against another for delivery at some future date. It differs from the spot market in that settlement occurs in the future, usually in increments of thirty days out to one year for most currencies. However, the liquidity in the market decreases beyond three months. As previously noted, the exchange rate for a specific currency will differ between spot and future transactions because of the time difference in settlement dates.

An exchange rate is fixed or agreed upon when the forward contract is entered into but no money is exchanged until the agreed future date (value date or settlement date) arrives. This type of contract enables a company or an individual who has a future commitment in a foreign currency to eliminate the risk of an adverse move in the rate of exchange prior to the maturity of the commitment. Forward exchange rates are usually quoted in terms of their premium or discount over the spot rate. As described above, there is a specific exchange rate for each forward contract and that rate will usually differ from the spot exchange rate. If the forward exchange rate for a currency is higher than the current spot rate for the same currency, the currency is said to be trading at a premium for the forward maturity. If the forward rate is below

the spot rate, the currency is said to be trading at a discount. The amount of the premium or the discount is generally determined by the interest rate differential for similar money market instruments that exists between the two countries.

Another type of forward contract is the forward option contract. A forward exchange transaction is often based on expectations of payments involved in future trade or financial operations, but it may be difficult to know the exact date. If the customer knows the approximate date when the currency will be received or needed he can enter into a foreign option contract. The contract may give the purchaser the option of completing a transaction in the first ten days, the middle ten days, or the last ten days of the month. The bank agrees to deliver payment or receive delivery of payment of exchange on any day within the ten-day option period. The customer is charged a less favorable rate for the advantage of leeway in timing the execution of the contract than he would be for a regular forward contract.

Swaps

Another common type of foreign exchange transaction is known as a financial swap, which is a simultaneous purchase and sale of a certain amount of foreign currency for two different value dates. For example, an exchange trader buys a currency for spot

value and at the same time sells it back for a value date in the future. The swap permits a temporary exchange of currencies and is often used to acquire a foreign currency which is then used to make a short-term investment. The maturity of the investment will coincide with the forward value date and the currency will be returned at that time. The exchange rate for the forward delivery is fixed at the outset thus the trader avoids the risk in fluctuations in the exchange rate over the life of the investment.

Foreign Exchange Risk

Trading in foreign exchange or holding assets and liabilities denominated in foreign currency entail certain risks. These risks fall into five categories; exchange rate risk, interest rate risk, credit risk, country risk, and operational risk.

Exchange Rate Risk occurs when a bank takes an open position in a currency. When a bank holds, buys, or agrees to buy more foreign currency than it sells, or agrees to sell more than it buys, an exposure is created which is known as an open position. Open positions are either long or short. When a bank buys more of a currency, either spot or forward, than it sells, it has a long position. Conversely, if more of a currency is sold than bought, a short position is created. Until an open position is covered by the purchase or sale of an equivalent amount of the same currency, the

bank risks an adverse move in exchange rates. A long position in a depreciating currency results in exchange loss relative to book value. As the foreign currency depreciates, it is convertible into fewer units of local currency. Similarly, a short position in a currency that is appreciating results in an exchange loss relative to book value because, as the currency increases in value it costs more units of local currency to close or square the position. To control exchange risk, bank management should establish limits for net open positions in each currency. A detailed discussion of limits appears in the section entitled **Trading Limits**.

Interest Rate Risk is also known as maturity-gap risk. It arises whenever there are mismatches or gaps in a bank's total outstanding spot and forward contracts. Gaps result in days or longer periods of uneven cash inflows or outflows. For example, a maturity spread of a bank's assets, liabilities, and future contracts may reflect a prolonged period over which large amounts of a particular currency will be received in advance of any scheduled offsetting payments. The exposure to the bank is that of adverse shifts in interest rates earned on funds provided by cash inflows or on interest rates paid on funds required to meet cash outflows. In this situation the bank must

decide whether; (1) to hold the currency in its "Nostro" accounts;¹ (2) to invest it short term; (3) to sell it for delivery at the time the gap begins and repurchase it for delivery at the time the gap closes; or (4) to use any combination of the above.

Banks control interest rate risk by establishing limits on the volume of mismatches in its total foreign exchange position. The problems of managing gaps is complex. The decision whether to close a gap when it is created, or leave it until a later date, is based upon analysis of the money market interest rates, and spot and forward exchange rates.

Credit Risk - When entering into a foreign exchange transaction, the bank must be confident that its customer (individual, company, or bank) has the financial means to meet its obligations at maturity. Two types of credit risk exist in foreign exchange trading; one is called the 10-20% risk or the cost cover, the second is delivery or settlement risk. The 10-20% risk is that a customer might not be able to deliver the currency as promised in order to execute the contract. The bank's foreign exchange position is suddenly unbalanced and the bank is exposed to any movements in exchange rates. The bank must either dispose of the currency it had acquired for

¹ Nostro accounts or due from accounts are accounts established in correspondent banks located in the countries where the bank conducts business. The bank will maintain an inventory of currency, i.e., British Pound Sterling in London, in order to complete transactions requiring the receipt or payment of Pounds. See "Other International Department Activities" for more details.

delivery under the contract, or it must purchase the currency it had expected to receive and probably had contracted to sell to a third party. In either case, the bank must enter into a new transaction and may suffer a loss if there has been an adverse change in exchange rates. Generally, exchange rates will fluctuate no more than 10-20% and usually much less, hence the term 10-20% risk.

Delivery or settlement risk refers to the risk of a customer taking delivery of funds from the bank but not delivering the counterpart funds. In this situation the bank is exposed for 100% of the transaction.

To limit both types of risk, a careful evaluation of the customer's creditworthiness is essential. The credit review should be used to establish an overall limit for exchange contracts for each customer. For example, after careful analysis of the customer's financial soundness, the bank may determine an overall limit for foreign exchange contracts for the customer in the equivalent amount of \$2 million.

With this total limit the bank might establish a settlement limit of no more than the equivalent of \$200,000 in any one day. In this manner it has limited its 10-20% risk to 10% of any outstanding contracts to a maximum of \$2 million. At the same time it has limited its delivery or settlement risk by imposing a \$200,000 settlement limit. If the customer fails to deliver counterpart funds, the bank can cancel remaining contracts and limit its risk of loss.

Country Risk - Political changes or adverse economic trends within a country are likely to be accompanied by changes in policies which could affect such factors as interest rates, balance of payments, foreign exchange reserves, and capital flows. These policies, whether based on economic necessity or changed attitudes, might affect the availability of exchange to the bank's customers or to the bank itself, and could even affect the convertibility of that country's currency in foreign exchange markets. In any case, the exchange rate for the currency will be subject to additional supply and demand influences, and sources of cover in the currency may vanish. Country risk is covered in more detail in preceding paragraphs.

Operational Risks

Banks that engage in foreign exchange transactions must have systems and personnel capable of controlling and reporting transactions. The absence of an effective operations department may result in unanticipated losses to the bank. Generally, the bank will have an Operations Manager whose responsibility is to ensure that systems are in place to record transactions, perform daily mark-to-market, reconcile currency positions daily, and assess compliance with limits. The Operations Department should also ensure that all confirmations are received or sent to counterparties daily.

EXAMINATION GUIDANCE

An examination of a bank's foreign exchange activities seeks to appraise the impact of the foreign exchange activities on the financial condition of the bank. To obtain this objective the following procedures may be used:

- Determine the reasonableness of FX activities in regard to bank policies and strategies, expertise, operations, internal controls, management information systems, and internal audit coverage.
- Evaluate the overall FX risk position of the bank, its potential impact on future earnings, and management's ability to manage the risk.
- Determine the type of FX activities and risks in which the bank is engaged (spot, forward, swaps, options, futures.)
- Evaluate the quality of personnel, risk controls, and systems.

FDIC Policy

In June 1980, the three Federal Bank Regulatory Agencies implemented a joint policy statement to provide banks with uniform guidance regarding internal control of foreign exchange activities. The policy statement covers minimum standards for written bank policies, basic internal control, and audit documentation. Examiners working in the area of foreign exchange should be familiar with the policy guidelines and should use them as a framework for examination activities.

The FDIC recognizes that many banks already have adequate controls in place for foreign exchange trading. The guidelines are intended to reinforce these controls and can be used by examiners, auditors, and bank management as a basis for evaluating the bank's policies and controls. The guidelines are not all-encompassing and banks that actively deal in foreign exchange probably have controls that exceed FDIC standards. On the other hand, it is conceivable that banks with limited foreign exchange activity may not need all the systems included in the guidelines. However, it is incumbent upon these banks to demonstrate that their systems provide adequate protection for the level of risk incurred.

Written Policies and Procedures

The bank's policies and procedures should, at a minimum, address the following:

- Scope of trading activity authorized and types of services offered;
- Trading and credit limits and limit exception approval and reporting process;
- Clear standards for trading with affiliated entities, members of the Board of Directors, and employees;
- Specific officer responsibility for and authority over functional trading desks (i.e., spot, forward, and futures;)
- Holdovers and after-hours transactions;
- Accounting methods; and
- Operational procedures.

Trading Limits

Trading limits should be evaluated in light of current strategies, liquidity/volatility of individual currencies, trader qualifications, and loss exposure related to capital. At a minimum that bank's policy should include limits with respect to:

- Net positions by currency; and aggregate;
- Maturity distribution of foreign currency assets, liabilities, and contracts;
- Individual customer and bank lines;
- Daily settlements with customers and banks;
- Total FX contracts outstanding;
- Overnight net FX positions by currency and aggregate; and
- Maximum loss by trader/desk/branch.

The process by which limits are allocated to branches and the process through which branches may borrow limits from other branches should be reviewed. In addition, policies governing the extension of limits and the approval and reporting procedures should also be evaluated.

Credit Limits

The allocation of credit limits and the monitoring of such limits should be reviewed.

The bank should establish the following:

- FX counterparty and settlement limits, approved by a credit review process, that are established independently of other credit lines within the bank;
- Daily reports generated by FX operations which indicate those customers or banks that have exceeded their limits (sometimes called an over-limit or exceptions report;)
- Daily report of limit excesses including written approvals for excesses prepared by an officer not in the trading area;

- Systems of allocating more risk to counterparties with long maturity positions;
- On-line systems available to traders that detail credit line status.

Examiners should review the list of approved credit limits and note any unusual concentrations or lines to banks with known market problems. A current report of all outstanding FX contracts should be compared with approval limits to verify that there are no other excesses other than those reported on the exceptions report.

Management Information Systems (MIS) and Operational Support

The bank's management information systems (MIS) and Operations Department should be capable of reporting and supporting the level of current and expected trading volumes on a daily basis. Specifically, with respect to the MIS, examiners should review the reports generated and evaluate the systems' ability to monitor all FX positions, compliance with limits (both trading and credit), frequency of distribution (at least daily), and periodic testing for accuracy.

The personnel in the Operations Department should report to someone other than a member of the trading staff. The Operations Department should be adequately staffed to support the volume of transactions and duties of the department should be segregated, i.e., confirmations, trader positions, counterparty positions. There should be sufficient documentation of all transactions to ensure a proper audit trail.

Documentation may be in the form of taped records of phone calls and trade tickets and confirmations received via telex, facsimile, recorded telephone calls, or mail.

The Operations Department should also review all trader and counterparty position reports and identify and report all excesses to the Operations Manager daily.

Documentation for the approval of excesses must be obtained and reviewed each day.

The revaluation or mark-to-market of appropriate positions are calculated by Operations personnel. Examiners should closely review these revaluations for accuracy and adherence to bank policy. Prices used by Operations personnel should be obtained and verified from sources other than the bank's traders. Revaluations are recorded at least monthly.

Written confirmations should be sent no later than one business day after the transaction date. Incoming confirmations should be reviewed by a designated person in Operations. All confirmation discrepancies must be recorded in a log and promptly

corrected. Most banks confirm transactions verbally the day of the transaction, therefore, a large number of discrepancies should be carefully scrutinized by examiners.

Finally, the status of nostro and vostro accounts should be reviewed to identify any outstanding items which may indicate settlement errors in those accounts.

Internal Accounting Controls - The bank's accounting systems and controls should be sufficient to provide reports on trading activities that are current and accurate and minimize the possibility of concealment of unauthorized transactions and misappropriation of funds. Documentation describing the accounting and other controls should be maintained by each trading office.

FDIC guidelines enumerate a number of specific recommendations for adequate internal controls of foreign exchange trading. In broad terms, the recommendations address the description of accounting systems and procedures, confirmation of contracts, reconciliation of trading positions, and reporting of exceptions. As a whole, the accounting guidelines are considered minimum standards for the control of exchange activities. It is possible that the bank can control certain risks in a different manner. In such case, the bank must be able to justify its method of control.

Audit Documentation - The audit function is an important tool for management's use in determining that controls are functioning as intended and that employees are adhering to policy directives. The review of audit reports is a necessary part of an examination particularly in specialized areas such as foreign exchange trading. The failure to extend adequate audit programs to the bank's foreign exchange activity might be considered an important weakness in the bank's system of controls. In such case, the examiner should address the matter in the examination report and seek corrective action from senior management.

The FDIC's guidelines do not describe how the audit program is to be performed. The development of an adequate audit program is a responsibility of senior management. The guidelines contain recommended minimum standards for documenting audit procedures and findings in a manner that facilitates an appraisal of the adequacy of the audit program.

The bank should maintain audit reports, workpapers, and related files at its head office or another centralized location and make them available to examiners. The auditor's files should indicate the extent to which the auditor tested the control and accounting entries, as well as compliance with bank policy. The auditor should also make a determination as to whether the bank's controls are adequate for the risks involved. The files should contain any recommendations by the auditor for additional controls.

or the deletion of existing controls, and the underlying rationale. Any material deficiencies disclosed by the audit should be promptly reported in writing to the board of directors or a board committee.

**Selected
Training Material**

Division of Bank Supervision

MEMORANDUM SYSTEM

Classification Number	6920 (I-S)
Date	June 23, 1987
Issuing Office	DBS/P&PD
Comptroller	S.G. Pfeifer, 6894
<input type="checkbox"/> Notice	<input checked="" type="checkbox"/> Memorandum

TO: Regional Directors

FROM: *for* Paul G. Fritts *[Signature]*
DirectorSUBJECT: Interest Rate Swaps

1. Purpose. To provide examiners with additional guidance on the accounting and supervisory implications of interest rate swap activity.
2. Background. Interest rate swaps continue to be used by financial institutions as a mechanism for reducing interest rate risks associated with asset/liability rate sensitivity imbalances. In some situations, these transactions have also been used for speculative purposes. In addition, larger banks and investment banking firms may enter into swap arrangements for the express purpose of generating fee income by developing, trading and selling interest rate swap products for their customers and clients. In any event, the volume of interest rate swap transactions continues to rise at a rapid pace. Based on Call Report information, the notional amount of outstanding swaps involving U.S. commercial banks increased from approximately \$100 billion at mid-year 1985 to over \$300 billion by year-end 1986.

If inappropriately utilized, interest rate swaps can subject a bank to additional interest rate risk. Furthermore, since there is a possibility that a counterparty could default on its interest payment obligations under the swap arrangement, a certain degree of credit risk also exists. In order to address this potential credit risk in a more formalized manner, the Board of Governors of the Federal Reserve System has issued for public comment a proposal that would impose a risk-based capital requirement for the counterparty credit risks arising from interest rate swaps (and from foreign exchange contracts).

The FDIC plans to carefully review any comments received under this Federal Reserve proposal. In the interim, examiners should carefully consider the potential credit risks arising from swap transactions, as well as the impact of such swap activity on the bank's overall level of interest rate risk. Consideration should also be given to the accounting methods used by banks to reflect interest rate swap transactions and to the policies and procedures established by bank management to monitor and control the risks associated with swap activities. The attached discussion paper has been provided to further aid examiners in their review of the supervisory and accounting implications of interest rate swaps. In addition, a discussion of interest rate swaps will also be incorporated in a future revision to Section H of the Manual of Examination Policies.

Transmittal No. 87-111

5

- 2 -

3. Action Required. This memorandum and its attachment should be provided to all examiners. In those banks that engage in interest rate swap transactions, examiners should consider the impact of such transactions on the bank's overall interest rate risk, as well as the potential credit risks that are associated with such activities. The accounting methods used to reflect swap activity should also be reviewed. If material, the impact of such transactions may require special consideration when preparing the Examiner's Comments and Conclusions page and the related schedules in the Report of Examination. Furthermore, the use of improper accounting methods to report swap transactions may also necessitate the filing of amended Call Reports. This memorandum replaces and rescinds the DBS memorandum dated December 11, 1984, Transmittal No. 236.

Attachment

ACCOUNTING AND SUPERVISORY CONSIDERATIONS
RELATING TO INTEREST RATE SWAP TRANSACTIONS

An interest rate swap is an arrangement whereby two parties agree to exchange the interest payment streams on a specified principal (or "notional") amount of assets or liabilities over a specified period of time. The notional amount can be established by reference to specific assets or liabilities that are to be hedged or the amount can be separately determined by the swap participants. The notional amount does not represent a liability of a swap participant to a counterparty but rather is used to calculate the amount of the interest payments that the swap participants have committed to exchange. Settlement between the parties is usually effected on a quarterly, semiannual, or annual basis with the party owing a net amount of interest under the swap arrangement making a net payment to the counterparty. The terms for interest rate swap agreements generally range from three to ten years.

Purpose of Interest Rate Swaps

The purpose of the swap arrangement can vary but two of the primary reasons are to allow the swap participants to obtain (1) a more preferable type of interest rate (e.g., fixed vs. floating) when raising funds or (2) a more stable net interest margin on assets and liabilities with different maturities and interest rate structures. Larger banks and investment banking firms also enter into swap arrangements for the express purpose of generating additional fee income by developing, trading, and selling interest rate swap products for their customers and clients. In many cases, these swap transactions allow the banks' borrowing customers to obtain interest rate terms that are more favorable than would otherwise be available. Swap arrangements are used not only by banks and other financial institutions but also by nonfinancial corporations and government-sponsored agencies as well.

Types of Swaps

The most common form of swap is the exchange by the participants of variable and fixed rate interest payments. For example, a party with floating rate obligations might agree to swap its interest payment stream for that of another institution with fixed rate obligations. Example 1 in Appendix A illustrates the mechanics of such a swap arrangement. However, many variations of the basic interest rate swap are possible and swap agreements could also specify that interest payments are to be denominated in more than one currency, based on more than one floating rate, or subject to a maximum interest rate ceiling or a minimum floor. Although the notional amount of most swaps remains unchanged over the term of the swap agreement, it is also possible that the notional amount of the swap could increase or decrease over time.

Intermediaries vs. End-Users

A bank can be involved in an interest rate swap either as a direct end-user or as an intermediary. Larger banks and investment banking firms frequently serve as intermediaries by arranging swaps between other parties and handling the interest payment settlements. In many instances, these intermediaries also act as a principal and thereby effectively guarantee the performance by the counterparties.

Risk Assumed by Intermediary. Intermediaries function as a counterparty to a swap arrangement and generally provide an informal secondary market for interest rate swaps. These intermediaries assume interest rate risk in conjunction with swap transactions and normally will attempt to minimize this risk by entering into offsetting swap transactions with other parties. In addition to interest rate risk, the possibility that a counterparty will fail to perform exposes the intermediary to a certain degree of credit risk.

Intermediaries originally functioned simply as brokers in arranging swap contracts with no financial liability attached to their role. More recently, they have become principals with much greater responsibilities and now effectively guarantee the performance of the participants to the swap agreement by initiating separate contracts with each counterparty. Example 2 in Appendix A provides an illustration of such a swap arrangement. Consequently, if the counterparty which has a net payment obligation defaults, the intermediary remains obligated on the offsetting swap contract and the intermediary is therefore effectively responsible for meeting the obligations of the defaulting party under the swap arrangement. In effect, what the intermediary might view as a contingent liability is actually a direct obligation in the event of a counterparty default. In essence, the amount of the obligation would be measured by (1) the cost to the intermediary in assuming the unfavorable side of the swap arrangement or (2) the replacement cost incurred by the intermediary in obtaining an offsetting swap contract. This potential liability might be reduced if the intermediary requires the pledge of collateral to protect its position or if it takes other action to minimize the level of potential credit risk.

Risk Assumed by End-Users. Even for end-users, interest rate swaps entail credit risk and may increase interest rate risk if not appropriately used for hedging purposes. The credit risk on a swap arrangement would consist of the possibility of default on the part of a counterparty in meeting any payments required under the swap agreement. This counterparty could be a financial institution acting as an intermediary bank or a nonfinancial corporation or other entity that is involved as a direct end-user. Consequently, the potential credit risk associated with swap transactions can vary greatly from case to case.

Accounting

Uniform accounting principles for interest rate swaps have not been established by the Financial Accounting Standards Board or by the accounting profession in general. Furthermore, the AICPA banking industry audit guide, Audits of Banks, does not address the accounting for interest rate swaps. Although certain accounting methods have evolved as experience has been gained by swap participants, there is some diversity in the handling of certain swap transactions. The following discussion analyzes some of the important aspects of accounting for interest rate swap arrangements.

Accrued Settlement Amounts. The periodic net settlement amount for each swap contract — that is, the difference between the periodic interest payment stream payable and receivable under the swap arrangement — should be accrued on a regular basis. Arguably, the net accrued receivable or payable under the swap might not be considered "interest" from a purely technical viewpoint since the swap arrangement does not represent the lending or borrowing of actual funds.

However, if the interest rate swap is used for hedging purposes, the net payment stream receivable or payable under the swap does synthetically modify the terms of an interest-bearing asset or an interest-bearing liability, or of a group of such assets or liabilities. Consequently, for Call Report purposes, the net accrued settlement amount under such a swap is generally reflected as an adjustment to the interest income of the hedged asset(s) or to the interest expense of the hedged liability(ies) with an offsetting entry to interest receivable or to interest payable, as appropriate. On the Report of Condition, any such receivables are reported as "other assets" and any payables are reflected as "other liabilities."

If the swap arrangement is undertaken in an intermediary capacity or is purely speculative in nature, with simply an exchange of cash flows unrelated to an asset or liability position, the net settlement amount that is accrued for each swap would still be shown on the balance sheet as an other asset or other liability. However, for income statement purposes, the accrued settlement amounts should be reflected in either "noninterest income" or "noninterest expense," as appropriate.

Market Valuation. When a bank has undertaken a swap arrangement for speculative purposes or as an intermediary, its swap positions should be marked to market on a regular basis. An informal secondary market has developed for interest rate swaps and a swap dealer, such as a large bank or an investment banking firm, may be a source for current market value quotations for pricing purposes. If not readily available, the market value can be estimated based on the present value of the estimated net settlement amounts over the remaining life of the swap contract. The unrealized gain or loss from changes in market value on a swap that is not used for hedging purposes should be taken currently into income rather than deferred since there is no underlying asset or liability position related to the swap arrangement. For swaps that are not used as hedges, any unrealized net gains or losses (i.e., market appreciation or depreciation) applicable to the current period should be reported as "noninterest income" or "noninterest expense," as appropriate. In addition, for those swaps where the cumulative mark-to-market adjustments constitute net receivables from the counterparties, the bank should reflect the receivables as "other assets." For those swaps where the cumulative market value adjustments result in net payables to counterparties, the bank should reflect the payables as "other liabilities." For Report of Condition purposes, swap adjustments representing receivables should not be netted against swap adjustments representing payables.

Termination of a Swap Position. The accounting for interest rate swap terminations also warrants careful consideration. In essence, whether gains or losses on the termination of interest rate swaps should be deferred depends upon whether a liability or an asset position had been hedged via the swap contract. If the interest rate swap was entered into for hedging purposes, any gain or loss on the termination of the swap contract should be deferred (unless the underlying asset or liability position that was being hedged is

also disposed of at the time the swap position is terminated) and the deferred amount should be reflected as an adjustment to the carrying amount of the asset(s) or liability(ies) that had been hedged. Deferral of gains and losses on swap terminations is appropriate in such circumstances because the net position of the swap participant, from an economic viewpoint, remains unchanged. That is, the net gain (loss) on the termination of the swap would tend to offset the unrealized market value loss (gain) on the assets or liabilities that were being hedged.

The amortization period for deferred gains and losses arising from hedged swap terminations normally would be over the remaining term to maturity of the original swap arrangement. However, if the particular assets or liabilities that were being hedged have an expected remaining life that is shorter than that of the swap contract, the gain or loss on the swap termination should be amortized over the shorter remaining life of the hedged item. The amortization would be reflected as an adjustment to "interest income" or "interest expense," depending on whether the swap had been used to hedge an asset or a liability position. If there had been no identifiable underlying asset or liability position related to the swap agreement (i.e., the swap represents a speculative position or a separate trading activity), the gain or loss on a swap termination should be taken currently into income and recorded as either "noninterest income" or "noninterest expense." A gain or loss on the termination of a swap should be adjusted for the remaining unamortized balance of any prepaid or deferred fees related to the inception of the swap agreement.

Fees. The accounting for the payment and receipt of fees in connection with interest rate swaps has not been standardized. Some banks reflect the receipt or payment of up-front fees as a current income or expense item while others use a deferred approach. In addition, some institutions recognize part of the fee received or paid as an income or expense item immediately and defer the balance. For swaps that are used to hedge an underlying asset or liability position, it is usually appropriate to defer and amortize over the term of the swap agreement any up-front direct costs incurred by the bank. Furthermore, in view of the potential credit risk undertaken in conjunction with most interest rate swap transactions, any up-front fees received should normally be deferred and amortized over the term of the swap agreement.

Instead of receiving an up-front fee, a yield adjustment payment could be made by a counterparty on an ongoing basis and reflected in the net settlement amounts that are periodically exchanged by the swap participants. The party locking in a fixed rate on the swap, for example, might be liable for an additional amount, over and above the fixed rate that the intermediary passes through to the other counterparty. An intermediary usually sets an interest rate differential at the inception of an agreement as compensation for incurring the credit risk and handling the settlement payments associated with the swap arrangement. Therefore, the payment received by the intermediary at each settlement period would exceed the amount which it pays to the counterparty with the favorable swap position. Example 2 in Appendix A provides a basic illustration of such a transaction. In essence, the intermediary requires the fixed rate obligor to pay a rate in excess of what is owed to the fixed rate recipient, thereby retaining part of the payment to compensate for services rendered and the credit risk undertaken. Many interest rate swap transactions handled by intermediaries involve the receipt of a periodic yield adjustment payment, or basis spread, over the term of the swap agreements rather than the receipt of any up-front fee.

Use of Swaps for Speculative Purposes

In general, speculation in interest rate movements via the use of interest rate swaps should not be conducted by banks. However, trading or intermediary activities involving swap contracts may be appropriate for those institutions with expertise in trading and actively managing interest rate swap positions, provided they institute and enforce appropriate limits and internal controls. Speculation through swap transactions might be difficult to determine in certain cases. However, if the rate sensitivity position of a bank is being managed with only a minimal interest rate mismatch, the bank's involvement in an interest rate swap would have to be questioned as to its underlying purpose.

A bank with more rate sensitive assets than liabilities could conceivably exchange a variable rate under a swap arrangement in return for receipt of a fixed rate in order to reduce the interest rate sensitivity imbalance. However, if the bank agreed to pay a fixed rate in exchange for a variable rate, speculation on an upward movement in rates would appear to be the reason for the bank's interest rate swap transaction and bank management's reasons for entering into the swap transaction would need to be further evaluated.

Examination Procedures

When reviewing a bank's interest rate swap activities, the following aspects warrant careful consideration.

Bank Policies. If a bank intends to engage in swap transactions, bank management should develop written guidelines covering interest rate swaps that are set forth in a separate interest rate swap policy or as part of the bank's overall asset/liability management policy. Regardless of the form, the policy should be approved by the bank's board of directors. The guidelines should be explicit in covering the circumstances under which a swap can be employed. Speculation should be prohibited, although trading or intermediary activities involving swaps could be acceptable if the bank has the experience, capacity and controls to properly handle such swap activities. Limitations should be placed on the gross and net volume of swap positions that can be undertaken at any one time. Authority for initiating swap transactions should be designated and those with whom swap transactions can be undertaken should be specified. Periodic reports should be required that measure the overall risk exposure arising from interest rate swap activities.

Bank's Evaluation of Credit Risk and Interest Rate Risk. A careful evaluation of a bank's overall interest rate sensitivity position should be made prior to entering into any swap transaction to ensure that the swap will in fact act as an effective hedge of an interest rate exposure. In addition, the review of pertinent financial information should be required prior to the acceptance of any contemplated swap partner. Periodic reports to the board of directors or to an appropriate committee should be required on the swap positions taken by the bank and these reports should cover the overall effect of swap activity on the interest rate sensitivity and earnings performance of the bank, especially since interest rate movements subsequent to the initiation of the swaps may affect the bank's rate sensitivity position and earnings in a manner that was not originally anticipated. The underlying credit risk associated with interest rate swaps should not be ignored and the estimated credit exposure to the counterparty should be combined with direct borrowings by the counterparty for purposes of establishing and monitoring internal lending limits for individual customers.

In addition, when evaluating the credit risk of swap counterparties, consideration should be given as to whether a valuation reserve should be established to adequately provide for these risks. In any event, individual credit files should appropriately document the potential credit risks arising from swap transactions with the bank's various counterparties.

Bank Records. The bank's general ledger should separately reflect the accrued amount of interest receivable by the bank and interest payable to counterparties under swap arrangements. Receivables and payables arising from mark-to-market valuations should also be similarly reflected. Subsidiary records should be sufficiently detailed so that the accrued settlement amounts and mark-to-market valuations under individual swap contracts can be reconciled to the general ledger. In addition, adequate documentation should be available to support those swap transactions that are being utilized for hedging purposes. Adequate supporting information should also exist for any deferred fees or costs associated with swap contracts. A memorandum account should reflect the notional amount of all swap arrangements and such amounts should also be incorporated into the bank's overall analysis of its interest rate sensitivity position and appropriately reported in Schedule RC-L of the Report of Condition.

Examination Report Treatment. For examination report purposes, the notional amount of swaps used for hedging purposes should also be included in the interest rate sensitivity analysis. For example, if the effect of the swap is to reduce rate sensitive assets by exchanging a variable rate in return for a fixed rate, the notional amount can be viewed as a reduction in the level of rate sensitive assets. On the other hand, if a fixed rate was exchanged in return for a variable rate as a means for converting fixed rate assets into variable rate assets, the notional amount should be reflected as an addition to the level of rate sensitive assets. Alternatively, a decrease would occur for rate sensitive liabilities if the purpose of the swap was to convert the variable rate on existing liabilities into a fixed rate. Consideration of the potential credit risk arising from interest rate swap transactions should also be considered when evaluating the overall adequacy of the bank's capital accounts.

Speculative Transactions. For more sophisticated institutions, the undertaking of swap positions as an intermediary or for trading purposes may be appropriate provided that acceptable policies, controls, and limits are in place. However, in other situations where it is determined that the bank is simply swapping payment streams with no asset or liability hedge involved, the potential effect of such a speculative practice on income in future periods should be considered when preparing the examination report comments that address interest rate sensitivity. The use of interest rate swaps for other than hedging purposes may constitute an unsafe or unsound practice and should be discussed on the Examiner's Comments and Conclusions page if the bank does not have the expertise, capacity and ability to properly manage a portfolio of interest rate swaps.

Legal Documentation. The bank should have written swap contracts on file detailing the rights and responsibilities of the parties to the swap arrangements. The notional amount should be indicated along with the fixed rate, if applicable, and the method to be used in determining the variable rate(s). If settlement is to be made in different currencies, the manner of determining these settlement amounts should also be indicated and the

- 7 -

settlement periods should be specified along with the conditions of default. Swap contracts should also contain provisions addressing the voluntary termination of the contract and the procedure to be used in determining the amount of the settlement. Banks contemplating a swap arrangement should also have the proposed contracts reviewed by legal counsel. As a reference source for use in developing interest rate swap agreements, bank management may wish to refer to the master interest rate swap agreement that was released in early 1987 by the International Swap Dealers Association (ISDA), as well as to the Code of Standard Wording, Assumptions and Provisions for Swaps (1986 Edition), which was also published by ISDA.

Attachment

Appendix A — Interest Rate Swap Examples

APPENDIX A

Example 1

A savings and loan association with fixed rate real estate mortgages and variable rate money market deposit accounts wishes to convert its liabilities into a fixed rate payment stream. On the other hand, a commercial bank with variable rate commercial loans and a sizable amount of longer term, fixed rate certificates of deposit wishes to convert those liabilities into a variable rate payment stream. In order to accomplish their mutual objectives, these institutions enter into the following interest rate swap transaction:

Notional Amount = \$10 Million		
Prime — Variable Rate		
!Savings! !and Loan!	←—————→	!Commercial! ! Bank !
	7% — Fixed Rate	
	—————→	

If the prime rate stayed at 8% during the entire first year of the swap, the commercial bank would have made a net payment of \$100,000 to the savings and loan association.

Prime on \$10 Million = \$800,000		
!Savings! !and Loan!	←—————→	!Commercial! ! Bank !
	Fixed Rate 7% on \$10 Million = \$700,000	
	—————→	
Positive flow of \$100,000		Negative flow of \$100,000

If the prime rate was at 7% during the entire second year of the swap, there would be no net payment due or receivable during year 2.

Prime on \$10 Million = \$700,000		
!Savings! !and Loan!	←—————→	!Commercial! ! Bank !
	Fixed Rate 7% on \$10 Million = \$700,000	
	—————→	
Net flow is is zero		Net flow is zero

A-2

If the prime rate was at 5% during the entire third year of the swap arrangement, the savings and loan association would make a net payment of \$200,000 to the commercial bank for that year.

	Prime on \$10 Million = \$500,000	
Savings and Loan	←	Commercial Bank
	Fixed Rate 7% on \$10 Million = \$700,000	
	→	
Negative flow of \$200,000		Positive flow of \$200,000

Example 2

A manufacturing firm has issued fixed rate debt but believes that interest rates will decline over the next several years. Furthermore, due to the existence of a sizable amount of assets that are held in short-term investments, the company wishes to convert this fixed rate debt to a floating rate. The company's commercial banker was informed of this intent and the bank has located a savings and loan association that is willing to pay a fixed rate to the manufacturing firm in return for a floating rate. Since neither the manufacturer nor the savings and loan association wants to rely on the creditworthiness of the other party, the bank acts as intermediary and enters into a swap contract with each party, thereby assuming credit risk and the responsibility for handling the settlement payments in return for an annual basis spread equal to 10 basis points (or 0.1%) of the swap's notional amount. In the example below, this fee is effectively paid by the fixed rate obligor (the savings and loan association) since the savings and loan pays a fixed rate of 7.1% while the intermediary bank passes through a fixed rate of only 7.0% to the manufacturing firm. Assuming that the prime rate remains at 8% during the entire first year of the swap arrangement, the following example illustrates the payment flow during year 1.

Notional Amount — \$10 Million
Prime Rate During First Year — 8%

	Prime on \$10 Million = \$800,000		Prime on \$10 Million = \$800,000
Savings and Loan	←	Intermediary Bank	Manufacturing Firm
	Fixed Rate 7.10% on \$10 Million = \$710,000		Fixed Rate 7% on \$10 Million = \$700,000
	→		→
Positive Flow of \$90,000	Intermediary Retains Fee of \$10,000		Negative Flow of \$100,000

The above example does not reflect any up-front fee. However, such fees could also be charged by intermediaries to offset the administrative and origination costs associated with the initiation of the swap arrangement.

**LEGAL DOCUMENTATION
JUNE 23, 1987 RD MEMO**

- **Written Swap Contracts on File Detailing Rights and Responsibilities of the Parties to the Swap Arrangements**
- **Contract Should Indicate Notional Amount, Fixed Rate, Method for Determining Variable Rates, Payment Frequency**
- **International Swap Dealers Association (ISDA) Master Interest Rate Swap Agreement**

SPECULATIVE TRANSACTIONS

JUNE 23, 1987 RD MEMO

- Use of Interest Rate Swaps for Purposes Other Than Hedging May Constitute Unsafe or Unsound Practice
- Trading or Intermediating Swaps Appropriate Only If Institution Has Trading Expertise and Adequate Policies and Controls
- Speculative Swap Positions Should Be Marked to Market on a Regular Basis
- Unrealized Gain or Loss From Changes in Market Value on Speculative Swaps Should Be Taken Into Current Income

SWAP EVALUATION
JUNE 23, 1987 RD MEMO

BEFORE Entering Interest Rate Swap Transaction Institution
Should Evaluate:

- Interest Rate Risk - Will the Swap Effectively Hedge Interest Rate Exposure?
- Credit Risk - Is the Estimated Credit Exposure on the Swap Within Established Policy Limits?

AFTER Entering Swap Transaction Institution Must Evaluate
Interest Rate and Credit Exposure of Swap Position on Ongoing
Basis

BANK POLICIES
JUNE 23, 1987 RD MEMO

- Bank Management Should Develop Written Policy Covering Interest Rate Swaps
- Limits on Gross and Net Swap Volume
- Swap Trading Authority Should Be Designated
- Allowable Counterparties Should Be Specified
- Periodic Reporting to Measure Risk Exposure from Swap Activities

INTEREST RATE SWAPS - CREDIT RISK

- **Credit Risk**
Risk of Counterparty Default
- **Credit Exposure**
Limited to Replacement Cost of the Swap
- **Credit Enhancement**
Counterparties Post Collateral or Swaps
Marked to Market

GENERIC SWAP VALUATION

NOTIONAL AMOUNT <u>10000M</u> <u>X</u> Pay/ <u>R</u> eceive			DEFAULT CURVE DATED 7/ 6/92		
MATURITY	SETTLEMENT	EFFECTIVE DT.	SWAP CURVE		
			(CURRENCY US)		
			TERM	COUPON	SPOT
<u>7/13/97</u>	<u>7/13/92</u>	<u>7/13/92</u>	1 WK	<u>3.5625</u>	<u>3.56</u>
CALCULATE: <u>3</u> <u>FIXED</u> <u>FLOATING</u>			D 1 MO	<u>3.5000</u>	<u>3.50</u>
COUPON (1)	<u>4.33327%</u> Index	<u>3.68750%</u>	E R 2 MO	<u>3.5000</u>	<u>3.50</u>
+ Spread (2) <u>0.0</u> bp			P A 3 MO	<u>3.5000</u>	<u>3.50</u>
1st COUPON	<u>1/13/93</u>	<u>1/13/93</u>	O T 4 MO	<u>3.5625</u>	<u>3.56</u>
PAYMENT FREQ.	<u>8</u>	<u>8</u>	S E 5 MO	<u>3.6250</u>	<u>3.63</u>
DAY COUNT	<u>30/360</u>	<u>ACT/360</u>	I S 6 MO	<u>3.6875</u>	<u>3.69</u>
RESET FREQ.	<u>8</u>	<u>8</u>	T 9 MO	<u>3.8125</u>	<u>3.81</u>
(3) SWAP PREMIUM (PER 100) <u>-8.6102</u>			1 YR	<u>3.9375</u>	<u>3.94</u>
MARKET VALUE (NPV) 861019.49			2 YR	<u>4.7311</u>	<u>4.75</u>
DURATION -3.893 yrs			3 YR	<u>5.4139</u>	<u>5.47</u>
RISK -3.515			S R 4 YR	<u>5.9607</u>	<u>6.06</u>
ACCRUED INTEREST NEXT PMT <u>1/13/93</u>			W A MATURITY	<u>6.3333</u>	<u>6.47</u>
FIXED	0.00	-216663.50	A T 5 YR	<u>6.3342</u>	<u>6.47</u>
FLOATING	0.00	188472.22	P E 7 YR	<u>6.8540</u>	<u>7.07</u>
NET	0.00	-28191.28	S 10YR	<u>7.3063</u>	<u>7.62</u>

HIT <PAGE> FOR CASHFLOW ANALYSIS

USE SWYC <GO> TO UPDATE

Sloberg-all rights protected. London:71-256-9010 New York:212-318-2000 Princeton:609-497-3500 Singapore:226-3000
 Sydney:2-241-1133 Tokyo:3-3578-1625 Washington DC:202-395-1024 SATT-189-3-2 06-Jul-92 10:22:27

GENERIC SWAP VALUATION

NOTIONAL AMOUNT		<u>10000M</u>	Pay/Receive
MATURITY	SETTLEMENT	EFFECTIVE DT.	
<u>7/13/97</u>	<u>7/13/92</u>	<u>7/13/92</u>	
CALCULATE:	<u>3</u>	<u>FIXED</u>	<u>FLOATING</u>
COUPON	(1) <u>4.93327%</u>	Index	<u>3.6875%</u>
		+ Spread (2)	<u>0.0</u> bp
1st COUPON	<u>1/13/93</u>		<u>1/13/93</u>
PAYMENT FREQ.	<u>3</u>		<u>3</u>
DAY COUNT	<u>30/360</u>		<u>ACT/360</u>
RESET FREQ.	<u>---</u>		<u>3</u>
(3) SWAP PREMIUM (PER 100)			<u>-8.6102</u>
MARKET VALUE (NPV)			-861019.49
DURATION			3.893 yrs
RISK			3.515
ACCRUED INTEREST		NEXT PMT	<u>1/13/93</u>
FIXED	0.00		216663.50
FLOATING	0.00		-188472.22
NET	0.00		28191.28

HIT <PAGE> FOR CASHFLOW ANALYSIS

DEFAULT CURVE DATED 7/ 6/92		
SWAP CURVE		
(CURRENCY US)		
	TERM	COUPON SPOT
D	1 WK	<u>3.5625</u> 3.56
	1 MO	<u>3.5000</u> 3.50
E R	2 MO	<u>3.5000</u> 3.50
P A	3 MO	<u>3.5000</u> 3.50
O T	4 MO	<u>3.5625</u> 3.56
S E	5 MO	<u>3.6250</u> 3.63
I S	6 MO	<u>3.6875</u> 3.69
T	9 MO	<u>3.8125</u> 3.81
	1 YR	<u>3.9375</u> 3.94
	2 YR	<u>4.7311</u> 4.75
	3 YR	<u>5.4139</u> 5.47
S R	4 YR	<u>5.9607</u> 6.06
W A	MATURITY	<u>6.3333</u> 6.47
A T	5 YR	<u>6.3342</u> 6.47
P E	7 YR	<u>6.8540</u> 7.07
S	10YR	<u>7.3063</u> 7.62

USE SWYC <GO> TO UPDATE

GENERIC SWAP VALUATION

NOTIONAL AMOUNT 10000M P Pay/ R receive
 7/13/97 7/13/92 7/13/92
 MATURITY SETTLEMENT EFFECTIVE DT.
 CALCULATE: 3 FIXED FLOATING
 COUPON (1) 8.33327% Index 3.68750%
 + Spread (2) 0.0 bp
 1st COUPON 1/13/93
 PAYMENT FREQ. 8
 DAY COUNT 30/360
 RESET FREQ. 8

(3) SWAP PREMIUM (PER 100) -8.6102

MARKET VALUE (NPV) -861018.74
 DURATION -3.608 yrs
 RISK -3.960
 ACCRUED INTEREST NEXT PMT 1/13/93
 FIXED 0.00 -416663.50
 FLOATING 0.00 188472.22
 NET 0.00 -228191.28

DEFAULT CURVE DATED 7/6/92
 SWAP CURVE

(CURRENCY US)
 TERM COUPON SPOT
 D 1 WK 3.5625 3.56
 1 MO 3.5000 3.50
 E R 2 MO 3.5000 3.50
 P A 3 MO 3.5000 3.50
 O T 4 MO 3.5625 3.56
 S E 5 MO 3.6250 3.63
 I S 6 MO 3.6875 3.69
 T 9 MO 3.8125 3.81
 1 YR 3.9375 3.94
 2 YR 4.7311 4.75
 3 YR 5.4139 5.47
 S R 4 YR 5.9507 6.06
 W A MATURITY 6.3333 6.47
 A T 5 YR 6.3342 6.47
 P E 7 YR 6.8540 7.07
 S 10YR 7.3063 7.62

HIT <PAGE> FOR CASHFLOW ANALYSIS

USE SWYC <GO> TO UPDATE

Govt BCSW

Govt BCSW

GENERIC SWAP VALUATION

NOTIONAL AMOUNT <u>10000M</u> <u>B</u> Pay/ <u>R</u> receive			DEFAULT CURVE DATED <u>7/ 6/92</u>		
			<u>SWAP CURVE</u>		
			(CURRENCY <u>US</u>)		
MATURITY	SETTLEMENT	EFFECTIVE DT.	TERM	COUPON	SPOT
<u>7/13/97</u>	<u>7/13/92</u>	<u>7/13/92</u>	<u>1 WK</u>	<u>3.5625</u>	<u>3.56</u>
CALCULATE: <u>3</u>	<u>FIXED</u>	<u>FLOATING</u>	<u>D 1 MO</u>	<u>3.5000</u>	<u>3.50</u>
COUPON (1)	<u>8.33327%</u>	Index <u>3.68750%</u>	<u>ER 2 MO</u>	<u>3.5000</u>	<u>3.50</u>
		+ Spread (2) <u>0.0 bp</u>	<u>PA 3 MO</u>	<u>3.5000</u>	<u>3.50</u>
1st COUPON	<u>1/13/93</u>	<u>1/13/93</u>	<u>OT 4 MO</u>	<u>3.5625</u>	<u>3.56</u>
PAYMENT FREQ.	<u>B</u>	<u>B</u>	<u>SE 5 MO</u>	<u>3.6250</u>	<u>3.63</u>
DAY COUNT	<u>30/360</u>	<u>ACT/360</u>	<u>IS 6 MO</u>	<u>3.6875</u>	<u>3.69</u>
RESET FREQ.	<u>B</u>	<u>B</u>	<u>T 9 MO</u>	<u>3.8125</u>	<u>3.81</u>
(3) SWAP PREMIUM (PER 100)		<u>8.6102</u>	<u>1 YR</u>	<u>3.9375</u>	<u>3.94</u>
			<u>2 YR</u>	<u>4.7311</u>	<u>4.75</u>
MARKET VALUE (NPV)		861018.74	<u>3 YR</u>	<u>5.4139</u>	<u>5.47</u>
DURATION		3.608	<u>SR 4 YR</u>	<u>5.9607</u>	<u>6.06</u>
RISK		3.960	<u>WA MATURITY</u>	<u>6.3333</u>	<u>6.47</u>
ACCRUED INTEREST		NEXT PMT <u>1/13/93</u>	<u>AT 5 YR</u>	<u>6.3342</u>	<u>6.47</u>
FIXED	0.00	416663.50	<u>PE 7 YR</u>	<u>6.8540</u>	<u>7.07</u>
FLOATING	0.00	-188472.22	<u>S 10YR</u>	<u>7.3063</u>	<u>7.62</u>
NET	0.00	228191.28			

HIT <PAGE> FOR CASHFLOW ANALYSIS

USE SWYC <GO> TO UPDATE

Bloomberg-all rights protected. London:71-256-9010 New York:212-318-2000 Princeton:609-497-3500 Singapore:226-3000
 Sydney:2-241-1133 Tokyo:3-3578-1625 Washington DC:202-393-1024 SATY-189-3-2 06-Jul-92 10:16:58

Govt BCSW

Govt BCSW

GENERIC SWAP VALUATION

NOTIONAL AMOUNT <u>10000M</u> <u>B</u> Pay/ Receive		
MATURITY	SETTLEMENT	EFFECTIVE DT.
<u>7/13/97</u>	<u>7/13/92</u>	<u>7/13/92</u>
CALCULATE: <u>3</u> <u>FIXED</u> <u>FLOATING</u>		
COUPON	(1) <u>6.33327%</u> Index	<u>3.68750%</u>
	+ Spread (2)	<u>0.0</u> bp
1st COUPON	<u>1/13/93</u>	<u>1/13/93</u>
PAYMENT FREQ.	<u>B</u>	<u>B</u>
DAY COUNT	<u>30/360</u>	<u>ACT/360</u>
RESET FREQ.	<u>---</u>	<u>B</u>
(3) SWAP PREMIUM (PER 100)		<u>-0.0000</u>
MARKET VALUE (NPV)		-0.00
DURATION		3.738 yrs
RISK		3.738
ACCRUED INTEREST	NEXT PMT	<u>1/13/93</u>
FIXED	0.00	316663.54
FLOATING	0.00	-188472.22
NET	0.00	128191.32

DEFAULT CURVE DATED <u>7/6/92</u>		
<u>SWAP CURVE</u>		
(CURRENCY <u>US</u>)		
	TERM	COUPON SPOT
D	<u>1 WK</u>	<u>3.5625</u> <u>3.56</u>
E	<u>1 MO</u>	<u>3.5000</u> <u>3.50</u>
R	<u>2 MO</u>	<u>3.5000</u> <u>3.50</u>
P	<u>3 MO</u>	<u>3.5000</u> <u>3.50</u>
A	<u>4 MO</u>	<u>3.5625</u> <u>3.56</u>
O	<u>5 MO</u>	<u>3.6250</u> <u>3.63</u>
T	<u>6 MO</u>	<u>3.6875</u> <u>3.69</u>
S	<u>9 MO</u>	<u>3.8125</u> <u>3.81</u>
E	<u>1 YR</u>	<u>3.9375</u> <u>3.94</u>
R	<u>2 YR</u>	<u>4.7311</u> <u>4.75</u>
A	<u>3 YR</u>	<u>5.4139</u> <u>5.47</u>
S	<u>4 YR</u>	<u>5.9607</u> <u>6.06</u>
W	<u>5 YR</u>	<u>6.3333</u> <u>6.47</u>
A	<u>7 YR</u>	<u>6.8540</u> <u>7.07</u>
T	<u>10YR</u>	<u>7.3963</u> <u>7.62</u>

HIT <PAGE> FOR CASHFLOW ANALYSIS

USE SWYC <GO> TO UPDATE

Sloberg-all rights protected. London:71-256-9010 New York:212-318-2000 Princeton:609-497-3500 Singapore:226-3000
 Sydney:2-241-1133 Tokyo:3-3578-1625 Washington DC:202-393-1024 SATY-189-3-2 06-Jul-92 9:31:55

SWAP CREDIT RISK AND MARKET VALUE

Swap Credit Exposure

- Swap Replacement Cost
- One Counterparty Exposed at a Time

Payer	Rates Rise	Rates Fall
Fixed Payer	Positive Value	Negative Value
Floating Payer	Negative Value	Positive Value

SWAP MARKET VALUE

$$\text{SWAP MARKET VALUE} = \text{PRESENT VALUE FIXED SIDE} - \text{PRESENT VALUE FLOATING SIDE} + \text{NET ACCRUED INTEREST}$$

WHERE DISCOUNT RATE EQUALS CURRENT MARKET RATE

DURATION EFFECT: BOND/SWAP PORTFOLIO

On/Off Balance Sheet	Asset	Coupon	Par/ Notional	Weight	Indiv. Duration Modified	Portfolio Duration
On	Bond	8.24%	100	100/100	1.81	1.81
Off	Swap	8.84%	100	100/100	1.32	1.32
On	Total		100			3.13

DURATION EFFECT: 2 - BOND PORTFOLIO

On/Off Balance Sheet	Asset	Coupon	Par/ Notional	Weight	Indiv. Duration Modified	Portfolio Duration
On	Bond	8.24%	100	100/200	1.81	.905
On	Bond	8.84%	100	100/200	1.80	.90
On	Total		200			1.805

DURATION OF SWAP FIXED SIDE

Coupon: 8.84%
Maturity: 2 Yrs.

YTM: 8.84%
Price: 100

Period (t)	Cash Flow (CF)	PV of CF at 4.42% (PVCF)	$\frac{\text{PVCF}}{\text{Price}}$	$\frac{t \times \text{PVCF}}{\text{Price}}$
1	4.42	4.232906	0.0423291	0.042329
2	4.42	4.053731	0.0405373	0.081075
3	4.42	3.882140	0.0388214	0.116464
4	104.42	87.831224	0.8783122	3.513249
		100.000000		3.753117

$$\text{Convert Duration to Years} = \frac{3.753117}{2}$$

Macaulay Duration = 1.88 years

Modified Duration = 1.80

DURATION OF SWAP FLOATING SIDE

Coupon: 8.625%
Maturity: 6 mos.

YTM: 8.625%
Price: 100

Period (t)	Cash Flow (CF)	PV of CF at 4.3125% (PVCF)	$\frac{\text{PVCF}}{\text{Price}}$	$\frac{t \times \text{PVCF}}{\text{Price}}$
1	104.3125	100.000000	1.0000000	1.000000

$$\text{Convert Duration to Years} = \frac{1.000000}{2}$$

Macaulay Duration = .50 years

Modified Duration = .48

NET SWAP MODIFIED DURATION = 1.32

INTEREST RATE SWAP DURATIONS

$$\text{SWAP DURATION} = \text{DURATION OF FIXED SIDE} - \text{DURATION OF FLOATING SIDE}$$

DURATION
OF
FIXED
SIDE

=
DURATION OF BOND WITH SAME
MATURITY AND COUPON

DURATION
OF
FLOATING
SIDE

=
DURATION OF ZERO COUPON BOND
WITH MATURITY EQUAL TO SWAP RESET

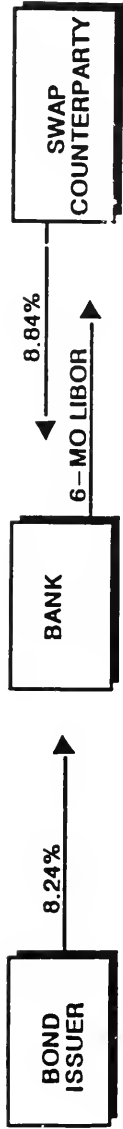
CASH FLOWS — BOND/SWAP COMBINATION

(Dollars in Millions)

Period	Bond (8.24%)	Swap Fixed (8.84%)	Swap (L) Floating	Total
1	4.12	4.42	L1/2	8.54 — L1/2
2	4.12	4.42	L2/2	8.54 — L2/2
3	4.12	4.42	L3/2	8.54 — L3/2
4	104.12	4.42 + 100	L4/2 — 100	108.54 — L4/2

4.12 = 8.24% Received Semiannually
 4.42 = 8.84% Received Semiannually
 L1, L2, L3, L4 = LIBOR Levels for the 4 Periods

BOND/SWAP PORTFOLIO



BOND

PAR VALUE: \$100 MILLION
MATURITY: 2 YEARS
COUPON: 8.24%
PAYMENT FREQUENCY: SEMIANNUAL

SWAP

NOTIONAL AMT: \$100 MILLION
MATURITY: 2 YEARS
RECEIVE FIXED: 8.84%
PAY FLOATING: 6-MONTH LIBOR
RESET FREQUENCY: SEMIANNUAL

INTEREST RATE SWAP BASIS RISK

Poor Correlation

Interest Rate Scenario	Asset Yield	Liability Cost	Net Interest Margin	Fixed Payment Swap	Receive Floating Swap	Net Spread
+300BP	8.00%	-8.0000%	0.0000%	-6.29%	8.00%	1.71%
+200	8.00%	-7.1250%	0.8750%	-6.29%	7.00%	1.59%
+100	8.00%	-6.3750%	1.6250%	-6.29%	6.00%	1.34%
0	8.00%	-5.0000%	3.0000%	-6.29%	5.00%	1.71%
-100	8.00%	-4.6250%	3.3750%	-6.29%	4.00%	1.09%
-200	8.00%	-3.5625%	4.4375%	-6.29%	3.00%	1.15%
-300	8.00%	-2.8750%	5.1250%	-6.29%	2.00%	0.84%

INTEREST RATE SWAP

High Correlation

Interest Rate Scenario	Asset Yield	Liability Cost	Net Interest Margin	Fixed Payment Swap	Receive Floating Swap	Net Spread
+300BP	8.00%	-8.00%	0.00%	-6.29%	8.00%	1.71%
+200	8.00%	-7.00%	1.00%	-6.29%	7.00%	1.71%
+100	8.00%	-6.00%	2.00%	-6.29%	6.00%	1.71%
0	8.00%	-5.00%	3.00%	-6.29%	5.00%	1.71%
-100	8.00%	-4.00%	4.00%	-6.29%	4.00%	1.71%
-200	8.00%	-3.00%	5.00%	-6.29%	3.00%	1.71%
-300	8.00%	-2.00%	6.00%	-6.29%	2.00%	1.71%

SWAP INTEREST RATE RISK

- **Basis Risk**
Poor Correlation of Floating Rate Index on Swap and Floating Rate on Hedged Asset or Liability
- **Timing Risk**
Difference Between Payment Frequency and Reset Dates on Swap and Hedged Position
- **Risk of Adverse Rate Move on Intermediated or Speculative Swaps**

INTEREST RATE SWAPS - MAJOR RISKS

- **Interest Rate Risk**
- **Credit Risk**
- **Liquidity Risk**

KEY USES OF INTEREST RATE SWAPS

- Adjust Repricing Interval of Assets or Liabilities to Protect NIM from Rising or Falling Rates
- Obtain Preferred Form of Funding--Fixed or Floating--at Favorable Rates
- Hedge Asset Value or Enhance Asset Yield
- Act as Intermediary Between Swap Counterparties to Generate Fee Income
- Trading or Speculation to Profit from Interest Rate Movements

INTEREST RATE SWAP EFFECT

Swap Converts Floating Rate Debt to Fixed Rate Debt.

Interest Rate Scenario	Floating Liability Cost	Fixed Swap Outflow	Floating Swap Inflow	Net Funding Cost
+300BP	8.00%	6.29%	8.00%	6.29%
+200	7.00%	6.29%	7.00%	6.29%
+100	6.00%	6.29%	6.00%	6.29%
0	5.00%	6.29%	5.00%	6.29%
-100	4.00%	6.29%	4.00%	6.29%
-200	3.00%	6.29%	3.00%	6.29%
-300	2.00%	6.29%	2.00%	6.29%

$$\text{Net Funding Cost} = \text{Floating Rate Liability Cost} + \text{Fixed Rate Swap Outflow} - \text{Floating Rate Swap Inflow}$$

LIBOR IPS - MAJOR RISKS

- **Interest Rate Risk**
 - Prepayment Risk
 - Yield Curve Risk
 - Basis Risk
- **Credit Risk**
 - Mark-to-Market Provisions
 - Risk-Based Capital
 - Legal Documentation
- **Liquidity Risk**

GENERIC SWAPS VS LIBOR IPS

	STANDARD SWAP	LIBOR IPS
NOTIONAL AMOUNT	FIXED	AMORTIZING
TERM	FINAL MATURITY	EXPECTED WAL OR FINAL MATURITY
FIXED RATE	COMPARABLE MATURITY TSY + SPREAD	COMPARABLE AVG. LIFE TSY + SPREAD
SWAP SPREAD	GENERIC MARKET LEVEL	PREMIUM FOR PREPAYMENT RISK
FLOATING RATE	MONEY MARKET INDEX	MONEY MARKET INDEX
LOCKOUT	NONE	6 - 18 MONTHS

LIBOR IPS CASH FLOWS

Period	Beginning Notional Amount	SM LIBOR at last reset	Change Relative to Base Case	Amortization (1)	Customer Receives	Customer Pays (2)	Quarterly Net
1-Q	100.00	4.25	0	0.00	1.688	1.077	0.610
2-Q	100.00	4.75	50	0.00	1.688	1.204	0.484
3-Q	100.00	4.25	0	0.00	1.688	1.077	0.610
4-Q	100.00	3.75	-50	12.70	1.688	0.951	0.737
5-Q	87.30	4.25	0	11.11	1.473	0.940	0.533
6-Q	76.18	4.75	50	9.40	1.286	0.917	0.368
7-Q	68.79	5.25	100	7.69	1.127	0.899	0.238
8-Q	59.10	4.75	50	9.40	0.997	0.712	0.286
9-Q	49.70	6.75	150	6.41	0.839	0.724	0.114
..
..

Payments continue until the notional amount has been reduced to zero or the stated final maturity of 4 years is reached.

(1) Based on original notional principal. Straight line interpolation is used between the stated points of rate move.
 (2) Adjusted for LIBOR day count.

LIBOR IPS AMORTIZATION

NOTIONAL PRINCIPAL AMORTIZATION INDEXED TO LEVEL OF 3-MONTH LIBOR:

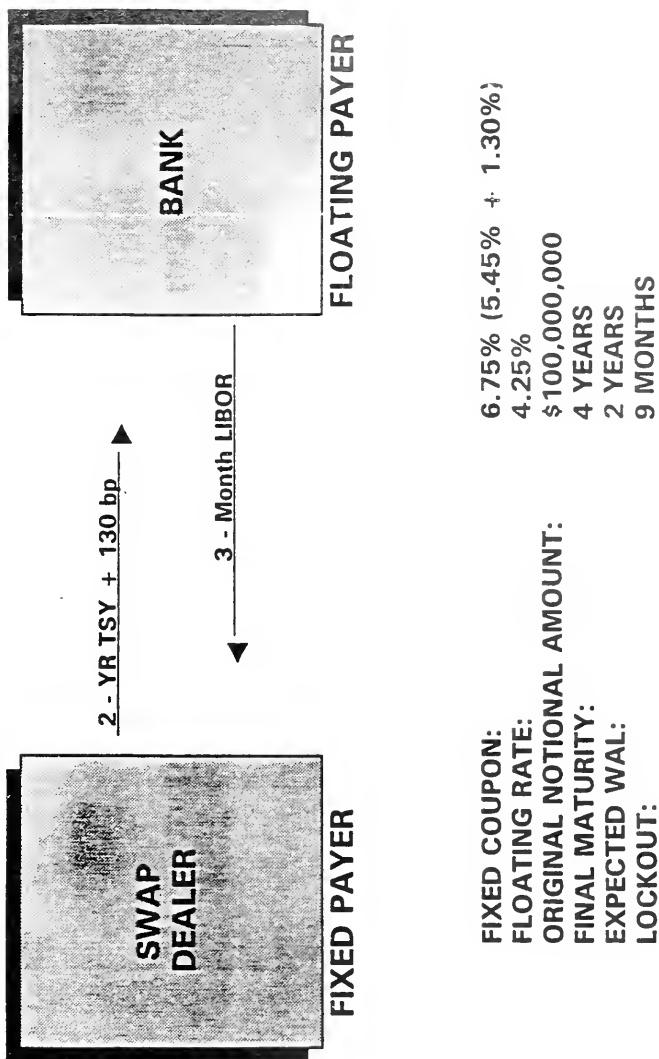
Rate Move (bp)	Quarterly Principal Amortization %	WAL	Final Maturity
-300	100.00%	1.00 yrs.	1.0 yrs.
-200	20.00	1.50	2.0
-100	14.29	1.75	2.5
0	11.11	2.00	3.0
100	7.69	2.50	4.0
200	5.13	3.00	4.0
300	0.00	4.00	4.0

Expected WAL: 2 years

Stated Final Maturity: 4 years

Lockout Period: 9 months, i.e., no amortization for the first 9 months.

LIBOR IPS PRICING



INDEXED PRINCIPAL SWAPS (IPS)

- **Basic IPS Structure**
 - Fixed and Floating Rate Payers
 - Notional Amount Amortizes
 - Final Maturity and Average Life
 - Swap Spread Priced to WAL
- **Amortization Tied to Specific Index**
 - LIBOR IPS
 - Treasury IPS
 - Mortgage IPS

COMMON FLOATING RATE INDICES

- LIBOR
(1-Month, 3-Month, 6-Month)
- PRIME
- COMMERCIAL PAPER
- FEDERAL FUNDS
- TREASURY BILLS
- CERTIFICATES OF DEPOSIT
- COST-OF-FUNDS INDEX (COFI)
- 30-DAY TAX EXEMPT

VARIATIONS ON PLAIN VANILLA SWAP

- Alternative Floating Rate Indices
- Floating Rate Spread
- Amortizing/Accreting
- Step Up/Step Down
- Basis Swaps - Floating/Floating
- Forward Swaps

SWAP SPREADS - MAJOR INFLUENCES

- Fluctuations in Eurodollar Futures Prices
- Government vs. Bank Borrowing Costs (TED Spread)
- Spreads on Corporate Fixed-Income Securities
- Level and Shape of Treasury Yield Curve

RATE SHEET

Treasuries

Maturity	Security	Price		Yield
		Bid/Ask		
2-year	4 7/8% of 1/94	99-09/10		5.25%
3-year	5 1/2% of 2/95	99-07/08		5.77%
5-year	6 1/4% of 1/97	98-12/13		6.63%
7-year	6 3/8% of 1/99	96-19/20		7.00%
10-year	7 1/2 of 11/01	100-24/25		7.38%
20-year	9 3/8% of 2/06	114-02/06		7.70%
30-year	8% of 11/21	101-00/02		7.90%

Money Market

Type	Maturity	Rate
LIBOR	1-mo.	4.9375%
LIBOR	3-mo.	4.9375%
LIBOR	6-mo.	5.0000%

Interest Rate Caps

Maturity	STRIKE RATE		
	5%	6%	7%
2-year	156	90	48
3-year	388	264	166
4-year	662	460	304
5-year	883	655	444

Interest Rate Floors

Maturity	STRIKE	
	4%	5%
2-year	23	53
3-year	26	59
4-year	28	64
5-year	30	70

Interest Rate Swaps

Maturity	TREASURY VS. LIBOR		Type
	Bid	Ask	
2-year	T +26	T +29	S:FX-S:FL
3-year	T +49	T +52	S:FX-S:FL
4-year	T +55	T +58	S:FX-S:FL
5-year	T +50	T +54	S:FX-S:FL
7-year	T +51	T +54	S:FX-S:FL
10-year	T +52	T +55	S:FX-S:FL

\$ = U.S. Dollar LIBOR T = UST Bond Yield
 FX = Fixed FL = Floating A = Annual
 S = Semi-Annual Q = Quarterly

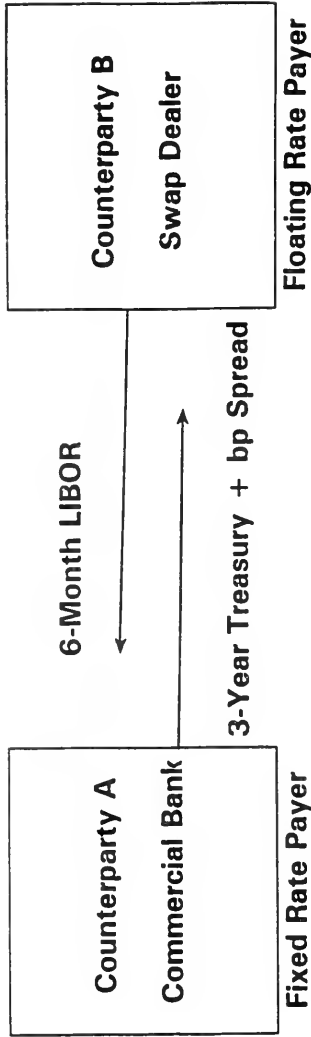
PRICING THE GENERIC SWAP

$$\begin{aligned} \text{(1) Fixed Rate} &= \text{Yield on U.S. Treasury Note} + \text{Swap Spread} \\ &= 5.77\% + .52\% \\ &= 6.29\% \end{aligned}$$

$$\begin{aligned} \text{(2) Floating Rate} &= \text{6-Month LIBOR flat} \\ &= 5.00\% \end{aligned}$$

- Fixed Rate Unchanged for Life of the Swap
- Floating Rate Reset Corresponds to Maturity of Floating Rate Index
 - Payment Frequency Corresponds to Maturity of Floating Rate Index

GENERIC "PLAIN VANILLA" SWAP



Bank Pays:	6.29% Fixed Rate on Notional Par	Maturity:	3 Years
Dealer Pays:	6 Month LIBOR on Notional Par	Payment Frequency:	Sem annual
Notional Par:	\$25 Million	Reset Frequency:	Every 6 Months

EFFECT OF SWAP ON MATURITY GAP

GAP PROFILE BEFORE SWAP

	< = 6 MONTHS	> 6 MONTHS < = 1 YEAR	> 1 YEAR < 2 = YEARS	> 2 YEARS < = 3 YEARS	> 3 YEARS
(1) ASSETS	0	20	40	25	65
(2) LIABILITIES & NET WORTH	25	20	40	0	65
(3) GAP (1) - (2)	(25)	0	0	25	0

GAP PROFILE AFTER SWAP

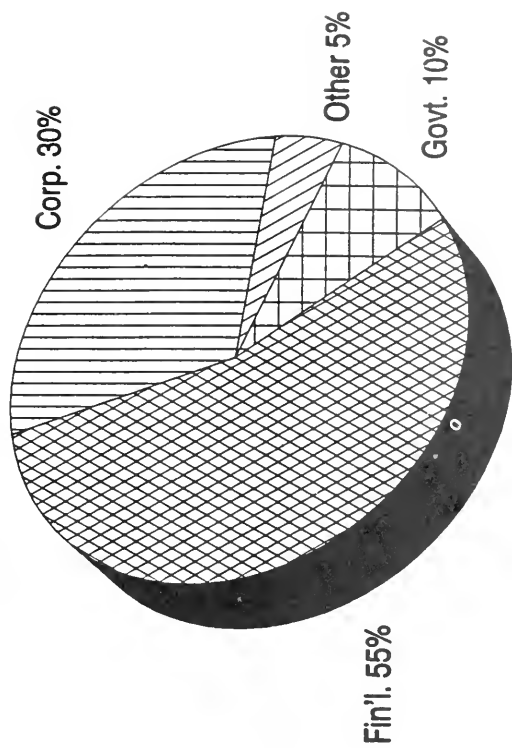
	< = 6 MONTHS	> 6 MONTHS < = 1 YEAR	> 1 YEAR < 2 = YEARS	> 2 YEARS < = 3 YEARS	> 3 YEARS
(1) ASSETS	0	20	40	25	65
(2) LIABILITIES & NET WORTH	25	20	40	0	65
(3) SWAP ADJUSTMENT	(25)	0	0	25	0
(4) LIABILITIES AFTER SWAP	0	20	40	25	65
(5) GAP (1) - (4)	0	0	0	0	0

BALANCE SHEET MISMATCH
Floating-Rate Liability Funding Fixed-Rate Asset

Asset Type:	Loan	Liability Type:	CD
Principal Amount:	\$25 Million	Principal Amount:	\$25 Million
Maturity:	3 Years	Maturity:	6 Months
Fixed/Floating:	Fixed Rate	Fixed/Floating:	Floating Rate
Rate:	8.00%	Rate:	6 Mo. LIBOR
Payment Frequency:	Semiannual	Repricing Frequency:	6 Months

END-USERS OF INTEREST RATE SWAPS

First Half 1991

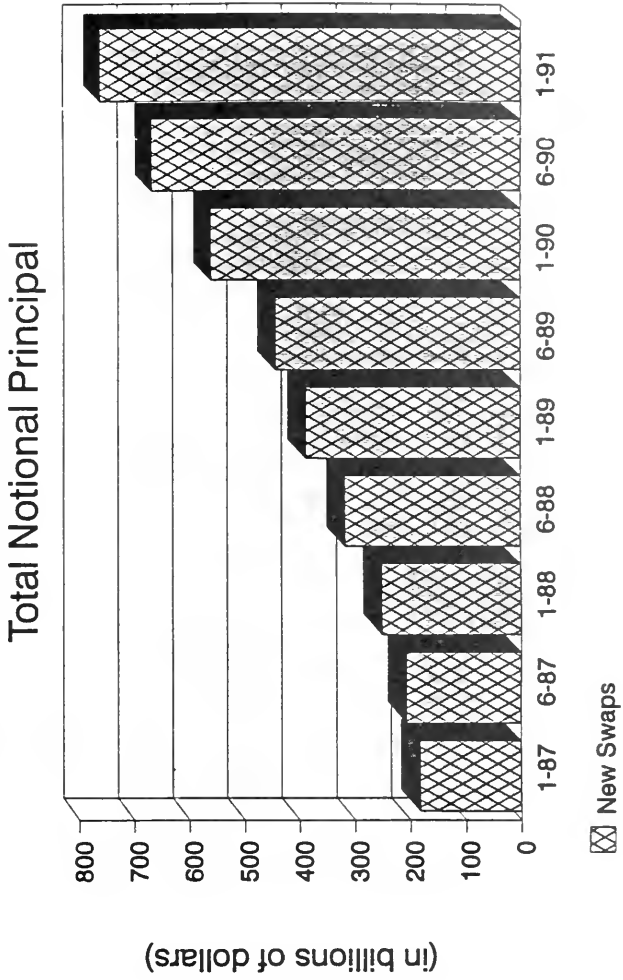


Source: ISDA

SWAP MARKET GROWTH - KEY FACTORS

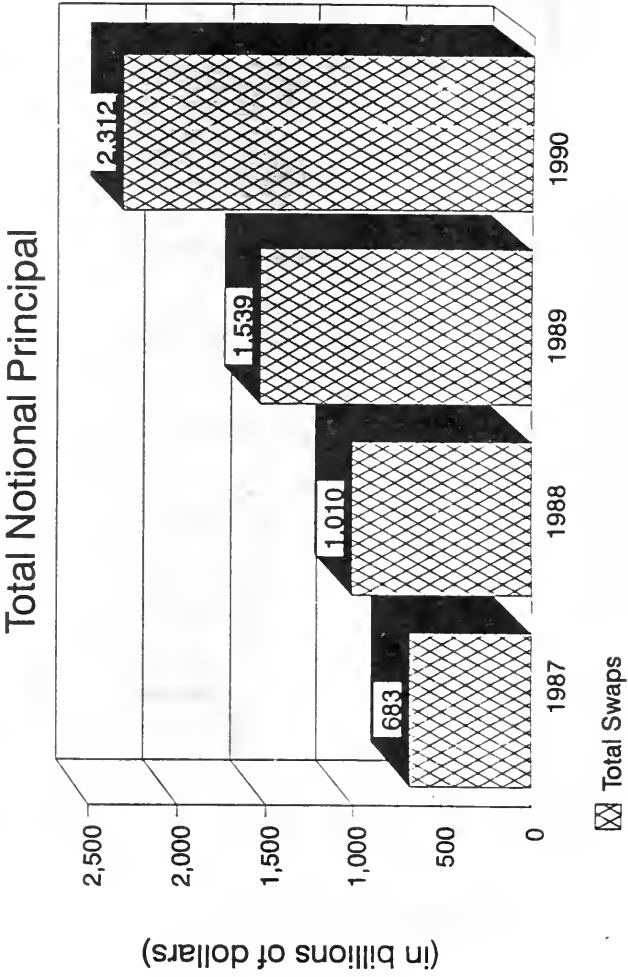
- Financial Institutions Hedge Interest Rate Volatility 1980-1982
- Federal Reserve Deregulates Short-Term Deposit Rates 1980
- Access to Long-Term Fixed-Rate Funding Difficult During 1981-1982 Recession
- Growth of Eurodollar Markets and Globalization of Financial Institutions

NEW INTEREST RATE SWAP ACTIVITY



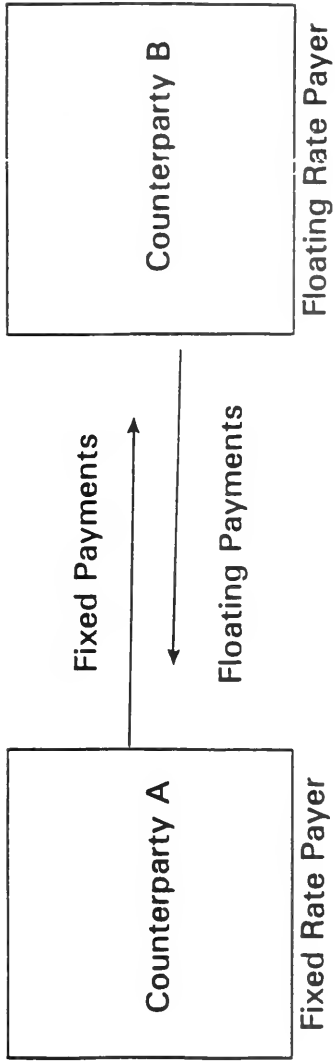
Source: ISDA

OUTSTANDING INTEREST RATE SWAPS



Source: ISDA

INTEREST RATE SWAP PAYMENT FLOWS



INTEREST RATE SWAPS

- Exchange of Interest Payment Streams Between Counterparties
- Fixed Rate Payer and Floating Rate Payer
- Interest Paid on Notional Par Amount -- No Exchange of Principal
- 2 - 10 Year Maturity
- Floating Rate Reset Periodically (Periodic Payments)
- Fixed Rate Coupon Set for Life of the Swap (Semiannual Payments)

INTEREST RATE CAPS

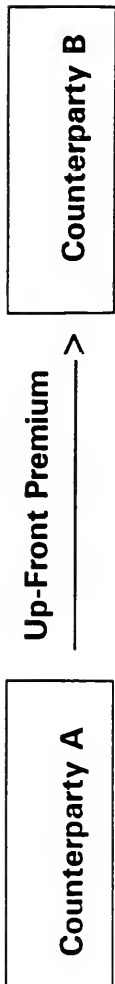
- ◆ **Interest Rate Protection Agreement that Sets a Maximum Level for the Cap Purchaser's Funding Rate**
- ◆ **Allows Purchaser to "Cap" Contractual Rate of Liability**

BASIC CAP TERMINOLOGY

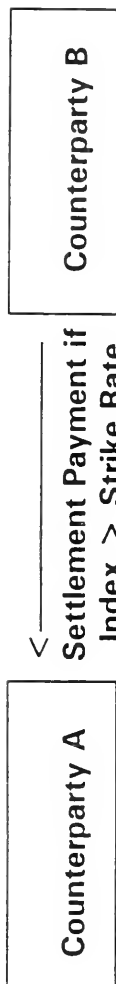
- **Underlying Index:** Interest Rate Index That is Being Capped
- **Strike Rate:** Level of Rate Protection for Buyer of the Cap (Cap Rate)
- **Settlement Frequency:** Frequency With Which Strike Rate is Compared to Index
- **Reset Dates:** Dates When Strike Rate Compared to Index
- **Term or Maturity:** 3 Months to 12 Years
- **Notional Amount:** Base For Determining Cash Flows
- **Up-Front Premium:** Fee Paid by Buyer to Seller at Contract Inception

STANDARD CAP PAYMENT FLOWS

On Cap Start Date:

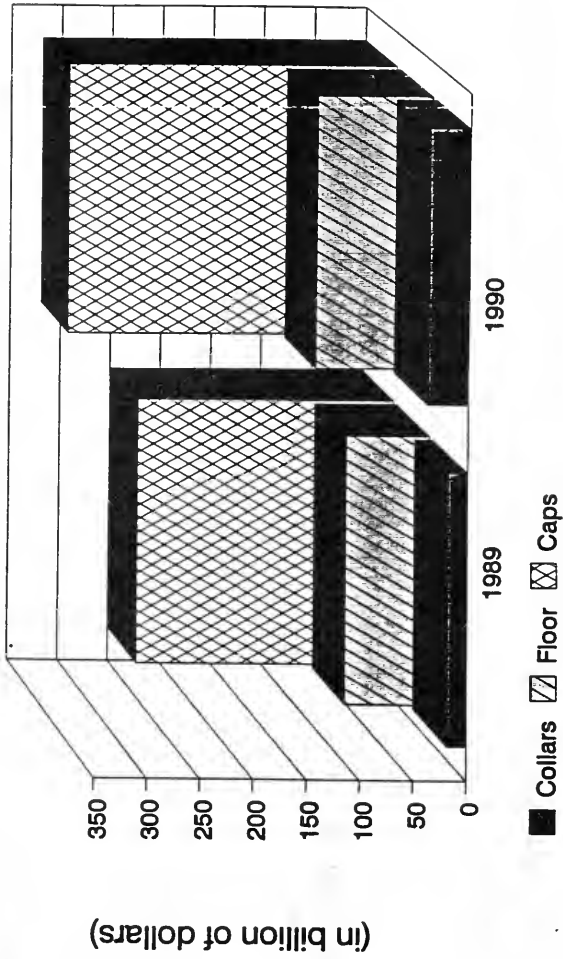


On Cap Reset Dates:



CAPS, FLOORS AND COLLARS

For Year-End 1989 & 1990



Source: ISDA

INTEREST RATE CAP PURCHASE

- ◆ Notional Amount: \$25,000,000 ◆ Settlement Frequency: Semiannual
- ◆ Underlying Index: 6-Month LIBOR ◆ Reset Dates: Every 6 Months
- ◆ Cap Strike Rate: 5.00% ◆ Maturity: 3 Years
- ◆ Up-Front Premium: 3.88% (388 Basis Points)

At Cap Start Date:

$$\begin{aligned} \text{Cap Payment} &= (\text{Up-Front Premium}) * (\text{Notional Amount}) \\ &= (.0388) * (\$25,000,000) \\ &= \$970,000 \end{aligned}$$

CAP PRICING - MAJOR FACTORS

- **Strike Rate:** Lower Strike Rates Have Higher Up-Front Premiums
- **Market Volatility:** Premiums Are Higher When Interest Rates Are Expected to Be Volatile
- **Term to Maturity:** Longer Maturity Caps Have Higher Premiums
- **Settlement Frequency:** Shorter Settlement Frequencies Command Higher Premiums

INTEREST RATE CAP PAYMENTS

At Each Reset Date, the Strike Rate is Compared to the Rate on the Underlying Index -

- If 6-Month LIBOR is Less Than or Equal to 5.00%, the Cap Purchaser Receives Nothing
- If 6-Month LIBOR is Greater Than 5.00%, the Cap Purchaser Receives a Payment from the Cap Seller

$$\begin{aligned} \text{Cap Payments} &= (\text{Index Rate} - \text{Strike Rate}) \\ &\quad * (\text{Notional Amount}) \\ &\quad * (\text{Days in Settlement Period}/360) \\ &= (.07 - .05) * (\$25,000,000) * (180/360) \\ &= (.02) * (\$25,000,000) * (1/2) \\ &= \$250,000 \end{aligned}$$

SWAPS VS. CAPS

	Interest Rate Swap			Interest Rate Cap		
	0	-300BP	+300BP	0	-300BP	+300BP
Interest Rate Scenario						
Asset Yield	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
CD Rate	-5.00%	-2.00%	-8.00%	-5.00%	-2.00%	-8.00%
Net Interest Margin	3.00%	6.00%	0.00%	3.00%	6.00%	0.00%
Swap Fixed Payments	-6.29%	-6.29%	-6.29%			
Swap Floating Payments	5.00%	2.00%	8.00%			
Cap Premium (Annualized)				-1.29%	-1.29%	-1.29%
Cap Payments						3.00%
Net Spread	1.71%	1.71%	1.71%	1.71%	4.71%	1.71%

ADVANTAGES OF INTEREST RATE CAPS

- ◆ **Cap Purchaser is Protected From Rising Interest Rates But Can Benefit From Falling Interest Rates (Asymmetric Protection)**
- ◆ **Cap Purchaser Can Choose Level of Rate Protection by Varying the Strike Rate**

INTEREST RATE FLOORS

- Interest Rate Floors Allow the Purchaser to Protect the Yield of An Asset
- Floor Purchaser is Protected Against Falling Interest Rates but Benefits From Rising Interest Rates
- At Each Reset Date, the Strike Rate is Compared to Rate on the Underlying Index:
 - If the Underlying Index is Less Than the Strike Rate, the Floor Purchaser Receives a Payment From the Floor Seller
 - If the Underlying Index is Greater Than the Strike Rate, the Floor Purchaser Receives Nothing

INTEREST RATE CAPS - MAJOR RISKS

INTEREST RATE RISK

- **Basis Risk - Poor Correlation of Underlying Index on Cap and Interest Rate on Liability**
- **Strike Rate Risk - Strike Rate Too High to Provide Adequate Protection**

CREDIT RISK

- **Risk of Counterparty Default**
- **Exposure Limited to Replacement Cost of the Cap**

LIQUIDITY RISK

INTEREST RATE CAPS - EXAMINATION ISSUES

- ◆ Written Policies Addressing Interest Rate Caps
 - ◆ Prior and Ongoing Assessment of Interest Rate Risk and Credit Risk
 - ◆ Written Cap Contract Specifying Notional Amount, Strike Rate, Settlement Frequency, Underlying Index
- ◆ Periodic Reporting to Measure Risk Exposure From These Activities

CAP PREMIUMS

Maturity	Strike Rate			
	5%	6%	7%	8%
2	1.56	.90	.48	.28
3	3.88	2.64	1.66	.94
4	6.62	4.60	3.04	1.82
5	8.83	6.55	4.44	2.23

FLOOR PREMIUMS

Maturity	Strike Rate			
	1%	2%	3%	4%
2	.00	.02	.23	.53
3	.00	.03	.26	.59
4	.00	.04	.28	.64
5	.00	.06	.30	.70

CAP PRICING - MAJOR FACTORS

- **Strike Rate:** Lower Strike Rates Have Higher Up-Front Premiums
- **Market Volatility:** Premiums Are Higher When Interest Rates Are Expected to Be Volatile
- **Term to Maturity:** Longer Maturity Caps Have Higher Premiums
- **Settlement Frequency:** Shorter Settlement Frequencies Command Higher Premiums

CAP AND FLOOR POSITIONS

Cap/ Floor	Buy/ Sell	Long/ Short	Contingent Right/Obligation
Cap	Buy	Long	Receives Payment if Index Exceeds Strike
Cap	Sell	Short	Makes Payment if Index Exceeds Strike
Floor	Buy	Long	Receives Payment if Index Falls Below Strike
Floor	Sell	Short	Makes Payment if Index Falls Below Strike

INTEREST RATE COLLARS

- **Collar Structure**
 - Buy a Cap at Higher Strike Rate
 - Sell a Floor at Lower Strike Rate
- **Collar Variations**
 - Zero Cost Collar
 - Reverse Collar
- **Advantages and Disadvantages**
 - Reduce Up-Front Cost
 - Give Up Asymmetric Protection
 - Short Option Risk

Govt BCCF

Govt B C C F

CAP/FLOOR/COLLAR CALCULATOR

Pg 1 of 2

American/ European	Settlement	Expiration Date	Strike Rate		1st Cpn Dt	Day Type	Freq.
			Cap	Floor			
E	7/ 6/92	7/ 6/96	7.00000	4.00000	10/ 6/92	ACT/360	Q
Currency		US	Bus. Days		US	Face Amt. 10000000	

Volatility
12.00

	Cap	Floor	Collar
Option Value	4.7630	0.4361	4.3270
Tick Value	1.2143	0.1109	1.1034
Market Value	121428.64	11090.08	110338.56
Mod. Duration	-85.193	349.959	-128.929
Risk	-1.034	0.388	-1.423

Note: To price a collar, specify both CAP & FLOOR strike rates.

Bloomberg-all rights protected. London:71-256-9010 New York:212-318-2000 Princeton:609-497-3500 Singapore:226-3000
Sydney:2-241-1133 Tokyo:3-3578-1625 Washington DC:202-393-1024 SATY-189-3-2 06-Jul-92 16:37:13

CAP/FLOOR/COLLAR CALCULATOR

Pg 2 of 2

		Cap	Floor	Collar
Settlement	Strike Rate	7.00000	4.00000	
7/ 6/92	Option Premium	4.7630	0.4361	4.3270
	Market Value	121428.64	11090.08	110338.56
Currency	Duration	-85.193	349.959	-128.929
US	Risk	-1.034	0.388	-1.423

		Component Options				
Expiration	Days V	Volatility	Implied Fwd Rate	Spot Rate	Option Value	Tick Value
10/ 6/92	92	12.00	3.84065%	3.50000%	-0.1928	-0.0493
1/ 6/93	184	12.00	3.99280%	3.68750%	-0.1368	-0.0350
4/ 6/93	274	12.00	4.19223%	3.81250%	-0.0882	-0.0220
7/ 6/93	365	12.00	5.39411%	3.93750%	0.0026	0.0007
10/ 6/93	457	12.00	5.39411%	4.27409%	0.0051	0.0013
1/ 6/94	549	12.00	5.51398%	4.51082%	0.0155	0.0040
4/ 6/94	639	12.00	5.45339%	4.70553%	0.0158	0.0040
7/ 6/94	730	12.00	6.70122%	4.85554%	0.2993	0.0757
10/ 6/94	822	12.00	6.70122%	5.13596%	0.3185	0.0814
1/ 6/95	914	12.00	6.85014%	5.37261%	0.3974	0.1016

INTEREST RATE CORRIDORS

- **Corridor Structure**
 - Buy a Cap at Lower Strike Rate
 - Sell a Cap at Higher Strike Rate
- **Corridor Variations**
 - Zero Premium Corridor
- **Benefits and Risks**
 - Reduces Up-Front Premium
 - Short Option Risk

CAP, COLLAR AND CORRIDOR PERFORMANCE

Rate Scenario (BP)	CAP			COLLAR			CORRIDOR		
	0	-300	+300	0	-300	+300	0	-300	+300
	Long 5% Cap	Long 5% Cap	Short 3% Floor	Long 5% Cap	Long 5% Cap	Short 3% Floor	Long 5% Cap	Long 5% Cap	Short 7% Cap
Fixed Asset Yield	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Floating Liability Cost	(5.00)	(2.00)	(8.00)	(5.00)	(2.00)	(8.00)	(5.00)	(2.00)	(8.00)
Net Interest Margin	3.00	6.00	0.00	3.00	6.00	0.00	3.00	6.00	0.00
Cap Premium *	(1.29)	(1.29)	(1.29)	(1.29)	(1.29)	(1.29)	(1.29)	(1.29)	(1.29)
Cap Payment			3.00			3.00			3.00
Floor Premium *				.09	.09	.09			
Floor Payment					(1.00)				
Cap Premium *							.55	.55	.55
Cap Payment									(1.00)
Net Spread	1.71	4.71	1.71	1.80	3.80	1.80	2.26	5.26	1.26

* Cap and Floor Premiums Annualized

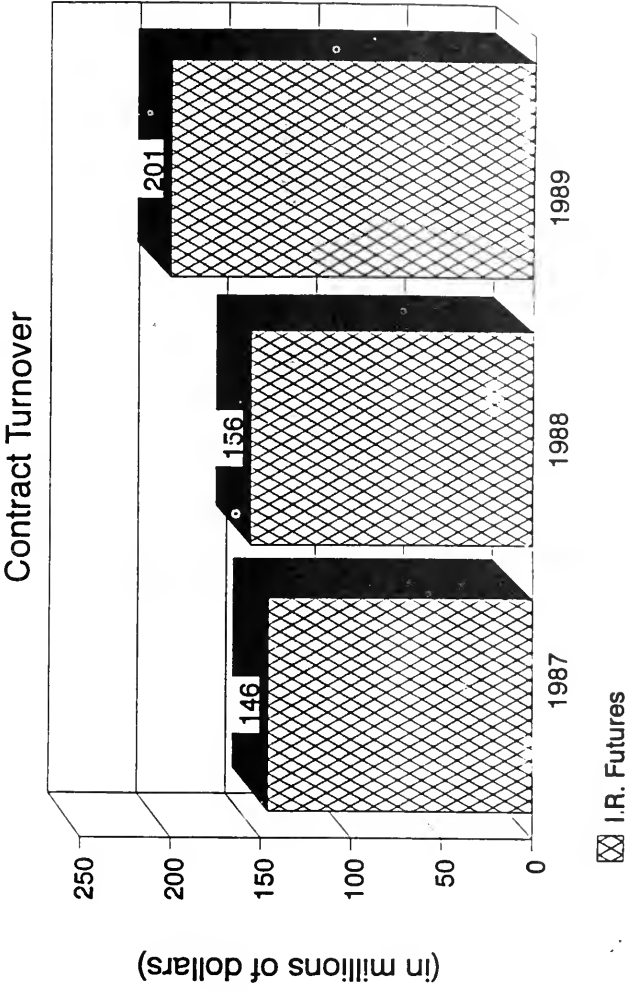
INTEREST RATE FUTURES - KEY TERMS

- **Interest Rate Futures Contract:** Commitment to Buy or Sell a Security at a Stated Price at a Future Date
- **Long Position:** Buying an Interest Rate Futures Contract
- **Short Position:** Selling an Interest Rate Futures Contract
- **Margin:** Initial Margin and Variation Margin
- **Volume:** Contract Turnover
- **Open Interest:** Outstanding Contracts

INTEREST RATE FUTURES - CONTRACT SPECIFICATIONS

- ◆ **Trading Unit:** Par Value
- ◆ **Price Quotation:** Percentage of Par or (100 - Annualized Interest Rate)
- ◆ **Tick Size:** 32nds or Basis Points
- ◆ **Tick Value:** Dollar Value of a Tick
- ◆ **Delivery Months:** Quarterly or Monthly
- ◆ **Deliverable Grade:** Deliverable Security or Cash Settled
- ◆ **Last Trading Day:** Specified by Futures Exchange
- ◆ **Delivery Date:** Securities Exchanged Between Buyers and Sellers

EXCHANGE-TRADED INTEREST RATE FUTURES



INTEREST RATE FUTURES - MAJOR CONTRACTS

Short Term Contracts:

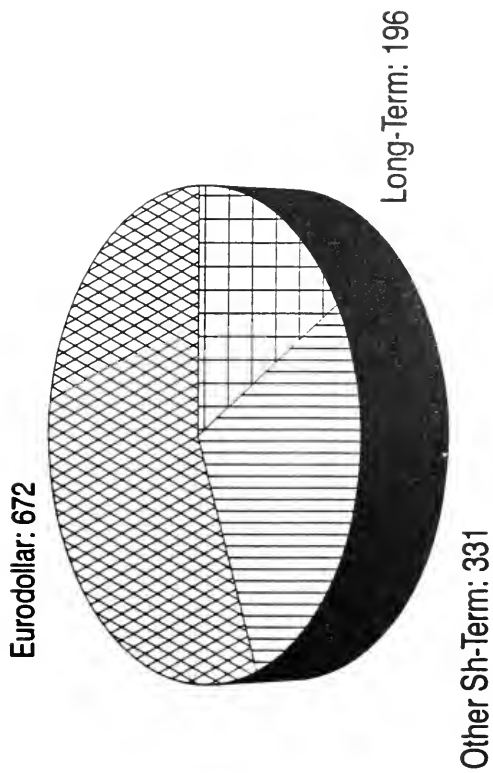
- 3-Month Eurodollars
- 1-Month LIBOR
- Treasury Bills
- 30-Day Interest Rate

Long-Term Contracts:

- 2-Year Treasury Notes
- 5-Year Treasury Notes
- 10-Year Treasury Notes
- 30-Year Treasury Bond

OPEN INTEREST: EXCHANGE-TRADED FUTURES

Year-End 1989 (Billions of Dollars)



Source: J.P. Morgan

FUTURES PRICES

Price Forward, 1938

Open Interest: 10,000; Volume: 10,000; High: 100; Low: 100; Close: 100

GRAINS AND OILSEEDS

Table with columns for various grain and oilseed futures including wheat, corn, soybeans, and cotton. Includes sub-sections for 'GRAIN' and 'LIVESTOCK AND MEAT'.

Metals and Petroleum

Table listing prices for various metals (gold, silver, platinum) and petroleum products (oil, gasoline).

Interest Rate

Table showing interest rates for Treasury bonds and other financial instruments.

Currency

Table listing exchange rates for various international currencies.

Exchange Observations

Table providing exchange observations for various international markets.

Exchange Observations

Table providing exchange observations for various international markets.

Exchange Observations

Table providing exchange observations for various international markets.

Exchange Observations

Table providing exchange observations for various international markets.

3-MONTH EURODOLLAR FUTURES - CONTRACT SPECIFICATIONS

Unit of Trading	\$1,000,000
Price Quotation:	100 - Annualized Futures Interest Rate
Tick Size:	.01 (Basis Point)
Tick Value:	\$25
Delivery Months:	March, June, September, December
Last Trading Day:	Second London Business Day Before Third Wednesday of the Delivery Month
Final Settlement Price:	(100) - (Spot 3-Month LIBOR) as Determined by Chicago Mercantile Exchange Bank Survey

3-MONTH EURODOLLAR FUTURES - SELLING A CONTRACT

- Establish a Short Futures Position - Sell 10 3-Month Eurodollar Futures Contracts at 95.00

$$\begin{aligned}
 \text{Price Quote} &= 100.00 - \text{Annualized Futures Interest Rate} \\
 &= 100.00 - 5.00 \\
 &= 95.00
 \end{aligned}$$

- If Interest Rates Rise 50 Basis Points, Futures Price Falls to 94.50

$$\text{Number of Ticks} = 95.00 - 94.50 = 50 \text{ Ticks}$$

$$\begin{aligned}
 \text{Profit on Short Position} &= (\text{Number of Ticks}) * (\text{Tick Value}) * (\text{Number of Contracts}) \\
 &= (50) * (\$25) * (10) \\
 &= \$12,500
 \end{aligned}$$

- If Interest Rates Fall 50 Basis Points, Futures Price Rises to 95.50

$$\text{Number of Ticks} = 95.00 - 95.50 = - 50 \text{ Ticks}$$

$$\begin{aligned}
 \text{Loss of Short Position} &= (\text{Number of Ticks}) * (\text{Tick Value}) * (\text{Number of Contracts}) \\
 &= (-50) * (\$25) * (10) \\
 &= -\$12,500
 \end{aligned}$$

3-MONTH EURODOLLAR FUTURES - CONSTRUCTING A SHORT HEDGE

Asset:	Commercial Loan	Liability:	CD
Principal:	\$10,000,000	Principal:	\$10,000,000
Rate:	5.75%	Rate:	5.00%
Index:	6-Month LIBOR + 50 bp	Index:	3-Month LIBOR Flat
Maturity:	6 Months	Maturity:	3 Months

- **Hedge Strategy:** Sell 10 3-Month Eurodollar Futures Contracts at 95.00 to Hedge Cost of Rolling Over CD

- **If Interest Rates Rise 50 Basis Points, 3-Month LIBOR = 5.50%**

$$\begin{aligned}
 \text{Added CD Interest Expense} &= (\$10,000,000 * .0500 * 1/4) - (\$10,000,000 * .0550 * 1/4) \\
 &= \$125,000 - \$137,500 \\
 &= - \$12,500
 \end{aligned}$$

$$\begin{aligned}
 \text{Gain on Short Futures} &= (95.00 - 94.50) = 50 \text{ Ticks} \\
 &= (50) * (\$25) * (10) \\
 &= + \$12,500
 \end{aligned}$$

- **If Interest Rates Fall 50 Basis Points, 3-Month LIBOR = 4.50%**

$$\begin{aligned}
 \text{Reduced CD Interest Expense} &= (\$10,000,000 * .0500 * 1/4) - (\$10,000,000 * .0450 * 1/4) \\
 &= \$125,000 - \$112,500 \\
 &= + \$12,500
 \end{aligned}$$

$$\begin{aligned}
 \text{Loss on Short Futures} &= (95.00 - 95.50) = .50 \text{ Ticks} \\
 &= (- 50) * (\$25) * (10) \\
 &= - \$12,500
 \end{aligned}$$

INTEREST RATE FUTURES - MAJOR RISKS

INTEREST RATE RISK

- Basis Risk - Poor Correlation of Interest Rate on Futures Contract and Hedged Liability
- Convergence Risk - Risk of Poor Correlation of Cash and Futures Prices before Futures Expiration

LIQUIDITY RISK

- Liquidity May be Uneven in Deferred Contract Months
- Contracts with Small Open Interest May Have Inadequate Liquidity

CREDIT RISK

- Minimal Credit Exposure - Daily Mark to Market of Margin Accounts
- Minimal Credit Risk - Futures Exchange is Counterparty to All Trades

FDIC STATEMENT OF POLICY

Interest Rate Futures

- ◆ **Futures Transactions Should be Related to the Institution's Business Needs and Capacity to Fulfill its Obligations**
- ◆ **Futures Positions Should Reduce Overall Risk Exposure -- Consider Entire Asset and Liability Mix**

FDIC STATEMENT OF POLICY

Policy Guidelines

- ◆ **Determine Whether Use of Futures Contracts is Legal Under state Law**
- ◆ **Develop Board-Approved Written Policies Covering Interest Rate Futures**
 - **Outline Permissible Contract Strategies**
- ◆ **Establish and Monitor Limits on Applicable Futures Contracts**
- ◆ **Periodic Reports to Management to Ensure Adherence to Bank Policy**

**HEDGE CRITERIA
AUGUST 9, 1990 RD MEMO**

◆ **Immediate Recognition of Gain/Loss on Futures Contract
Unless FASB Hedge Criteria Are Met**

- Criteria:**
- 1. Item to be Hedged Exposes Institution to
Price or Interest Rate Risk**
 - 2. Futures Contract Reduces Exposure and
is Designated as a Hedge**

**HEDGE EFFECTIVENESS
AUGUST 9, 1990 RD MEMO**

BEFORE Entering Intended Hedging Transaction Institution Should:

- ◆ **Track Unrealized Gains/Losses on Hedged Item and Related Futures Contract During Relevant Past Periods and Determine That There is High Correlation**
 - ◆ **Relevant Past Periods - Covers Various Levels Of Interest Rates For At Least Preceding 12 Months**

AFTER Entering Hedging Transaction Institution Must Regularly Track Gains/Losses to Ensure Continued High Correlation

- ◆ **Regularly - At Least Monthly**

**HIGH CORRELATION
AUGUST 9, 1990 RD MEMO**

- Correlation of Changes in Value of Hedged Item and Futures Contract Should Range From -.80 to -1.25

- Cumulative Offset Ratio is One Method of Determining High Correlation:

$$\text{Cumulative Offset Ratio} = \frac{\text{Sum of Futures Gains/Losses}}{\text{Sum of Hedged Item Gains/Losses}}$$

CUMULATIVE OFFSET RATIO

High Correlation

Period	Futures Contract*	Hedged Item**	Offset Ratio
1	-594	537	-1.11
2	500	-544	-0.92
3	444	-475	-0.93
4	1148	-987	-1.16
5	-789	806	-0.98
Sum:	709	-663	-1.07

* Amount Represents Change in Market Value From One Period to the Next Multiplied by its Quantity

** Amount Represents Change in Fair Value From One Period to the Next

CUMULATIVE OFFSET RATIO

Speculation

Period	Futures Contract*	Hedged Item**	Offset Ratio
1	537	1030	0.52
2	-789	-512	1.54
3	734	422	1.74
4	-255	-164	1.55
5	446	597	0.75
Sum:	673	1373	0.49

* Amount Represents Change in Market Value From One Period to the Next Multiplied by its Quantity

** Amount Represents Change in Fair Value From One Period to the Next

CUMULATIVE OFFSET RATIO

Whipsaw Effect

Period	Futures Contract*	Hedged Item**	Offset Ratio
1	543	-600	-0.91
2	484	-502	-0.96
Cumulative: 3	1027 452	-1102 -483	-0.93 -0.94
Cumulative: 4	1479 -1326	-1585 1080	-0.93 -1.23
Cumulative: 5	153 -1250	-505 1048	-0.30 -1.19
Cumulative:	-1097	543	-2.02

* Amount Represents Change in Market Value From One Period to the Next Multiplied by its Quantity

** Amount Represents Change in Fair Value From One Period to the Next

**DOCUMENTATION
AUGUST 9, 1990 RD MEMO**

- **Written Documentation of Correlation Prepared Prior to Hedging Transaction**
 - **Identify Item to be Hedged and Designate Futures Contract**
 - **Show How Item to be Hedged Exposes Institution to Price or Interest Rate Risk**
- **Written Documentation Of Whipsaw Effect and Ongoing Correlation Required**
- **Absence of Written Documentation Precludes the Use of Hedge Accounting**

CONSTRUCT HEDGE RATIO

$$\text{Hedge Ratio} = \frac{\text{Volatility of Hedged Position}}{\text{Volatility of Futures Contract}}$$

CALCULATING PRICE VOLATILITY

$$\text{Hedge Ratio} = \frac{\text{PVBP Hedged Position}}{\text{PVBP Futures Contract}}$$

$$\begin{aligned} \text{PVBP} &= \text{Price Value of a Basis Point} \\ &= \frac{\text{Principal Value}}{100} \times 1 \text{ Basis Point} \times \frac{\text{Days}}{360} \end{aligned}$$

CALCULATING PRICE VOLATILITY

6—Month LIBOR—Based CD

$$\begin{aligned} \text{PVBP} & \\ \text{Hedged} &= \$50,000,000 \times .0001 \times 180/360 \\ \text{Position} &= \$2,500 \end{aligned}$$

3—Month Eurodollar Futures

$$\begin{aligned} \text{PVBP} & \\ \text{Futures} &= \$1,000,000 \times .0001 \times 90/360 \\ \text{Contract} &= \$25 \end{aligned}$$

$$\begin{aligned} \text{Hedge} &= \frac{\$2,500}{\$25} = 100 \text{ Contracts} \\ \text{Ratio} & \end{aligned}$$

CALCULATE YIELD VOLATILITY FACTOR

$$\text{Yield Volatility Factor} = \frac{\text{Expected Rate Move Hedged Position}}{\text{Expected Rate Move Futures}}$$

6-Month LIBOR = 100 BP Move

3-Month Eurodollar = 125 BP Move

Yield

Volatility = $\frac{100}{125} = .8$

Factor

ADJUSTED HEDGE RATIO

$$\text{Hedge Ratio} = \frac{\text{PVBP Cash}}{\text{PVBP Futures}} \times \text{Yield Volatility Factor}$$

$$= \$2,500 \times .8$$

$$= \$200$$

$$= 80 \text{ Contracts}$$

DETERMINE CONTRACT MONTHS

Strip Hedge

- **Futures Contracts With Successive Maturities**
- **Liquidity Considerations**
- **Lower Yield Curve Risk**
- **No Hedge Ratio Volatility Adjustment**

Stack Hedge

- **Stack Futures Contracts In One Contract Month**
- **Risk From Yield Curve Changes**
- **High Liquidity Contracts**
- **Hedge Ratio Volatility Adjustment**

HEDGE RATIO CHANGES

- Declining PVBP of Cash Position
- Volatility Changes
 - Risk of Over-Hedging
 - Contract Liquidation

Duration of Futures Contract

- Equals Duration of Underlying Instrument

Asset Management

- Buy Futures to Increase Asset Duration
- Sell Futures to Shorten Asset Duration

Liability Management

- Sell Futures to Increase Liability Duration
- Buy Futures to Shorten Liability Duration

USING FUTURES TO MODIFY DURATION

Equity Capital: \$90 million
Duration of Equity Capital: 8.0
Price of Bond Contract: 90
Futures Value: \$90,000/contract

<u>Treasury Bond Futures</u>	<u>Duration of</u>
<u>Contract Transactions</u>	<u>Equity Capital</u>
Sell 100 Contracts	7.2
200	6.4
300	5.6
Buy 100 Contracts	8.8
200	9.6
300	10.4

INTEREST RATE OPTIONS MARKETS

Over-the-Counter Options

- Fixed Income Options

Exchange-Traded Options

- Fixed Income Options
- Futures Options

OTC FIXED INCOME OPTIONS

OTC Market Structure

- Non-Standard Terms, Size and Price
- Credit Risk
- Liquidity and Position Reversal

OTC Options Contracts

- Options on Mortgages
- Options on Treasury Securities
- LIBOR Caps and Floors

FUTURES OPTIONS - BASIC STRUCTURE

- Option Premium
- Underlying Instrument
 - Strike Price
 - Expiration
 - Type
- American vs European

EDZ2 Comdty OHT 12

Comdty OHT

11:14

DISPLAY: C C-chg/%chg, D-delta/volat

Wed 7/8

OPTION HORIZON ANALYSIS
 DEC OPTIONS ON 90DAY EUROS (IMM) Dec92
 MARKET IS OPEN

EDZ2

OPTION	TODAY							7 DAYS LATER							
	96.01							96.01 unch							
	CALLS			PUTS				CALLS			PUTS				
PRICING:	Tickr			Tickr			Volat=Same				Volat=Same				
STRIKE	Prc	Del	I.Vol	Prc	Del	I.Vol	Prc	Chg	%Chg	Prc	Chg	%Chg	Prc	Chg	%Chg
95.25	.82	.79	27.76	.03	.16	24.57	.82	unch	+0%	.05	unch	+0%	.05	unch	+0%
95.50	.62	.70	27.81	.07	.22	22.11	.61	-.01	-2%	.07	unch	+0%	.07	unch	+0%
95.75	.43	.60	26.60	.14	.36	23.17	.42	-.01	-2%	.14	unch	+0%	.14	unch	+0%
<u>96.00</u>	<u>.26</u>	<u>.47</u>	<u>24.65</u>	<u>.21</u>	<u>.51</u>	<u>20.76</u>	<u>.25</u>	<u>-.01</u>	<u>-4%</u>	<u>.21</u>	<u>unch</u>	<u>+0%</u>	<u>.21</u>	<u>unch</u>	<u>+0%</u>
96.25	.15	.32	25.01	.37	.67	23.25	.14	-.01	-7%	.36	-.01	-3%	.36	-.01	-3%
96.50	.08	.19	25.90	.52	.85	19.38	.08	unch	+0%	.52	unch	+0%	.52	unch	+0%
96.75	.03	.09	25.01				.03	unch	+0%						
97.00															
	Wed	7/	8/92(159days Expr)		3.50%	Fin	Wed	7/15/92(152days Expr)		3.50%	Fin				

OPTION T - "Tickr" price S - "Same" volatility
 PRICING: M - Trade "Match" volatility 1 2 . 5 % (or any other volat.)

Bloomberg: all rights protected. London: 71-256-9010 New York: 212-318-2000 Princeton: 609-497-3500 Singapore: 226-3000
 Sydney: 2-261-1133 Tokyo: 3-3578-1625 Washington DC: 202-393-1024 SATT: 189-3-2 08-Jul-92 11:15:05

US22 Comdty OBT 12

Comdty OBT

11:16
Wed 7/8

DISPLAY: C C-chg/%chg, D-delta/volat

OPTION HORIZON ANALYSIS
DEC OPTIONS ON US LONG BOND(CBT) Dec92
MARKET IS OPEN

U S 2 2

OPTION	T O D A Y							7 D A Y S L A T E R							
	101-12							101-12							u n c h
	C A L L S			P U T S				C A L L S			P U T S				
PRICING:	Tickr			Tickr			Volat=Same				Volat=Same				
STRIKE	Prc	Del	I.Vol	Prc	Del	I.Vol	Prc	Chg	%Chg	Prc	Chg	%Chg	Prc	Chg	%Chg
94	7'34	.90	9.49	'14	.08	9.15	7'33	-'01	+0%	'13	-'01	-7%			
96	5'49	.83	9.05	'29	.15	9.00	5'47	-'02	-1%	'27	-'02	-7%			
98	4'11	.74	8.76	'54	.25	8.78	4'08	-'03	-1%	'51	-'03	-6%			
100	2'59	.60	8.99	1'30	.38	8.58	2'56	-'03	-2%	1'27	-'03	-3%			
102	1'50	.46	8.49	2'24	.53	8.40	1'47	-'03	-3%	2'21	-'03	-2%			
104	1'02	.31	8.41	3'37	.68	8.20	'63	-'03	-5%	3'34	-'03	-1%			
106	'34	.19	8.25	5'06	.80	8.24	'32	-'02	-6%	5'04	-'02	-1%			
108	'18	.11	8.44	6'54	.87	8.63	'16	-'02	-11%	6'52	-'02	+0%			
	Wed 7/	8/92	(136days Expr)	3.50%Fin			Wed 7/15/92	(129days Expr)	3.50%Fin						

OPTION T - "Tickr" price S - "Same" volatility
PRICING: M - Trade "Match" volatility 1 2 . 5 % (or any other volat.)
Bloomberg-all rights protected. London:71-256-9010 New York:212-318-2000 Princeton:609-497-3500 Singapore:226-3000
Sydney:2-241-1133 Tokyo:3-3578-1625 Washington DC:202-393-1024 SATY-189-3-2 08-Jul-92 11:16:30

FUTURES OPTION POSITIONS

Call/ Put	Buy/ Sell	Long/ Short	Right/ Obligation
Call	Buy	Long	Right to Buy Futures Contract at Specific Price On or Before Specific Date
Call	Sell	Short	Obligation to Sell Futures Contract if Call Owner Exercises Option
Put	Buy	Long	Right to Sell Futures Contract at Specific Price On or Before Specific Date
Put	Sell	Short	Obligation to Buy Futures Contract if Put Buyer Exercises Option

OPTION INTRINSIC VALUE

Out of The
Money

In The
Money

At The
Money

Call	Strike Price Equals Current Futures Price	Current Futures Price Higher Than Strike Price	Current Futures Price Lower Than Strike Price
	Strike Price Equals Current Futures Price	Current Futures Price Lower Than Strike Price	Current Futures Price Higher Than Strike Price
Put	Strike Price Equals Current Futures Price	Current Futures Price Lower Than Strike Price	Current Futures Price Higher Than Strike Price
	Strike Price Equals Current Futures Price	Current Futures Price Higher Than Strike Price	Current Futures Price Lower Than Strike Price

OPTION PREMIUMS

$$\text{OPTION PREMIUM} = \text{INTRINSIC VALUE} + \text{TIME VALUE}$$

INTRINSIC VALUE = AMOUNT BY WHICH AN OPTION IS IN THE MONEY

TIME VALUE = PRICE OF AN OPTION LESS ITS INTRINSIC VALUE

EXAMPLE:	OPTION STRIKE	=	100
	FUTURES PRICE	=	102
	CALL PREMIUM	=	4.215
	INTRINSIC VALUE	=	
	TIME VALUE	=	

FUTURES OPTIONS PRICES

- **Current Futures Price**
- **Option's Exercise Price**
- **Volatility of the Futures Price**
 - **Time to Expiration**
 - **Short-Term Interest Rate**

OPTION RISK PARAMETERS

- **DELTA**

- **GAMMA**

- **VEGA**

- **THETA**

DELTA

DELTA: CHANGE IN PRICE OF OPTION FOR A 1 POINT CHANGE IN THE PRICE OF THE UNDERLYING FUTURES CONTRACT.

$$\text{DELTA} = \frac{\text{CHANGE IN PREMIUM}}{\text{CHANGE IN FUTURES PRICE}}$$

$$\text{EXAMPLE:} = \frac{.30}{1.00} = .3 \text{ DELTA}$$

EDZ2 Comdty OBT 12

Comdty OBT

11:18
Wed 7/8

DISPLAY: D C-chg/%chg, D-delta/volat

OPTION HORIZON ANALYSIS
DEC OPTIONS ON 90DAY EUROS (IMM) Dec92
WORKSHEET

EDZ2

OPTION PRICING:	T O D A Y 95.99							S A M E D A Y 96.99 + 1.00						
	C A L L S			T i c k e r				C A L L S			P U T S			
	STRIKE	Prc	Del	I.Vol	Prc	Del	I.Vol	Prc	Del	I.Vol	Prc	Del	I.Vol	
95.00	1.04	.82	31.09		.03	.10	24.89	1.99	1.0	.00	.00	n/a	n/a	
95.25	.82	.77	29.84		.05	.16	24.07	1.74	1.0	.00	.00	n/a	n/a	
95.50	.62	.68	29.35		.07	.23	21.54	1.49	1.0	.00	.00	n/a	n/a	
95.75	.43	.58	27.77		.15	.38	23.43	1.24	1.0	.00	.00	n/a	n/a	
96.00	.26	.45	25.54		.25	.53	23.62	.99	1.0	.00	.01	.05	25.14	
96.25	.15	.31	25.69		.38	.69	22.85	.75	.89	24.44	.02	.09	24.09	
96.50	.08	.19	26.43		.52	.90	15.89	.54	.77	26.05	.01	.08	15.45	
96.75	.03	.09	25.43					.34	.64	24.68				
	Wed	7/	8/92	(159days Expr)		3.50	%Fin	Wed	7/	8/92	(159days Expr)		3.50	%Fin

OPTION T - "Ticker" volatility S - "Same" volatility
PRICING: M - Trade "Match" volatility 1 2 . 5 % (or any other volat.)

Bloomberg: all rights protected. London: 71-256-9010 New York: 212-318-2000 Princeton: 609-497-3500 Singapore: 226-3000
Sydney: 2-241-1133 Tokyo: 3-3578-1625 Washington DC: 202-393-1024 SATT: 189-3-2 08-Jul-92 11:22:25

DELTA PROPERTIES

IN-THE-MONEY OPTION	=	HIGHER DELTAS	(.8)
AT-THE-MONEY OPTION	=	AVERAGE DELTAS	(.5)
OUT-OF-THE-MONEY OPTION	=	LOWER DELTAS	(.2)

DELTA PROPERTIES

Option/Futures Position	Delta Positive/ Negative
Long Call	Positive
Long Put	Negative
Short Call	Negative
Short Put	Positive
Long Futures	Positive (+1.0)
Short Futures	Negative (-1.0)

GAMMA

Gamma: Change in Option's Delta for a 1 Point Change
in the Price of the Underlying Futures Contract

Delta = .60

Gamma = .05

DELTA CHANGE	
Futures: +1.00	Futures: -1.00
Call	.55
Put	-.65

VOLATILITY

- **Volatility of Futures Price**
 - Historical Volatility
 - Implied Volatility

VEGA

VEGA: CHANGE IN OPTION'S PRICE FOR A
1 PERCENTAGE POINT CHANGE IN VOLATILITY

EXAMPLE: CALL PREMIUM = 2.00
IMPLIED VOLATILITY = 20%
VEGA = .12

IMPLIED VOLATILITY INCREASES TO 21%:
CALL PREMIUM = 2.12 (2.00 + .12)

Help

Comdty O H T

11:26
Wed 7/8

DISPLAY: D C-chg/%chg, D-delta/volat

OPTION HORIZON ANALYSIS
DEC OPTIONS ON 90DAY EUROS (IMM) Dec92
WORKSHEET

E D Z Z

OPTION PRICING:	T O D A Y 96.00						S A M E D A Y 96.00 u n c h					
	C A L L S			P U T S			C A L L S			P U T S		
	Strike	Prc	Del	I.Vol	Prc	Del	I.Vol	Prc	Del	I.Vol	Prc	Del
95.25	.82	.78	28.83	.06	.18	25.84	.83	.77	30.14	.07	.19	27.28
95.50	.62	.69	28.59	.09	.25	24.28	.63	.68	29.70	.10	.26	25.46
95.75	.43	.59	27.20	.15	.37	23.81	.44	.58	28.19	.16	.38	24.82
<u>96.00</u>	<u>.26</u>	<u>.46</u>	<u>25.09</u>	<u>.26</u>	<u>.52</u>	<u>25.09</u>	<u>.27</u>	<u>.46</u>	<u>26.06</u>	<u>.27</u>	<u>.53</u>	<u>26.06</u>
96.25	.15	.31	25.35	.37	.68	22.51	.16	.32	26.43	.38	.68	23.60
96.50	.07	.18	24.75	.52	.87	17.80	.08	.19	26.17	.53	.85	19.65
96.75	.03	.09	25.22				.03	.09	25.22			
97.00												

Wed 7/ 8/92(159days Expr) 3.50%Fin

Wed 7/ 8/92(159days Expr) 3.50%Fin

OPTION T - "Tickr" volatility S - "Same" volatility
PRICING: M - Trade "Match" volatility 1 2 . 5 % (or any other volat.)

Bloomberg: all rights protected. London: 71-256-9010 New York: 212-318-2000 Princeton: 609-497-3500 Singapore: 226-3000
Sydney: 2-241-1133 Tokyo: 3-3578-1625 Washington DC: 202-393-1024 SATY: 189-3-2 08 Jul-92 11:28:37

Help

Comdty OET

11:26
Wed 7/8

DISPLAY: D C-chg/1chg, D-delta/volat

OPTION HORIZON ANALYSIS
DEC OPTIONS ON 90DAY EUROS (IMM) Dec92
WORKSHEET

E D 2 2

OPTION PRICING:	T O D A Y 96.00						S A M E D A Y 96.00								
	CALLS			PUTS			CALLS			PUTS					
	Strike	Prc	Del	I.Vol	Prc	Del	I.Vol	Strike	Prc	Del	I.Vol	Strike	Prc	Del	I.Vol
95.25	.82	.78	28.83	.06	.18	25.84	.81	.79	27.47	.05	.16	24.32			
95.50	.62	.69	28.59	.09	.25	24.28	.61	.70	27.48	.08	.24	23.07			
95.75	.43	.59	27.20	.15	.37	23.81	.42	.60	26.20	.14	.37	22.80			
96.00	.26	.46	25.09	.26	.52	25.09	.25	.46	24.13	.25	.52	24.13			
96.25	.15	.31	25.35	.37	.68	22.51	.14	.31	24.27	.36	.69	21.40			
96.50	.07	.18	24.75	.52	.87	17.80	.06	.17	23.27	.52	.87	17.80			
96.75	.03	.09	25.22				.03	.09	25.22						
97.00															
	Volat=1						Volat=1								
	u	n	c				h								
	3.50%						3.50%								

OPTION T - "Tickr" volatility S - "Same" volatility
PRICING: M - Trade "Match" volatility 12.5% (or any other volat.)

Bloomberg-all rights protected. London:71-256-9010 New York:212-318-2000 Princeton:609-497-3500 Singapore:226-3000
Sydney:2-241-1133 Tokyo:3-3578-1625 Washington DC:202-393-1024 SATY-189-3-2 08-Jul-92 11:29:01

Help

Comdty OBT

11:26
Wed 7/8

DISPLAY: D C-chg/%chg, D-delta/volat

OPTION HORIZON ANALYSIS
DEC OPTIONS ON 90DAY EUROS (IMM) Dec92
WORKSHEET

E D Z 2

OPTION PRICING:	T O D A Y 96.00						S A M E D A Y 96.00 unch					
	C A L L S			P U T S			C A L L S			P U T S		
	Pr	Del	I.Vol	Pr	Del	I.Vol	Pr	Del	I.Vol	Pr	Del	I.Vol
STRIKE												
95.25	.82	.78	28.83	.06	.18	25.84	.84	.75	31.42	.08	.20	28.65
95.50	.62	.69	28.59	.09	.25	24.28	.65	.67	31.86	.12	.29	27.75
95.75	.43	.59	27.20	.15	.37	23.81	.46	.57	30.16	.18	.39	26.82
96.00	.26	.46	25.09	.26	.52	25.09	.29	.46	28.00	.29	.53	28.00
96.25	.15	.31	25.35	.37	.68	22.51	.18	.33	28.56	.40	.67	25.76
96.50	.07	.18	24.75	.52	.87	17.80	.09	.20	27.54	.54	.83	21.33
96.75	.03	.09	25.22				.04	.11	27.42			
97.00												
	Wed	7/	8/92(159days Expr)	3.50%Fin			Wed	7/	8/92(159days Expr)	3.50%Fin		

OPTION T - "Tickr" volatility S - "Same" volatility
PRICING: M - Trade "Match" volatility 1 2 . 5 % (or any other volat.)

Bloomberg-all rights protected. London:71-256-9010 New York:212-318-2000 Princeton:609-497-3500 Singapore:226-3000
Sydney:2-241-1133 Tokyo:3-3578-1625 Washington DC:202-393-1024 SATY-189-3-2 08-Jul-92 11:27:28

Help

Comdty OHT

11:26
Wed 7/8

DISPLAY: D C-chg/%chg, D-delta/volat

OPTION HORIZON ANALYSIS
DEC OPTIONS ON 90DAY EUROS (IMM) Dec92
WORKSHEET

EDZ2

OPTION PRICING:	TODAY 96.00						SAME DAY 96.00 unch					
	CALLS			PUTS			CALLS			PUTS		
	Strike	Prc	Del I.Vol	Prc	Del I.Vol	Prc	Del I.Vol	Prc	Del I.Vol	Prc	Del I.Vol	
95.25	.82	.78	28.83	.06	.18	25.84	.78	.84	22.91	.02	.09	18.76
95.50	.62	.69	28.59	.09	.25	24.28	.57	.75	22.77	.04	.17	17.70
95.75	.43	.59	27.20	.15	.37	23.81	.37	.63	21.14	.09	.32	17.59
<u>96.00</u>	<u>.26</u>	<u>.46</u>	<u>25.09</u>	<u>.26</u>	<u>.52</u>	<u>25.09</u>	<u>.20</u>	<u>.47</u>	<u>19.29</u>	<u>.20</u>	<u>.52</u>	<u>19.29</u>
96.25	.15	.31	25.35	.37	.68	22.51	.10	.28	19.86	.32	.73	16.85
96.50	.07	.18	24.75	.52	.87	17.80	.03	.12	18.27	.50	1.0	.00
96.75	.03	.09	25.22				.01	.05	19.39			
97.00												
Wed 7/ 8/92 (159days Expr) 3.50%Fin						Wed 7/ 8/92 (159days Expr) 3.50%Fin						

OPTION T - "Tickr" volatility S - "Same" volatility
PRICING: M - Trade "Match" volatility 1 2 . 5 % (or any other volat.)

Bloomberg-all rights protected. London:71-256-9010 New York:212-318-2000 Princeton:609-497-3500 Singapore:226-3000
Sydney:2-241-1133 Tokyo:3-3578-1625 Washington DC:202-393-1024 SATY-189-3-2 08-Jul-92 11:29:38

THETA

THETA: AMOUNT OF OPTION PREMIUM LOST AS
1 DAY PASSES (TIME DECAY)

EXAMPLE: OPTION PREMIUM = 1.00
THETA = .04

AFTER 1 DAY: OPTION PREMIUM = .96

OHT 12

Comdy OHT

11:30
Wed 7/8

DISPLAY: C C-chg/1chg, D-delta/volat

OPTION HORIZON ANALYSIS
DEC OPTIONS ON 90DAY EUROS (IMM) Dec92
WORKSHEET

ED 2 2

OPTION PRICING:		TODAY 96.00						30 DAYS LATER 96.00 unch					
		CALLS			PUTS			Volat=Same			Volat=Same		
STRIKE	Prc	Del	I.Vol	Prc	Del	I.Vol	Prc	Chg	1Chg	Prc	Chg	1Chg	
95.25	.82	.78	28.83	.06	.18	25.84	.80	-.02	-2%	.04	-.02	-33%	
95.50	.62	.69	28.59	.09	.25	24.28	.60	-.02	-3%	.07	-.02	-22%	
95.75	.43	.59	27.20	.15	.37	23.81	.40	-.03	-7%	.13	-.02	-13%	
96.00	.26	.46	25.09	.26	.52	25.09	.23	-.03	-12%	.23	-.03	-12%	
96.25	.14	.31	24.27	.37	.68	22.51	.12	-.02	-14%	.35	-.02	-5%	
96.50	.07	.18	24.75	.52	.87	17.80	.05	-.02	-29%	.51	-.01	-2%	
96.75	.03	.09	25.22				.02	-.01	-33%				
97.00													

Wed 7/ 8/92 (159days Expr) 3.50%Fin

Fri 8/7/92 (129days Expr) 3.50%Fin

OPTION T - "Tickr" volatility S - "Same" volatility
PRICING: M - Trade "Match" volatility 12.5% (or any other volat.)

Bloomberg-all rights protected. London:71-256-9010 New York:212-318-2000 Princeton:609-497-3500 Singapore:226-3000
Sydney:2-241-1133 Tokyo:3-3578-1625 Washington DC:202-393-1024 SATY-189-3-2 08-Jul-92 11:31:40

OHT 12

Comdty OHT

11:30
Wed 7/8

DISPLAY: C C-chg/%chg, D-delta/volat

OPTION HORIZON ANALYSIS
DEC OPTIONS ON 90DAY EUROS (IMM) Dec92
WORKSHEET

E D Z 2

OPTION PRICING:	T O D A Y 96.00							9 0 D A Y S L A T E R 96.00 un ch						
	C A L L S			T i c k r				C A L L S			T i c k r			
	C A L L S			P U T S				C A L L S			P U T S			
	STRIKE	Prc	Del	I.Vol	Prc	Del	I.Vol	Prc	Chg	%Chg	Prc	Chg	%Chg	
95.25	.82	.78	28.83	.06	.18	25.84	.77	-.05	-6%	.01	-.05	-83%		
95.50	.62	.69	28.59	.09	.25	24.28	.54	-.08	-13%	.03	-.06	-67%		
95.75	.43	.59	27.20	.15	.37	23.81	.34	-.09	-21%	.07	-.08	-53%		
<u>96.00</u>	<u>.26</u>	<u>.46</u>	<u>25.09</u>	<u>.26</u>	<u>.52</u>	<u>25.09</u>	<u>.17</u>	<u>-.09</u>	<u>-35%</u>	<u>.17</u>	<u>-.09</u>	<u>-35%</u>		
96.25	.14	.31	24.27	.37	.68	22.51	.07	-.07	-50%	.31	-.06	-16%		
96.50	.07	.18	24.75	.52	.87	17.80	.02	-.05	-71%	.50	-.02	-4%		
96.75	.03	.09	25.22				.00	-.03	-100%					
97.00														
	Wed	7/	8/92(159days Expr)	3.50%Fin			Tue	10/	6/92(69days Expr)	3.50%Fin				

OPTION T - "Tickr" volatility 8 - "Same" volatility
 PRICING: M - Trade "Match" volatility 1 2 . 5 % (or any other volat.)
 Bloomberg: all rights protected. London: 71-256-9010 New York: 212-318-2000 Princeton: 609-497-3500 Singapore: 226-3000
 Sydney: 2-241-1133 Tokyo: 3-3578-1625 Washington DC: 202-393-1024 SATY-189-3-2 08-Jul-92 11:32:03

12

Comdty C O A T

11:35
Wed 7/8

CALL ANALYSIS TABLE
DEC OPTIONS ON 90DAY EUROS (IMM) Dec92
WORKSHEET

E D Z 2

9 5 . 9 8

Hi 96.08 Lo 95.98

STRIKE	PRICING		Option		Hedge		Time I-DAY			I.VOL CHANGE	
	Type	value	PRICE	I.VOL	DEL	GAM	VALUE	DECAY	VEGA	OPTN	FUTR
Master:											
1) 95.25	P	.82	.82	30.80%	.75	.371	.09	.0007	.0080	+1.23%	-.96%
2) 95.50	P	.62	.62	30.08%	.67	.441	.14	.0008	.0093	+1.07%	-.73%
3) 95.75	P	.43	.43	28.34%	.57	.512	.20	.0009	.0102	+1.98%	-.57%
4) 96.00	P	.26	.26	25.97%	.45	.567	.26	.0008	.0104	+1.97%	-.44%
5) 96.25	P	.14	.14	24.94%	.30	.523	.14	.0007	.0092	+1.09%	-.33%
6) 96.50	P	.07	.07	25.27%	.18	.386	.07	.0005	.0069	+1.43%	-.26%
7) 96.75	M	24.72%	.03	25.64%	.09	.235	.03	.0003	.0042	+2.21%	-.21%
8) 97.00	M	.10%		n/a							

(P value)	Price override
(V value)	Volatility
(M)	Trade-Match-Volat.

159 days at 3.50 Finance Rate
Wed 7/ 8/92 to Mon 12/14/92 exp

Bloomberg-all rights protected. London:71-256-9010 New York:212-318-2000 Princeton:609-497-3500 Singapore:226-3000
Sydney:2-241-1133 Tokyo:3-3578-1625 Washington DC:202-393-1024 SATY-189-3-2 08-Jul-92 11:36:07

FUTURES OPTIONS – POSITIONS

CALL PUT

LONG

Falling Rates
Rising Prices
Bullish
Limited Risk

Rising Rates
Falling Prices
Bearish
Limited Risk

SHORT

Rising Rates
Falling Prices
Bearish
Unlimited Risk

Falling Rates
Rising Prices
Bullish
Unlimited Risk

OPTIONS HEDGING STRATEGIES

- **Basic Hedging Strategies**
 - Protective Puts
 - Writing Covered Calls
 - Option Collars

HEDGING NEGATIVE CONVEXITY

Hedged Position:

Instrument:	1-Yr. Treasury ARM	Margin:	2.0
Coupon:	8.00%	Next Reset:	12 Months
Par Amount:	\$10,000,000		
Effective Duration:	1.80 Years		

Futures:

Instrument:	Eurodollar Futures
Par Amount:	\$1,000,000
Futures Duration:	0.25 Years

$$\text{Hedge Ratio} = \frac{\text{ARM Duration}}{\text{Futures Duration}} \times \frac{\text{ARM Value}}{\text{Futures Value}}$$

$$= \frac{(1.80 \times \$10)}{(0.25 \times \$1)}$$

$$= 72 \text{ Contracts}$$

TREASURY ARM HEDGE – EURODOLLAR FUTURES

Hedged Position: \$10 Million ARM Portfolio
 Futures Hedge: Short 72 Eurodollar Futures Contracts

HEDGE PERFORMANCE

Change in Interest Rates (Basis Points)	P/L on ARM Portfolio (\$000's)	P/L on Short Eurodollar Futures (\$000's)	Net P/L on Hedged Portfolio (\$000's)
-300	453	-540	-87
-200	311	-360	-49
-100	163	-180	-17
-50	85	-90	-5
0	0	0	0
+50	-93	90	-3
+100	-197	180	-17
+200	-436	360	-76
+300	-715	540	-175

TREASURY ARM HEDGE – EURO FUTURES + OPTIONS

Hedged Position: \$10 Million ARM Portfolio
 Futures Hedge: Short 59 Eurodollar Futures Contracts
 Options Hedge: Long 38 Dec 90.75 Eurodollar Puts

HEDGE PERFORMANCE

Change in Interest Rates (Basis Points)	P/L on ARM Portfolio (\$000's)	P/L on Hedge			Nat P/L on * Hedged Port. (\$000's)
		Futures (\$000's)	Options (\$000's)	Combined (\$000's)	
-300	435	-443	-2	-445	-10
-200	310	-295	-2	-297	+13
-100	184	-148	-1	-149	+35
-50	117	-74	-1	-75	+42
0	44	0	-1	-1	+43
+50	-39	74	0	74	+35
+100	-133	148	8	156	+23
+200	-355	295	76	371	+16
+300	-620	443	170	613	-8

* P/L Over 3 – Month Horizon.
 Assumes ARM Financed at 8% Repo Rate.

INTEREST RATE SWAP DERIVATIVES

- **Swaps With Embedded Options**
 - **Cancelable Swaps**
 - **Embedded Floating Rate Options**
- **Options on Swaps**
 - **Swaptions**

EMBEDDED FLOATING RATE OPTIONS

- **Capped Swap**
 - Sets Ceiling on Swap Floating Rate
 - If Index Rises Above Ceiling, Floating Payer Pays Ceiling
 - Up Front Premium or Fixed Rate Decrease
- **Floored Swap**
 - Sets Floor for Floating Rate
 - If Index Falls Below Floor, Floating Receiver Receives Floor
 - Up Front Premium or Fixed Rate Increase

CANCELABLE SWAPS

- **Callable Swaps**
 - Fixed Payer Has Option to Terminate Swap
 - Up-Front Premium or Fixed Rate Increase
 - Fixed Payer Long the Option
 - Fixed Receiver Short the Option
- **Putable Swaps**
 - Floating Payer Has Option to Terminate Swap
 - Up-Front Premium or Fixed Rate Decrease
 - Floating Payer Long the Option
 - Floating Receiver Short the Option

SWAPPTIONS

- **Call Swaption**

- Swaption Buyer Has Right to Enter a Swap and Receive Fixed
- Option Exercised If Swap Fixed Rates Fall Below Swaption Strike
- Swaption Seller Obligated to Pay Fixed at Swaption Strike

- **Put Swaption**

- Swaption Buyer Has Right to Enter a Swap and Pay Fixed
- Option Exercised If Swap Fixed Rates Rise Above Swaption Strike
- Swaption Seller Obligated to Receive Fixed at Swaption Strike

SWAPPTIONS - PRODUCT ANALYSIS

- **Settlement**
 - Deliverable
 - Cash Settled
- **Structure**
 - American or European
 - Option Period 3 Months to 3 Years
 - Swap Maturity 3 to 10 Years
- **Pricing**
 - Spot and Forward Swap Prices
 - Strike Price
 - Time to Expiration
 - Volatility

CONVERTING CALLABLE DEBT WITH SWAPTIONS



FUNDING:	ISSUE CALLABLE DEBT	HEDGE:	SELL CALL SWAPTION
FIXED/FLOATING	FIXED RATE PAYER	FIXED/FLOATING	CONTINGENT FIXED PAYER
MATURITY:	5 YEARS	OPTION PERIOD:	3 YEARS
CALL DATE:	3 YEARS	SWAP:	2 YEARS (YRS 4 & 5)
AMOUNT:	10 MILLION	NOTIONAL:	\$10 MILLION

SWAPTION POSITIONS

Call/ Put	Long/ Short	Swaption Position	Contingent Swap Position
Call Swaption	Long	Buy Right to Receive Fixed	Become a Fixed Receiver
Call Swaption	Short	Sell Right to Receive Fixed	Become a Fixed Payer
Put Swaption	Long	Buy Right to Pay Fixed	Become a Fixed Payer
Put Swaption	Short	Sell Right to Pay Fixed	Become a Fixed Receiver

SWAPTIONS AND CALLABLE DEBT

Scenario	Swap	Bank	Result
Interest Rates Higher After 3 Years	Swaption Not Exercised	Bank Does Not Call The Debt	Bank Has 5-Year Fixed Rate Funding
Interest Rates Lower After 3 Years	Swaption is Exercised. Bank Pays Fixed and Receives Floating For Years 4 and 5	Bank Calls The Debt and Funds Floating For Years 4 and 5	Bank Has 5-Year Fixed Rate Funding

SWAPTION RISKS

- **Interest Rate Risk**
 - Option Risk
 - Swap Risk
- **Counterparty Risk**
 - Cash Settled
 - Deliverable
- **Liquidity Risk**

TABLE ROCK NATIONAL BANK

OFF-BALANCE SHEET CASE STUDY

TABLE ROCK NATIONAL BANK

BACKGROUND UPDATE

Due to the findings of the July 13, 1991 concurrent Treasury examination of Table Rock National Bank, at which you criticized the bank's overall interest rate risk posture, as well as its existing Interest Rate Risk Management Policy, the bank's Board of Directors decided major changes would be necessary to correct the bank's problem in this regard. The Board determined the management group, as it existed at the time of the examination, was not fully capable of addressing the IRR problems of the bank; therefore, it was decided that outside assistance would be sought. As a result, Mr. Sean Jovi, a derivative trader previously employed by Blackburn & Rhoads, a now defunct investment bank, was hired by the institution to solve the IRR problem currently facing the bank and to be responsible, prospectively, for all interest rate risk management matters. Mr. Jovi was given the title of Executive Vice President/ Risk Management. He was hired with the understanding that he would report directly to the Asset/Liability Committee ("ALCO") and would replace the Chief Financial Officer as Chairperson of the committee.

Mr. Jovi's reputation as an aggressive and knowledgeable trader preceded him, and the Directorate determined he was the type of manager which was needed to correct the problems. Moreover, his expertise with off-balance sheet instruments only enhanced his value to the bank. In addition to his proven abilities as a trader, he was also familiar with financial institutions and the inherent interest rate risk which must be dealt with in such entities. Prior to working for Blackburn & Rhoads, he had been the CFO of a \$12 billion thrift. At that institution, Mr. Jovi had successfully addressed its rather serious interest rate risk problem; he did so primarily with off-balance sheet derivative products.

Mr. Jovi's first task after assuming his position with the bank was to revise the IRR Management Policy. Once this was complete, he was to implement the policy as soon as possible, with the primary focus of his attention being the reduction of the duration mismatch which was so strongly criticized at the examination.

Within a week after being employed by Table Rock National Bank, Mr. Jovi had completed his first assignment - revision of the IRR Management Policy. Mr. Jovi has provided you a copy of the revised policy (Exhibit I). Although the revised policy implies that Table Rock National Bank is managing its IRR with the aid of a simulation model, the model is not yet operational; it is still being "fine tuned". Nevertheless, it is this policy which will guide the bank's IRR management practices in the future.

PROBLEM

1. You should review the revised IRR Management Policy and the other information provided. Upon completion, you are to assume the role of Sean Jovi and develop a plan for reducing the IRR exposure of the bank, using only off-balance sheet strategies. (NOTE: For this part of the case study, assume the IRR exposure of the bank remains unchanged from that which was disclosed at the examination.)

BACKGROUND UPDATE (cont.)

-2-

2. Using your laptop computer, implement the plan which you have developed by inputting the data in the model provided. Your group should form a consensus as to the plan needed and which off-balance instruments are to be used to correct the problem and why you chose the instruments you did. Be prepared to present and discuss your group's results with the entire class. To assist you, relevant information concerning futures and options on futures from The Wall Street Journal is provided (Exhibit II). In addition, slotting instructions (including delta tables) are also provided for inputting the off-balance sheet instruments you select as part of your plan (Exhibit III).

EXHIBIT I**INTEREST RATE RISK MANAGEMENT POLICY**
(Revised 9-30-91)**INTRODUCTION**

This statement establishes the interest rate risk management policy and certain associated procedures of Table Rock National Bank. This policy supercedes all previous policies and statements relative to interest rate risk ("IRR").

In general, it is the bank's policy to seek to maximize net interest income and, at the same time, protect the economic value of the firm, by matching, as closely as is practicable, the duration of its rate sensitive assets and rate sensitive liabilities. Off-balance sheet instruments may be used to hedge against any remaining mismatch. Interest rate risk is to be borne only where the costs of hedging exceed the benefits derived.

Notwithstanding the objective stated above, this policy is intended to be interpreted in a manner consistent with the bank's overall business plan, and any risks taken are to be prudent and for business purposes. In that regard, in order to achieve certain business objectives, the bank may from time to time be forced to accept interest rate risk, although such risks must be within established limits, as set forth below.

The Board of Directors shall have the ultimate responsibility for overseeing the implementation of this policy. The Board hereby delegates responsibility for successfully implementing the policy to the Asset/Liability Committee ("ALCO"). The Board shall review on a monthly basis the activities of the ALCO and ratify such activities as necessary.

DEFINITION AND MEASUREMENT

Table Rock National Bank defines interest rate risk as uncertainty about values and cashflows of assets, liabilities, and hedging instruments resulting from possible changes in the prevailing market interest rates. For the purposes of this policy statement, risk will be measured by estimating the impact of rate changes on two aggregate measures of the value and cashflow associated with the bank's portfolio - (1) the estimated economic value of the firm and (2) the estimated net interest income ("NII").

The net present value of its assets, liabilities, and off-balance sheet instruments is considered the economic value of the firm. In implementing this program, the bank determines the present value of its assets, liabilities and off-balance sheet instruments in various interest rate environments. Thus, the impact of interest rate changes on the economic value of the firm can be measured. The bank's program is intended to minimize the change in economic value, computed for the current environment ("Base Case"), and the value computed under other likely interest rate scenarios. Such minimization efforts shall be measured given parallel changes in the U. S. Treasury yield curve in up and down increments of 100 basis points to 300 basis points. In addition,

IRR Management Policy (cont.)

-2-

the bank measures its economic value in various other environments, such as: (1) non-parallel shifts in the yield curve and (2) changes in the rate of mortgage prepayments. The analysis described above is conducted on at least a monthly basis.

In order to determine the net present value of its assets, liabilities and off-balance sheet positions, cash flows are projected, in each environment, and discounted using an appropriate discount rate. The methodology used to calculate the present value of assets, liabilities and off-balance sheet instruments, and the sensitivity to changes in market conditions associated with each, must take into account the level and shape of the treasury yield curve, mortgage spreads, predicted prepayments corresponding to various levels of interest rates, and all other material factors identified by management as related to interest rate risks.

Projections of NII will be made for a period of no less than four quarters, on the assumption that assets and liabilities are permitted to run off, with replacement in like instruments. The impact of interest rate changes, both parallel and non-parallel, and changes in the rate of mortgage prepayments will likewise be a part of the analysis of NII. As stated previously, the goal of the institution is to maximize such NII, while minimizing the risk as a result of rate movements.

ASSET/LIABILITY COMMITTEE

The ALCO shall meet on the second Tuesday of each month to consider the bank's IRR profile and shall authorize management to institute such actions deemed to be appropriate to reduce the bank's IRR if such is considered to be excessive.

Members of the ALCO shall consist of the following:

Chief Financial Officer
 Executive Vice President/Risk Management (Chairperson)
 Executive Vice President/Treasurer
 Executive Vice President - Lending
 Senior Vice President - Investment Portfolio Manager
 One or more independent directors

Specifically, the ALCO shall be responsible for:

1. Monitoring and evaluating the economic conditions of the community and the nation, including the current and expected trend in interest rate levels.
2. Developing and utilizing an IRR management system that accurately measures the bank's exposure to IRR;
3. Developing and implementing an IRR management strategy to resolve the bank's exposure to IRR;

IRR Management Policy (cont.)

-3-

4. Coordinating the IRR management policies and procedures with the bank's business plan and recommending to the Board changes to such policies and procedures which are consistent with the business plan;
5. Monitoring, on a monthly basis, the interest rate risk position of the bank;
6. Recommending and authorizing procedures and actions necessary to correct undue levels of IRR exposure and to assure adherence to the interest rate risk management policy;
7. Preparing and presenting a monthly report to the Board of Directors relative to the bank's IRR position. Such report shall include the following:
 - a. Financial Statements of the bank as of the end of the previous month;
 - b. A report of the bank's exposure to IRR, also as of the end of the previous month;
 - c. A report of the bank's current hedge position;
 - d. An economic update for the country, as well as the bank's trade area; and
 - e. Such other information the ALCO deems appropriate relative to the bank's IRR profile.

INTEREST RATE RISK MANAGEMENT

Table Rock National Bank seeks to minimize its exposure to interest rate risk through its choice of duration matched assets and liabilities (internal hedging). In the event that hedging is needed beyond that which can be economically achieved through the use of internal hedging, the bank will use hedging instruments such as interest rate swaps, financial futures and options (external hedging). It is anticipated that significant external hedging will be necessary.

EXTERNAL HEDGING ACTIVITIES

The hedging objective of the bank is to immunize its economic value against changes in interest rates by equalizing the duration of its assets and liabilities. Although this policy authorizes management to enter into transactions involving derivative instruments, Table Rock National Bank is strictly prohibited from taking any position which is speculative.

The bank's strategies for accomplishing its stated objective may include the following:

IRR Management Policy (cont.)

←

Interest Rate Swaps

The bank may utilize interest rate swaps to effectively adjust the duration of its assets or liabilities. It may, for hedging purposes, enter into interest rate swap agreements in which (1) the notional principal balance amortizes based upon the prepayment experience of a specified group of mortgage backed securities or the behavior of an interest rate index (Indexed Principal Swaps), or (2) which may be terminated or extended at the option of the bank or its counterparty. In addition, the bank is authorized to utilize swaptions (an option to enter into a swap) as a means of adjusting a duration mismatch.

The aggregate notional principal amount of interest rate swaps, excluding indexed principal swaps and swaptions, shall not exceed \$500 million. The aggregate notional principal amount of indexed principal swaps and swaptions may not exceed 100 percent of the bank's capital on the trade date of the transaction.

Financial Futures

The bank may hedge externally using financial futures in order to adjust the duration of its assets or liabilities. The bank is authorized to take long or short positions in futures on U. S. Treasury notes, bills and bonds, one month LIBOR, 30-Day interest rates, and Eurodollars, provided the contracts entered into are traded on an organized exchange regulated by the Commodities Futures Trading Commission and the price of the futures contracts have a high relative correlation with the price of the cash instrument being hedged.

The aggregate notional amount of financial futures contracts shall not exceed \$500 million, nor can the bank take a position which exceeds five (5) percent of the open interest in any specific futures contract on the trade date of the transaction.

Financial Options

The bank may hedge externally using financial options, including caps, floors and options on financial futures. In addition to interest rate caps and floors, the bank may take a long or short hedge position in any options contract provided the underlying instrument is either a security authorized for investment or a futures contract authorized by this policy. Furthermore, the hedge must be constructed in such a manner that the price volatility of the option position is consistent with the price volatility of the cash instrument being hedged or the option component of that instrument. All options contracts used by the bank for hedging purposes must be traded on an organized exchange regulated by the Commodities Futures Trading Commission.

The aggregate notional amount of financial options contracts shall not exceed \$500 million, nor can the bank take a position which exceeds five (5) percent of the open interest in any specific options contract on the trade date of the transaction.

IRR Management Policy (cont.)

-5-

BOARD AUTHORIZED LIMITATIONS

The IRR exposure of the bank shall be monitored on a continuous basis, with a formal report prepared no less often than monthly. Table Rock National Bank's Board of Directors has approved the maximum allowable exposure limitations for both the economic value of the firm and net interest income, as follows:

INTEREST RATE RISK EXPOSURE LIMITS

Max. Permissible Change Compared to Base Case:		
<u>Interest Rate Change*</u>	<u>Economic Value</u>	<u>Net Interest Income</u>
+300	+/-70%	-65%
+200	+/-40%	-40%
+100	+/-15%	-20%
0		
-100	+/-15%	-20%
-200	+/-25%	-40%
-300	+/-50%	-65%

Maximum Permissible Change in Equity Capital as a Percentage of Total Assets:	
<u>Rate Change*</u>	<u>Percentage Change</u>
+300	+/-3.00%
+200	+/-1.50%
+100	+/-0.75%
0	
-100	+/-0.75%
-200	+/-1.50%
-300	+/-3.00%

* Basis points; Instantaneous interest rate changes.

Any exceptions to the above limits shall be specifically discussed and approved by the ALCO and presented to the Board of Directors as part of the ALCO's monthly report.

TABLE ROCK NATIONAL BANK CASE STUDY

FUTURES

INTEREST RATE

TREASURY BONDS (CBT)-100.000; prts. 200ths of 100%

Table with columns: Open, High, Low, Settle, Chg, Settle, Chg, Interest. Rows include dates from 10/24 to 10/28.

TREASURY BONDS (MNC)-100.000; prts. 200ths of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 71.700% - Also 11.800%

Y - BONDS (LIPFE) U.S. 100.000; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 67.124% - 4.7%

GERMAN GOVT. BOND (LIPFE)

EST. YIELD: 10/27 10/28 10/29 10/30 = 67.124% - 4.7%

TREASURY NOTES (CBT)-100.000; prts. 200ths of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 72.462% + 4.6%

Y R. TREAS. NOTES (CBT)-100.000; prts. 200ths of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 71.526% - 1.1%

30-DAY INTEREST RATE (CBT)-50 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 70.274% - 3.6%

TREASURY BILLS (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 69.474% - 1.0%

LIBOR-1 MO (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

MUNICIPAL BOND INDEX (CBT)-100.000; Index Bond Buyer

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

EURODOLLAR (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

STERLING (LIPFE)-100.000; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 3 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 6 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 9 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 12 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 18 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 24 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 36 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

FUTURES OPTIONS

INTEREST RATE

100.000; prts. and 100ths of 100%

Table with columns: Price, Cash, Settle, Puts, Settle. Rows include dates from 10/24 to 10/28.

EST. YIELD: 10/27 10/28 10/29 10/30 = 71.700% - Also 11.800%

Y - BONDS (LIPFE) U.S. 100.000; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 67.124% - 4.7%

GERMAN GOVT. BOND (LIPFE)

EST. YIELD: 10/27 10/28 10/29 10/30 = 67.124% - 4.7%

TREASURY NOTES (CBT)-100.000; prts. 200ths of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 72.462% + 4.6%

Y R. TREAS. NOTES (CBT)-100.000; prts. 200ths of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 71.526% - 1.1%

30-DAY INTEREST RATE (CBT)-50 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 70.274% - 3.6%

TREASURY BILLS (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 69.474% - 1.0%

LIBOR-1 MO (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

MUNICIPAL BOND INDEX (CBT)-100.000; Index Bond Buyer

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

EURODOLLAR (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

STERLING (LIPFE)-100.000; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 3 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 6 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 9 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 12 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 18 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 24 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 36 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

LIBOR 48 M (10000)-10 million; prts. of 100%

EST. YIELD: 10/27 10/28 10/29 10/30 = 68.474% - 1.0%

TABLE ROCK NATIONAL BANK

OFF-BALANCE SHEET CASE STUDY

MODEL SLOTTING INSTRUCTIONS

■ OFF-BALANCE SHEET REPORTING

Off-balance sheet positions should be reported as either amortizing or non-amortizing based on the cash flow characteristic of the underlying instrument. The following discussions and examples outline the net position reporting formats for various off-balance sheet instruments:

● Interest Rate Swaps

An interest rate swap contract obligates an institution to both receive and remit interest payments that are based on the notional amount of the swap contract. According to the contract, the institution will either receive fixed and pay floating-rate payments, or it will receive floating and pay fixed-rate payments. To represent the institution's receipt of payments, the notional value of the swap (positive sign) is slotted either according to the maturity of the swap (payments received are fixed) or to the next repricing period (payments received are floating). To represent the institution's obligation to remit payments, the notional value of the swap (negative sign) is also slotted according to its maturity or repricing date depending on whether the payments are fixed or floating. Options on interest rate swaps would be handled similarly, with the option being valued by multiplying the option's current delta by its principal or notional value.

EXAMPLE:

The institution has entered into an interest rate swap contract with another party for a notional amount of \$125 million where the institution receives fixed payments and pays floating payments. The floating rate resets monthly (thus, the negative \$125 million in the less than or equal to 3-month time band), and the swap matures in 2 years (thus, the positive \$125 million in the 1- to 2-year time band).

OFF-BALANCE SHEET ITEM (Dollars in Thousands)	TOTAL	< = 3 MONTHS	> 3 MONTHS < = 1 YEAR	> 1 YEAR < = 2 YEARS	> 2 YEARS < = 3 YEARS	> 3 YEARS < = 5 YEARS
SWAPS						
Positive (+)	\$125,000	\$0	\$0	\$125,000	\$0	\$0
Negative (-)	(\$125,000)	(\$125,000)	\$0	\$0	\$0	\$0
Net Position	\$0	(\$125,000)	\$0	\$125,000	\$0	\$0

● **Futures Contracts & Forward Rate Agreements**

A futures contract (bought or sold) and a Forward Rate Agreement (FRA) both call for the receipt or delivery of a financial instrument or a cash settlement at a specified date in the future. They are slotted in the same manner on the IRR Reporting Schedule using only one entry in the time band corresponding to the maturity of the underlying position. The maturity of positions in these instruments should reflect the time period over which interest rates are fixed by the contract. Therefore, a purchased futures contract is slotted as a positive dollar amount, while a sold contract is slotted with a negative sign.

EXAMPLE:

An institution has sold 1,000 Treasury note futures contracts for delivery in one month. Each contract is for a five year, \$100,000 face amount Treasury note. Slot the face value of the shorted contracts in the time band corresponding to the maturity of the standardized financial instrument the seller is obligated to deliver (thus, the negative value of \$100 million in the > 3-year to <= 5-year time band).

<u>OFF-BALANCE SHEET ITEM</u> (Dollars in Thousands)	<u>TOTAL</u>	<u>< = 3 MONTHS</u>	<u>> 3 MONTHS < = 1 YEAR</u>	<u>> 1 YEAR < = 2 YEARS</u>	<u>> 2 YEARS < = 3 YEARS</u>	<u>> 3 YEARS < = 5 YEARS</u>
Futures						
Positive (+)	\$0	\$0	\$0	\$0	\$0	\$0
Negative (-)	(\$100,000)	\$0	\$0	\$0	\$0	(\$100,000)
Net Position	(\$100,000)	\$0	\$0	\$0	\$0	(\$100,000)

- **Firm Commitments to Buy or Sell Loans or Securities**

When the institution has committed to buy loans or securities, slot the dollar amount of the commitment (positive sign) in the time band corresponding to the maturity of the underlying asset. Conversely, commitments to sell loans or securities should be slotted as a negative value in the time band corresponding to the maturity of the underlying asset.

EXAMPLE:

An institution has made a firm commitment to sell in four months \$85 million of loans with a remaining term of four years. The dollar amount is slotted according to the maturity of the underlying loans (thus, a negative \$85 million in the > 3-year to < = 5-year time band).

OFF-BALANCE SHEET ITEM (Dollars in Thousands)	TOTAL	< = 3 MONTHS	> 3 MONTHS < = 1 YEAR	> 1 YEAR < = 2 YEARS	> 2 YEARS < = 3 YEARS	> 3 YEARS < = 5 YEARS
Firm Commitments						
Positive (+)	\$0	\$0	\$0	\$0	\$0	\$0
Negative (-)	(\$85,000)	\$0	\$0	\$0	\$0	(\$85,000)
Net Position	(\$85,000)	\$0	\$0	\$0	\$0	(\$85,000)

● Options

The maturity of positions in this instrument should reflect the time period during which the underlying contract will affect the interest rate position of the financial institution, assuming the option is exercised. The delta equivalent value should be reported for exchange-traded options. The delta represents the change in the value of an option relative to the change in the value of the instrument on which the option is written. An option's current delta times the notional value equals the delta equivalent value, and this value should be slotted in the time band corresponding to the maturity/repricing period of the underlying instrument. Purchased calls and written puts should be slotted using positive delta notional values, while purchased puts and written calls should be slotted using negative notional values.

EXAMPLE:

An institution has bought call options on the 1-year Treasury bill with a delta equivalent value of \$30 million. A positive amount equal to the delta value is reported in the same time band as the maturity of the underlying instrument (thus, the positive \$30 million in the > 3-month to <= 1-year time band).

<u>OFF-BALANCE SHEET ITEM</u> (Dollars in Thousands)	<u>TOTAL</u>	<u>< = 3 MONTHS</u>	<u>> 3 MONTHS < = 1 YEAR</u>	<u>> 1 YEAR < = 2 YEARS</u>	<u>> 2 YEARS < = 3 YEARS</u>	<u>> 3 YEARS < = 5 YEARS</u>
Options						
Positive (+)	\$30,000	\$0	\$30,000	\$0	\$0	\$0
Negative (-)	\$0	\$0	\$0	\$0	\$0	\$0
Net Position	\$30,000	\$0	\$30,000	\$0	\$0	\$0

● **Caps, Floors and Collars**

Interest rate caps and floors represent a series of options with consecutive expiration dates equal to the repricing date of the underlying index. Caps represent a series of calls on a short-term interest rate, and can be used to create an upper limit on the cost of floating-rate liabilities. Floors are a series of consecutive puts on a short-term rate and may be used to protect the overall rate of return on floating-rate assets. For purchased caps, if the index rate (the underlying rate upon which the cap is based) is within 100 basis points of the cap strike rate (or "in the money"), slot the notional value of the cap (negative sign) according to the maturity of the cap. In essence, the floating-rate liability is converted into a fixed-rate liability; hence, the negative entry at the longer maturity (long a fixed-rate liability). Do not slot purchased caps which are not within 100 basis points of the cap strike rate.

For purchased floors, if the index rate is within 100 basis points of the floor strike rate, slot the nominal value of the floor (positive sign) according to the maturity of the floor. In essence, the floating-rate asset is converted into a fixed-rate asset; hence, the positive entry at the longer maturity (long a fixed-rate asset). Do not slot purchased floors which are not within 100 basis points of the cap strike rate.

Collars involve the purchase of a cap and the sale of a floor. Treat each position separately. Sold caps and floors should be handled in the opposite fashion as discussed above.

As an alternative to slotting caps, floors and collars at their full notional amount, you may slot them using their delta value, which can be computed using the delta weight table supplied with these instructions.

EXAMPLE:

An institution purchased a cap with a notional amount of \$10 million which matures in 2 years. The index is 3-month LIBOR which is currently 6% and the cap strike rate is 6.5%. Slot the notional amount according to the maturity of the cap (thus, the negative \$10 million in the > 1-year to < = 2-year time band).

OFF-BALANCE SHEET ITEM (Dollars in Thousands)	TOTAL	< = 3 MONTHS	> 3 MONTHS < = 1 YEAR	> 1 YEAR < = 2 YEARS	> 2 YEARS < = 3 YEARS	> 3 YEARS < = 5 YEARS
Caps						
Positive (+)	\$0	\$0	\$0	\$0	\$0	\$0
Negative (-)	(\$10,000)	\$0	\$0	(\$10,000)	\$0	\$0
Net Position	(\$10,000)	\$0	\$0	(\$10,000)	\$0	\$0

DELTA WEIGHT TABLE

(Percentage of Notional Value Allowed for Impact of Hedging)

OPTIONS							
Remaining Years	Basis Points Out-of-the-Money						501 or More
	50 or Less	51- 100	101- 200	201- 300	301- 400	401- 500	
≤ .25	100%	19%	3%	0%	0%	0%	0%
≤ 1	100%	49%	24%	9%	4%	2%	1%
≤ 2	100%	64%	41%	23%	13%	7%	4%
≤ 3	100%	71%	51%	32%	21%	13%	8%
≤ 4	100%	75%	57%	39%	27%	18%	13%
≤ 5	100%	78%	61%	44%	31%	22%	16%
≤ 6	100%	80%	64%	47%	35%	26%	19%
≤ 7	100%	81%	66%	50%	38%	28%	22%
≤ 8	100%	82%	67%	52%	40%	31%	24%
≤ 9	100%	83%	69%	54%	42%	33%	25%
≤ 9	100%	84%	70%	55%	43%	34%	27%

SWAPIONS						
Nearest Exercise Date (Years)	Basis Points Out-of-the-Money					126 or More
	10 or Less	11- 30	31- 50	51- 85	86- 125	
≤ .5	100%	34%	12%	3%	0%	0%
≤ 1	100%	66%	44%	26%	11%	3%
≤ 2	100%	80%	64%	48%	30%	13%
≤ 3	100%	83%	69%	55%	38%	19%
≤ 3	100%	87%	76%	64%	49%	25%

TABLE 2
IRR EXPOSURE MEASUREMENTS
(Dollars in Thousands)

REPORTING INSTITUTION: Table Rock National Bank

REPORTING DATE: 6/30/91

RISK WEIGHTING ANALYSIS

IRR Weights:	REMAINING TIME BEFORE MATURITY OR INTEREST RATE ADJUSTMENT									
	3 MONTHS ←	> 1 YEAR ← 1 YEAR	> 2 YEARS ← 2 YEARS	> 3 YEARS ← 3 YEARS	> 5 YEARS ← 5 YEARS	> 10 YEARS ← 10 YEARS	> 20 YEARS ← 20 YEARS	OVER 20 YEARS		
Amortizing Assets	0.10%	0.30%	0.60%	1.00%	1.50%	2.60%	3.90%	4.60%		
Non-Amortizing Assets	0.15%	0.60%	1.35%	2.15%	3.20%	5.20%	7.70%	9.10%		
Deep Discount Assets	0.15%	0.60%	1.45%	2.40%	3.60%	7.10%	14.30%	23.00%		
Liabilities	0.15%	0.60%	1.40%	2.25%	3.40%	5.60%	8.70%	10.70%		
Weighted Positions:										
Assets	\$80,119.55	\$436.87	\$1,604.13	\$474.32	\$2,465.06	\$1,280.98	\$11,072.99	\$56,453.66		
Liabilities	(\$37,675.84)	(\$650.92)	(\$3,051.16)	(\$4,791.35)	(\$2,206.53)	(\$9,570.24)	(\$18,905.43)	\$0.00		
Off-Balance Sheet Positions	(\$32,500.00)	\$300.00	\$1,200.00	\$0.00	\$0.00	(\$18,400.00)	(\$15,600.00)	\$0.00		
Weighted Net Position (+/- Chg. in Equity Capital):	\$9,943.91	\$85.95	(\$247.04)	(\$3,817.03)	\$258.53	(\$25,689.26)	(\$23,432.44)	\$6,331.54		

with a 100 basis point parallel shift in the yield curve.

INTEREST RATE SCENARIO ANALYSIS

Short Rates Long Rates	CUSTOM INTEREST RATE SCENARIO: ENTER BELOW THE 1 POINT CHANGE DESIRED IN EACH TIME BAND (+ OR -)										
	100 BP DEC	100 BP INC	NO CHANGE	100 BP DEC	100 BP INC	NO CHANGE	100 BP DEC	100 BP INC	NO CHANGE	100 BP DEC	100 BP INC
SUMMARY RISK MEASURES											
Chg. in Equity Capital	\$9,943.91	(\$9,943.91)	(\$48,901.99)	\$49,901.99	(\$30,958.08)	\$30,958.08	(\$64,619.49)	\$64,619.49	(\$4,971.95)		
Chg. in Eq. Cap./Beg. Assets	0.44%	-0.44%	-2.14%	2.14%	-1.71%	1.71%	-7.63%	7.63%	-0.22%		
Chg. in Eq. Cap./ Beg. Eq. Cap.	5.91%	-5.91%	-29.07%	29.07%	-23.16%	23.16%	-38.41%	38.41%	-2.96%		
Equity Capital/Asset Ratio	7.37%	7.37%	7.37%	7.37%	7.37%	7.37%	7.37%	7.37%	7.37%		
Adjusted Eq. Cap./Asset Ratio	7.54%	7.18%	5.38%	9.25%	5.62%	9.14%	4.65%	9.95%	7.28%		
Volatility of E.C./Asset Ratio	0.17%	-0.18%	-1.99%	1.88%	-1.75%	1.77%	-2.58%	2.58%	-0.09%		

TABLE 1
INTEREST RATE RISK REPORTING SCHEDULE
(Dollars in Thousands)

REPORTING INSTITUTION: Table Rock National Bank

REPORTING DATE: 6/30/91

	TOTAL	REMAINING TIME BEFORE MATURITY OR INTEREST RATE ADJUSTMENT				OVER 20 YEARS
		<= 3 MONTHS	> 3 MONTHS <= 1 YEAR	> 1 YEAR <= 2 YEARS	> 2 YEARS <= 3 YEARS	
I. INTEREST-BEARING ASSETS						
1 Interest-bearing Deposits (Inc)	\$1,158					
2 Securities (Including Treasuries)						
a) Amounts	\$955,047	\$87,210	\$239,929	\$107,338	\$2,606	\$110,588
b) Non-Amortized	\$213,160	\$137,758	\$11,200	\$41,639	\$16,466	\$7,914
c) Term Deposits/Comps	\$206,273				\$90,382	\$5,500
d) FVSD & Sec Purch For Resale	\$57,000	\$57,000			\$66,548	\$140,225
e) Loans, Leases & Acceptances						
f) Amounts	\$397,457	\$37,182	\$49,576	\$49,644	\$55,772	\$46,026
g) Non-Amortized	\$146,527	\$10,086	\$116,441			
5 Total Interest-bearing Assets	\$7,029,117	\$334,448	\$405,910	\$190,621	\$71,044	\$159,508
III. TOTAL ASSETS	\$7,283,628	\$334,448	\$405,910	\$190,621	\$71,044	\$159,508
IV. INT-BEARING LIABILITIES						
1 Interest-bearing Deposits						
a) NOW Accounts	\$70,379	\$1,760	\$5,278	\$7,038	\$14,075	\$25,190
b) MMDA Accounts	\$216,614	\$5,415	\$16,246	\$21,661	\$43,326	\$109,205
c) Savings	\$84,104	\$2,105	\$6,313	\$8,410	\$16,826	\$47,094
d) Time Deposits	\$1,201,243	\$337,448	\$432,405	\$497,981	\$75,735	\$7,390
2 FVSD & Sec Sold For Repo	\$84,457					
3 Other Borrowed Funds	\$162,388					
4 Total Int-bearing Liabilities	\$1,826,265	\$431,185	\$500,242	\$587,478	\$87,021	\$282,367
V. NONINT-BEARING LIABILITIES						
1 Demand Deposits	\$110,465	\$7,762	\$8,285	\$11,047	\$22,094	\$55,730
2 Other Liabilities	\$170,678					
VI. TOTAL LIABILITIES	\$2,115,408	\$433,947	\$508,527	\$598,525	\$287,068	\$337,597
VII. EQUITY CAPITAL	\$168,220					
VIII. NET OFF-BAL SHEET POS						
1 Amounts	\$0	\$0	\$0	\$0	\$0	\$0
2 Non-Amortizing	(\$475,000)	\$200,000	\$200,000	\$0	(\$575,000)	(\$300,000)
	\$0	\$0	\$0	\$0	\$0	\$0

NOTE: Fixed rate loans, MBSs, U.S Treasury securities and interest-bearing balances have been input at their contractual maturities. Variable rate loans, Federal funds sold and adjustable MBSs were input using their appropriate repricing intervals. The remaining assets were input using weighted average lives.

OFF-BALANCE SHEET NET POSITION WORKSHEET FOR IRR REPORTING SCHEDULE

REPORTING INSTITUTION: Table Rock National Bank

REPORTING DATE: 6/30/91

	REMAINING TIME BEFORE MATURITY OR INTEREST RATE ADJUSTMENT									
	<= 3 MONTHS	> 3 MONTHS <= 1 YEAR	> 1 YEAR <= 2 YEARS	> 2 YEARS <= 3 YEARS	> 3 YEARS <= 5 YEARS	> 5 YEARS <= 10 YEARS	> 10 YEARS <= 20 YEARS	OVER 20 YEARS		
OFF-BALANCE SHEET ITEMS										
AMORTIZING										
Sum of Net Positions Below	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sweeps										
Positive(+)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Negative(-)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Position	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Futures										
Positive(+)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Negative(-)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Position	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Forwards										
Positive(+)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Negative(-)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Position	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Options, Caps, Floors										
Positive(+)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Negative(-)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Position	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
NON-AMORTIZING										
Sum of Net Positions Below	(\$475,000)	\$200,000	\$0	\$0	(\$575,000)	(\$300,000)	\$0	\$0	\$0	\$0
Sweeps										
Positive(+)	\$400,000	\$200,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Negative(-)	(\$100,000)	\$0	\$0	\$0	(\$200,000)	(\$700,000)	\$0	\$0	\$0	\$0
Net Position	\$300,000	\$200,000	\$0	\$0	(\$200,000)	(\$700,000)	\$0	\$0	\$0	\$0
Futures										
Positive(+)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Negative(-)	(\$100,000)	\$0	\$0	\$0	(\$50,000)	(\$50,000)	\$0	\$0	\$0	\$0
Net Position	(\$100,000)	\$0	\$0	\$0	(\$50,000)	(\$50,000)	\$0	\$0	\$0	\$0
Forwards										
Positive(+)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Negative(-)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Position	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Options, Caps, Floors										
Positive(+)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Negative(-)	(\$375,000)	\$0	\$0	\$0	(\$375,000)	(\$50,000)	\$0	\$0	\$0	\$0
Net Position	(\$375,000)	\$0	\$0	\$0	(\$375,000)	(\$50,000)	\$0	\$0	\$0	\$0

OFFICE OF THE COMPTROLLER OF THE CURRENCY

APPENDIX 1

TRADING ACTIVITIES

INTRODUCTION

Trading activities are conducted using an increasing variety of cash market, commodity based and off balance sheet products. Several of these products are also offered to end investors or originated to meet specific customer requirements. This section deals principally with activities where a product is purchased or originated and held with the intention of either taking advantage of short term price movements or reselling at existing bid/offer spreads. There are three basic trading practices:

- o **Positioning** - Where a long or short inventory is assembled to speculate on changing prices.
- o **Arbitrage** - A situation where a trader buys and sells one or more instruments speculating that the yield spread between them will narrow or widen. This is done between maturities, markets and instruments. Arbitrage also occurs when traders take advantage of differentials between markets.

Most complicated trading strategies are forms of arbitrage. In theory, there is no limit to the variety of arbitrage strategies which can be developed. In practice, they are limited by the availability of trader expertise, marketability of the end product, and suitable quantitative analysis for identifying emerging opportunities.

- o **Trading** - Basically this is buying low and selling high, profiting from existing bid/offer spreads as opposed to anticipated changes in those spreads.

The most significant external risk encountered in trading activities is market risk. Market risk is directly related to market price movements as they relate to the duration and liquidity of the instrument traded. Anticipated arbitrage profits are often eliminated by basis risk, when price movement between instruments involved in the transactions do not perform as expected. Basis risk also presents itself when open positions are hedged with other types of instruments. Since hedges often fail to have their desired effect and have on occasion increased the magnitude of losses, hedging strategies should be carefully evaluated. Trading also exposes the institution to credit, settlement and liquidity risks.

The greatest internal risk is uncontrolled or unauthorized trading. Therefore, trader compliance with the approved credit and market risk limits should be monitored by personnel independent of the trading units. Automated or manual reports must be available from independent sources to allow for daily

TRADING ACTIVITIES**INTRODUCTION**

reporting of limit excesses. It is also very important that all trading portfolios are marked-to-market on a regular basis. Most trading rooms will revalue their positions daily. At a minimum, positions should be revalued monthly and verified by an independent source.

Although the primary objective of trading activities is to produce a reasonable return on equity, there are other intangible benefits derived from participating in certain markets. Some banks maintain a trading presence in markets like U.S. government securities, domestic negotiable CDs, Euro CDs, and CP to maintain access for informational and funding purposes. Truly liquid trading account assets are also an important source of asset liquidity for some banks. Despite the intangibles, the amount of resources allocated to loss making or break even trading activities must be closely monitored by senior management.

POSSIBLE TRADING PRODUCTS**DOMESTIC MARKETS**

U.S. Government Treasury Bills
U.S. Government Treasury Notes
U.S. Government Treasury Bonds
U.S. Federal Agency Securities
Commercial Paper
Bankers Acceptances
Negotiable CDs
Municipal Securities
Precious Metals
Related Financial Futures Contracts
Related Options Contracts
Foreign Government Securities

INTERNATIONAL MARKETS

Foreign Government Securities
Euro CDs
Euro CP
Euronotes
Eurobonds
Precious Metals
Related Financial Futures Contracts
Related Options Contracts

TRADING ACTIVITIES**INTRODUCTION**

MARKET RISK LIMIT METHODOLOGIES

The following are descriptions of several methodologies for limiting market risk. These methodologies may be used individually or in various combinations as part of an institution's overall risk control system.

VOLUME POSITION LIMITS

These types of limits are expressed in absolute dollar or contract (e.g. futures) terms. Volume position limits are relatively easy to calculate and monitor, but are related only indirectly to profitability.

PRICE VOLATILITY (EARNINGS IMPACT) LIMITS

These limits are defined in terms of the maximum amount of loss that can be sustained before a position is closed out, or management approval is required to maintain the position.

RISK POINT LIMITS

Risk point limit systems attempt to derive limits based on the historic price volatility of the instruments traded. Therefore, longer maturity trading instruments consume more risk points per dollar of position assumed than shorter term items. For example, a \$25 million, 30 year U.S. government bond position would use considerably more risk points than a 3 month T-Bill position of the same size.

TRADING ACTIVITIES**EXAMINATION GUIDELINES**

OBJECTIVES

- o To determine if the policies, procedures, practices, and internal controls regarding trading activities are adequate.
- o To determine if bank officers are operating in conformance with established policies and guidelines for trading activities.
- o To evaluate trading activities for risk and profitability.
- o To evaluate the adequacy of trading limits, risk management and internal control systems.
- o To determine the scope and adequacy of the audit function regarding trading activities.
- o To determine compliance with applicable U.S. and foreign laws, rulings, and regulations.
- o To recommend corrective action when policies, practices, procedures, or internal controls are deficient and subject the bank to undue risk or when violations of law, rulings or regulation have been noted.

INITIAL MEETING/NATURE OF ACTIVITIES

- o Set up an initial meeting with management to discuss strategies, objectives, and plans with respect to:
 - Nature of trading activities
 - Market share
 - Volume
 - Profitability performance and major sources of earnings (or losses)
 - Intangible benefits
 - Retail distribution network
- o Determine how management measures the success of trading activities (e.g., profit/loss, cost of funds utilized, new business generation, asset liquidity, interest rate trends, etc.).

TRADING ACTIVITIES**EXAMINATION GUIDELINES**

Request copies of the following:

- Organization charts and job descriptions of key management/staff (including a delineation of officer approval authorities and reporting responsibilities to group and head office management).
 - Written policies and procedures
 - Formal limits/guidelines on positioning, arbitraging, trading, and hedging activities.
 - The unit's business plan, strategic marketing plans and operational budget.
 - Minutes of management committee meetings.
 - Personnel information on senior management and line officers (including compensation).
 - Most recent internal and external audit reports and regulatory compliance reports (including management replies).
- o Determine if there are any significant changes since the previous examination with respect to:
- Products/activities
 - Management information system (MIS) reports
 - Trading philosophies or strategies
 - Back room operations and systems
 - Policies and procedures
 - Credit and position risk limits
 - Staffing
- o Request the following MIS reports:
- List of authorized trading instruments
 - Trading position reports

TRADING ACTIVITIES**EXAMINATION GUIDELINES**

- Limit exception reports
- Inventory turnover (ageing) reports
- Aged fail and due bill reports
- Borrowed and loaned securities reports
- Revaluation reports
- Profitability reports by individual activity/product area

AUDIT/INTERNAL CONTROL

- o Review internal/external audit reports, regulatory compliance reports, and related management responses.
 - Determine the significance of audit or compliance deficiencies and the status of corrective action.
- o Document conclusions with respect to the adequacy of:
 - Internal controls
 - Internal/external audit coverage (including independence and experience/education to analyze trading activities and their underlying analytical assumptions.)

SUPERVISION OF TRADING ACTIVITIES

- o Determine the extent and effectiveness of supervision over trading activities by reviewing established policies and procedures, risk limits, committee meeting minutes, management reports and internal/external audit reports to ensure that:
 - Strategies and market objectives are fully defined and realistic.
 - Policies and procedures formally define:
 - scope of authorized trading activities;
 - approval authorities and administrative controls;
 - reporting requirements;
 - accounting guidelines;

 TRADING ACTIVITIES

 EXAMINATION GUIDELINES

- operational procedures; and
- guidelines for trading with affiliated companies and insiders.
- Trading risk limits are prudent and are being complied with. These could include:
 - position limits by instrument (i.e., overnight, intraday);
 - arbitrage position limits in aggregate and by instruments arbitraged;
 - hedging limits in aggregates and by position hedged; and
 - stop loss limits by position/trader/center.
- An adequate risk limit compliance monitoring process has been established that includes methods for reporting and approving limit exceptions.
- An adequate compliance function has been established in keeping with applicable regulatory requirements.
- The level and experience of management, trading and operations staff are appropriate given the complexity of activities and volume, especially during peak periods.
- o Evaluate management information systems (MIS) and determine their adequacy in light of transaction volumes and scope of activities. Consider:
 - Sufficiency of reports for monitoring:
 - compliance with limits;
 - aggregate exposure (Netting: Correlation criteria should be established before long and short positions in various instruments can be netted. This applies regardless of whether risk point or volume limits are used.); and
 - success of strategies regarding positioning, trading, arbitrage, and hedging.

TRADING ACTIVITIES**EXAMINATION GUIDELINES**

- Frequency (e.g., real time capabilities)
- Distribution
- Source
 - manual/automated;
 - independent preparation; and
 - periodic testing for accuracy.
- o Identify any shortcomings in the MIS including accuracy, timeliness, or usefulness.
- o Evaluate the manner in which trading strategies are formulated, executed and monitored.
 - Requirements for approving trading in new instruments, hedging strategies, and arbitrage activities.
 - Management's authority and willingness to modify or override trader decisions (via offsetting positions or specific instructions).
 - Off premise/after hours trading
 - Management oversight
 - Modifications for varying market conditions

TRADING RISK ASSESSMENT

- o Evaluate the criteria used in determining limits. These may include the following:
 - Liquidity of instrument
 - Volatility of instrument
 - Correlation of price movements of arbitrated or hedging instruments.
 - Loss exposure related to capital or earnings
 - Market acceptability of bank name

TRADING ACTIVITIES**EXAMINATION GUIDELINES**

- Experience of traders
 - Local government regulations
 - Distribution capabilities
 - Strength of operations and internal controls
 - Analytical department studies
- o Evaluate formal approval and allocation of limits. Consider:
- Source. Limit requests may originate at individual trading desks, with aggregates approved at higher levels. Alternatively, a senior officer or committee might determine maximum allowable exposure.
 - Limit review triggers
 - periodic;
 - profitability;
 - reduced/increased activity; and
 - staffing changes.
 - Allocation by
 - region/location/booking unit;
 - trading desk; and
 - individual dealers.
- o Evaluate the manner in which compliance with limits is monitored. Consider:
- Independence from trading function.
 - Review and approval of excesses by higher levels of management.
 - Frequency of review

TRADING ACTIVITIES**EXAMINATION GUIDELINES**

CREDIT RISK ASSESSMENT

- o Evaluate credit criteria employed in establishing money market and securities counterparty and issuer lines. Consider:
 - Requirements for financial information.
 - Reputation and market reception of counterparties or issuers.
 - Credit ratings
 - Integration of trading area credit exposures with bank wide credit exposures to the same or related counterparties.
- o Determine that limits have been established through an independent credit approval process and not by the trading staff, and that traders are restricted from trading with counterparties and in issuer names for whom limits have not been established.
- o Determine that separate limits are in place for cash market and off balance sheet transactions.
- o Evaluate the manner in which credit exposure on noncash market transactions (e.g., swaps, options, etc.) is quantified. Consider:
 - Volatility of the instrument's price.
 - Market value of outstanding transactions.
 - Collateral or margin requirements.
- o Evaluate systems for ensuring counterparty and issuer line availability prior to executing transactions.
- o Determine that the bank does not enter into repurchase/reverse agreements with counterparties with whom it would be unwilling to lend unsecured.
- o Determine that limit exception reports are generated by an area independent of dealers. Also consider:
 - Capability of aggregating counterparty exposure
 - by region or globally;

TRADING ACTIVITIES**EXAMINATION GUIDELINES**

- by product; and
- frequency.
- Capability of identifying concentrations with a single counterparty or groups of counterparties with similar characteristics.
- Approval of excesses
 - documentation requirements and
 - independence from dealers.

OPERATIONS SUPPORT

- o Obtain a general knowledge of the work flow and job responsibilities within the operations unit. This can be accomplished through discussions, a walk-through, or a review of flow charts and job descriptions. From the review of specific operational areas, evaluate the quality of the overall operational work process. Specifically, using appropriate sampling techniques, determine:
 - That adequate operations procedures have been defined.
 - If operations personnel report independently from trading staff.
 - That adequate segregation of duties exists.
 - That there is satisfactory transactional documentation to ensure a proper audit trail.
 - That the staff operates efficiently and operational losses are reasonable.
- o Test the limit exception monitoring system for compliance with established policy and written procedures.
 - Ascertain if the responsibility for limit monitoring and excess reporting is independent of the trading room.
- o Assess the capacity of the bank's processing and settlement systems and the ability of back office staff to handle present and projected volumes.

ARBITRAGE/HEDGING ACTIVITIES**INTRODUCTION**

CURRENCY AND/OR INTEREST RATE PRODUCTS

Arbitrage/hedging products include interest rate and currency swaps, options, futures and derivatives of such products. These products are designed to either hedge an unwanted position, lower effective borrowing rates or increase yield, speculate on changing prices via position taking or engage in various types of arbitrage. These activities require analytical support to identify opportunities and assess risks. Analytical studies should be independently reviewed and positions should be limited until risks can be reasonably quantified through the different stages of the business cycle.

A variety of risks are associated with arbitrage/hedging activities. The most common are credit, market, settlement, and liquidity risk. Please refer to the "Risk Analysis Framework" provided in the Appendix and the BIS publication, Recent Innovations in International Banking (copies sent to multinational EICs) for detailed descriptions of the risks associated with specific arbitrage/hedging products.

ARBITRAGE/HEDGING ACTIVITIES**EXAMINATION GUIDELINES**

OBJECTIVES

- o Determine if policies, procedures, practices, and internal controls for arbitrage/hedging activities are adequate.
- o Assess the adequacy of audit review of these activities and identify areas needing increased examination emphasis.
- o Determine associated risks and profitability of arbitrage/hedging activities.
- o Evaluate risk management and control systems.
- o Evaluate operations and record keeping
- o Evaluate adherence to applicable law, rulings, regulations, and OCC guidelines; or in the absence of such, adherence to standard market practice.

EXAMINATION GUIDELINES**INITIAL ASSESSMENT**

- o Review all recent internal/external audit reports that specifically address arbitrage/hedging activities.
 - Determine whether there are any problems that may indicate systemic weaknesses in the bank's operation or a breakdown in internal controls.
 - Review management's response to identified discrepancies and/or deficiencies for timely and appropriate action.
 - Review and evaluate the effectiveness of the overall audit scope with regard to arbitrage/hedging activities.
 - o Based on the evaluation of internal controls and the level of reliance that can be placed on internal/external audit work, determine the scope of the examination.
 - o Obtain a listing of reports available to both senior management and booking/origination managers.
-

ARBITRAGE/HEDGING ACTIVITIES**EXAMINATION GUIDELINES**

- o Determine the nature and extent of arbitrage/hedging activities.
 - Meet with management to discuss objectives, volume, profitability, plans, and market share.
 - Identify permissible activities.
 - Review management reports, including budgets and/or strategic plans.
 - Obtain any feasibility studies, marketing analyses, or internal product profiles that may describe the bank's arbitrage/hedging services.
 - Determine where arbitrage/hedging products are originated, managed and booked, and whether the examination will be conducted at head office or remote units.
 - Determine if arbitrage/hedging strategies are defensive or aggressive (e.g. for customer accommodation or as market maker).

MANAGEMENT SUPERVISION AND PLANNING

- o Review budgets/strategic plans and evaluate projections for growth, types of transactions, and risk assumptions.
- o Determine if policies and procedures are commensurate with the volume of activities either currently undertaken or anticipated.
- o Review pricing policy and determine whether new/additional business is justified.
- o Determine the proportion of arbitrage/hedging transactions initiated for intracompany and the bank's own use.
- o Review management and staff within arbitrage/hedging units.
 - Evaluate management expertise and staff size in relation to stated objectives, the volume of activity, and associated risks.

ARBITRAGE/HEDGING ACTIVITIES**EXAMINATION GUIDELINES**

- Ascertain whether turnover has impacted daily operations.
- Evaluate staff compensation against market standards.

INTERNAL CONTROLS AND AUDIT

- o If a separate compliance/risk management function exists, review reports of such activity and determine whether appropriate remedial action has been initiated.
 - o Follow up on significant, unresolved discrepancies and/or deficiencies and determine adherence to implemented corrective procedures.
 - o Evaluate the risk management policy and control process.
 - Ascertain if all associated risks have been identified.
 - Determine the level of compliance with exposure/customer limits.
 - Evaluate the quality of arbitrage/hedging portfolios.
 - o Evaluate risk positions.
 - Review position reports and determine the level of unhedged interest rate and currency positions.
 - Review management models which estimate exposure (profit or loss) under different market scenarios.
 - Assess management's quantification of what comprises a hedge (basis risk coverage).
 - Estimate the impact of possible changes in interest and foreign exchange rates.
 - Discuss risk positions with management and determine whether positions are consistent with written policy.
 - o Discuss and evaluate risk formulae; determine if formulae accurately assess loss potential.
-

ARBITRAGE/HEDGING ACTIVITIES**EXAMINATION GUIDELINES**

- o Evaluate the credit approval process for arbitrage/hedging activities.
 - Determine how approval is obtained from the appropriate credit responsibility unit (i.e. prior or subsequent to inception).
 - Determine whether customer arbitrage/hedging exposures are aggregated with the customer's total credit exposure.
 - Evaluate controls over customer limits and credit exposure.

ACCOUNTING AND OPERATIONS

- o Determine whether back room processing capabilities are compatible with the current level of activity and with projected growth.
 - o Evaluate backroom operations and determine if limit monitoring and exception reporting are effective.
 - Where exceptions are noted, ascertain if appropriate notification was made and approval obtained.
 - Review work flow for proper controls.
 - Review discrepancy log for negative trends; investigate any unusual situations.
 - Determine if sufficient records are retained to reconstruct individual transactions.
 - Assess the appropriateness of the revaluation process.
 - o Evaluate the adequacy of the confirmation/documentation process.
 - o Identify hedging portfolios for the bank's own use and verify that their structure and accounting is in accordance with appropriate accounting and regulatory guidelines.
-

ARBITRAGE/HEDGING ACTIVITIES**EXAMINATION GUIDELINES**

- o Evaluate accounting procedures to insure that they conform with accounting, regulatory, and/or market guidelines (e.g. up front fees, accruals, notional vs. total exposure, etc.).
- o Review regulatory reports and determine that obligations and associated income are properly reported.

INCOME AND EXPENSE

- o Analyze trading unit/product profitability reports.
 - Determine the profitability of different origination units.
 - Determine the source of gains or losses (realized and/or unrealized); discuss any large or unusual gains or losses.
 - Assess whether earnings are commensurate with associated risks.

CONCLUSIONS

- o Discuss with appropriate management and prepare report comments addressing:
 - The soundness of objectives, strategies, policies and procedures.
 - The profitability and success of arbitrage/hedging activities.
 - The quality and effectiveness of product management.
 - The level of risks assumed.
 - The effectiveness of control, reporting and analytical systems.
 - The adequacy of operational and internal controls.
 - Other matters of significance.
 - o Prepare a memorandum and update workpapers with any information that would facilitate future examinations. Conclusions regarding the nature and extent of arbitrage/hedging activities should be included.
-

 ARBITRAGE/HEDGING ACTIVITIES

APPENDIX

 INTERNAL CONTROL QUESTIONNAIRE

YES NO

POLICIES

- ___ ___ Has the board of directors (or a duly appointed committee) adopted written policies for arbitrage/hedging activities that:
- ___ ___ o define the objectives of the bank's activities?
 - ___ ___ o identify inherent risks and provide appropriate limits?
 - ___ ___ o establish credit quality standards and provide appropriate approval guidelines?
 - ___ ___ o require segregation of duties among trading, accounting, and confirmation personnel?
 - ___ ___ o prescribe a code of ethics for dealing room personnel?
 - ___ ___ o provide a resolution process for discrepancies?
 - ___ ___ o establish management reporting requirements?
 - ___ ___ o provide guidelines and controls for off-premise trading?
 - ___ ___ o establish appropriate accounting and revaluation procedures?
- ___ ___ Are policies periodically updated as new strategies are introduced or conditions change?
- ___ ___ Do policies attempt to minimize undue pressure on traders to meet specific, budgeted earnings goals?
- ___ ___ Are policies understood and uniformly interpreted by all personnel (i.e. trading, accounting, and audit)?

INTERNAL AND EXTERNAL AUDIT

- ___ ___ Are arbitrage/hedging activities subjected to regular, comprehensive audits?
-

 ARBITRAGE/HEDGING ACTIVITIES

APPENDIX

 YES NO

- ___ ___ Do audit procedures provide sufficient coverage?
 ___ ___ Do either internal or external auditors periodically perform direct confirmation of a representative sample of arbitrage/hedging arrangements?
 ___ ___ Are audit staff sufficiently trained?
 ___ ___ Are appropriate follow-up procedures performed when discrepancies/deficiencies are identified?

TRANSACTION INITIATION

- ___ ___ Are customer and/or product proposal sheets prepared for all new or unusual transactions?
 ___ ___ Is credit approval evidenced in writing?
 ___ ___ Are transaction summaries prepared for each deal that:
 ___ ___ o disclose whether deals are matched/unmatched or hedged at inception?
 ___ ___ o explain accounting and settlement procedures?
 ___ ___ Are standardized contracts used and have they been approved by legal counsel?
 ___ ___ Are legal opinions required before new or unusual deals are closed?
 ___ ___ Is evidence of authorization to enter into arbitrage/hedging transactions obtained from the counterparty prior to inception?
 ___ ___ For matched deals, is closing conducted simultaneously or on the same day?

TRADING FUNCTION

- ___ ___ Is a trader's position sheet maintained for each interest rate product traded?
 ___ ___ Does management receive the position report at the end of each trading day?

 ARBITRAGE/HEDGING ACTIVITIES

APPENDIX

 YES NO

— — Have controls been established to safeguard the integrity of transaction data input?

— — Are telephone deals taped and maintained for a reasonable length of time (e.g. 60 days)?

RISK MANAGEMENT

— — Has management initiated a system to measure and control risks associated with arbitrage/hedging activities?

— — Are limits based on independent risk analysis?

Do quantifiable limits exist for:

— — o aggregate book size?

— — o open positions?

— — o individual counterparties?

— — o trading exchanges?

— — o concentrations?

— — o maximum tenor?

— — o stop loss amounts of profit or loss?

CONFIRMATIONS/DOCUMENTATION

— — Do controls exist to prevent delivery of incoming and outgoing confirmations to the trading area?

— — Are all data on incoming confirmations verified with file copies of the contract?

— — Are outgoing confirmations mailed, telexed, or telephoned on the day during which each trade is effected?

— — Do controls exist that identify booked contracts for which no incoming confirmation has been received?

ARBITRAGE/HEDGING ACTIVITIES**APPENDIX**

YES NO

- — Are appropriate risk control personnel notified if no confirmation is received within a limited number of days after a contract has been effected?
- — Are discrepancies directed to an officer outside of the trading area for resolution?
- — Is a documentation checklist used to ensure that all required documents are retained?
- — Are original documents properly safeguarded?
- — Are duplicate documents maintained in back-up files?

ACCOUNTING/REPORTING

- — Does appropriate segregation of duties exist between the trading room and accounting/reporting function?
- — Do accounting procedures adhere to GAAP, market practice, and/or regulatory guidelines?
- — Are after hours deals posted as of the day contracted?
- — Is the accounting treatment for unusual/exotic transactions approved before inception?
- — Are positioning/warehouse portfolios segregated from hedging portfolios?
- — Are revaluation/mark-to-market rates obtained from an independent source?
- — Are revaluation/mark-to-market calculations independently verified on a periodic basis?
- — Are management reports prepared in an accurate and timely manner?

OTHER

- — Is the bank's MIS capable of identifying sudden increases in volume by individual traders?
-

ARBITRAGE/HEDGING ACTIVITIES**APPENDIX**

YES NO

- ___ ___ Are brokerage fees periodically reviewed to determine if concentrations exist?
- ___ ___ Does the bank have a system to ensure compliance with applicable laws, rules, and regulations (both U.S. and international)?

CONCLUSION

Based on an evaluation of the answers to the foregoing questions, internal control is considered _____ (good, average, or poor).

CHIEF NATIONAL BANK EXAMINER'S OFFICE

Commodity Derivative Markets

BANK PARTICIPATION AND RISKS

MARCH 1991

COMMODITY DERIVATIVE MARKETS**BANK PARTICIPATION AND RISKS**

MARKET OVERVIEW

The commodity derivative markets offer participants a way to take positions on future commodity prices. Market participants are often commodity producers or consumers who want to lock in future revenues or expenses by entering into a contract that guarantees a given price. The contract specifies exactly the type or grade of the commodity, the amount, and future delivery or settlement dates. Some contracts allow for delivery of the commodity; others are settled for cash.

Until recently, nearly all commodity contracts were exchange-traded because of legal and regulatory restrictions. In July 1989, however, the Commodity Futures Trading Commission (CFTC) permitted the development of an over-the-counter (OTC) market. The CFTC ruled that commodity swaps and options could be offered over-the-counter as long as these derivatives met certain criteria. Shortly after, the OCC also liberalized restrictions on bank participation in this market. As a result, a sizable OTC market has emerged in which the commercial banks are major players.

There are several fundamental differences between the futures exchanges and the OTC markets. First, futures contracts entail delivery of the physical commodity upon expiration whereas OTC contracts can only be settled for cash. Cash settlement makes it more difficult to use the OTC market to manipulate the price of a commodity through cornering the market. Second, futures contracts are standardized whereas OTC contracts are tailored and are often for commodities or maturities that are not offered on the exchanges. As a result, the OTC markets tend to be shallower and more illiquid than the futures market. This means that participants in the OTC market may have more difficulty hedging their positions and third-party prices may not be readily available.

COMMODITY DERIVATIVE MARKETS**BANK PARTICIPATION AND RISKS**

COMMODITY DERIVATIVE PRODUCTS**Futures**

A futures contract promises delivery of a specified quantity of a specified commodity at a future date for a specified price. The seller of the futures contract promises to deliver the commodity and is said to be "short." The buyer promises to purchase the commodity and is said to be "long." Under the US Commodity Exchange Act, futures may be lawfully entered into in the United States only on a regulated exchange. The exchange is always the counterparty in a futures contract, which limits credit risk. When a bank deals through a broker, however, the bank retains the risk that the broker may not correctly execute the contract or the margin calls on the exchange.

The futures market generally extends out to two to three years but may be shorter for certain commodities. Contract terms are standardized as to quantity, quality, and delivery dates, and contracts exist for only those commodities that are widely traded.

Swaps

A commodity swap is a financial contract between two counterparties whereby one party pays a specified fixed price for a specified amount of a commodity and receives the market price at specified payout dates over the lifetime of the swap. (See Attachment I.) Unlike other rate swaps, the floating or market price is usually the average of a commodities price index over a specified period, which means that hedges must be adjusted daily to achieve an average price. The payments are based on a notional amount of the commodity and are netted at each payout date. The swap is a purely financial contract; the underlying commodity is never delivered.

Commodity swaps were developed by banks to provide customers with hedging instruments that are more flexible and tailored than futures contracts. Futures contracts are limited in terms of the type of commodity and maturity and have standardized notional amounts. Swaps may be written on any commodity, and the maturity is theoretically unlimited, although the market does not extend much beyond seven years. Payment dates and other cash flow characteristics of swaps can also be tailored so that a swap can more perfectly hedge an underlying transaction.

COMMODITY DERIVATIVE MARKETS**BANK PARTICIPATION AND RISKS**

Caps And Floors

Caps and floors are OTC options that allow the purchaser to establish a maximum price (cap) or a minimum price (floor) on a given amount of a commodity over a specified time period. Unlike a swap or future, these are asymmetrical transactions. The purchaser pays a premium to the seller for this protection. The premium is the market value of the option at the original transaction date and is recorded on the balance sheet as the purchaser's asset and the seller's liability.

A cap is a contract between two parties whereby the seller has an obligation to pay the buyer the difference between the market price and the fixed price (the strike price) when the market price exceeds the cap. (See Attachment II.) In options terms, a cap is a series of European call options on forward prices. A floor is a contract between two parties whereby the seller has an obligation to pay the buyer the difference between the market price and a specified fixed price (the strike price) when the market price is less than the floor. In options terms, a floor is a series of European put options on forward commodities prices.

A collar is made up of a cap and a floor and is usually sold as a hedge for an underlying position. It allows the buyer to establish a hedge on an adverse price movement but at the same time the buyer gives up the benefit of a favorable price movement. In exchange for giving up this benefit, the buyer reduces or eliminates the premium paid to the seller. In options terms, the seller of a collar sells a cap to the client and buys a floor (or vice versa). If the price of the cap and floor are the same, the premiums are effectively netted and there is no upfront payment. In a portfolio, the collar is broken down into a long (bought) and short (sold) option position, and the risk is managed as such.

COMMODITY DERIVATIVE MARKETS**BANK PARTICIPATION AND RISKS**

MARKET CHARACTERISTICS**Liquidity**

The commodity derivative markets are generally much less liquid than the interest rate and foreign exchange derivative markets. Liquidity usually rapidly drops off for contracts on forward prices beyond one year. As a rule of thumb, commodities that are not exchange-traded are more likely to be illiquid in the forward markets. These market characteristics make hedging more difficult as perfect hedge instruments are often not available. It also complicates the mark-to-market or revaluation of the portfolio as independent prices may not be readily available.

Volatility

Commodity prices tend to be much more volatile than interest rates or foreign currency rates and more subject to manipulation. As the commodity markets are smaller than these other markets, changes in supply or demand can have a more dramatic effect on the price and thus volatility. For instance, many commodities markets are dominated by only a few suppliers. Thus a disruption in any one source of supply may greatly affect the price. At times, supply can be artificially constrained by speculators who attempt to manipulate the price by cornering the market. This is accomplished by buying commodity futures at a low price and then forcing the spot price up by buying up the commodity in the spot market. Cornering can be done only in markets that are small enough to be dominated by one player or by a few market participants acting in collusion.

The Forward Price Curve

The forward price curve represents the prices at which a commodity can be bought for delivery or settlement at a given future date. (See Attachment III.) The forward price curve is based on prices that are observable in the market out to one to two years. Beyond that point, however, the curve is usually based on hypothetical models as there are fewer prices observable in the market. These models usually take the near term curve and extrapolate it into the future. An upward sloping forward price curve is referred to as being in "contango," and a downward sloping curve is referred to as being in "backwardation."

COMMODITY DERIVATIVE MARKETS
BANK PARTICIPATION AND RISKS

The accuracy of these models is a key component to successful pricing, hedging, and accounting. At this stage, most market participants use models that are internally developed as standard pricing and hedging models are not yet available in the market. If the model is flawed or inaccurate, unanticipated losses may occur from unrealistic pricing, ineffective hedges, or an inability to recognize and account for accumulated losses. Internal models should be validated by a third party independent of the market-makers.

RISKS
Market Risks
EXPOSURE TO CHANGES IN SPOT PRICES (NET OPEN POSITION)

Spot risk is the market value sensitivity of a position to changes in spot prices (sometimes referred to as "delta"). A long position will increase in value with an increase in the price of the commodity and a short position will decline in value with an increase in the price. In terms of derivative contracts, the following positions are analogous to being long or short the underlying commodity:

<u>Contract</u>	<u>Long Positions</u>	<u>Short Positions</u>
Future	Buy	Sell
Swap	Receive Floating Pay Fixed	Receive Fixed Pay Floating
Cap	Buy	Sell
Floor	Sell	Buy

In order to hedge spot risk, risk managers will offset a long position with a short position. The choice of hedge instrument used generally depends on: (1) market conditions, e.g., whether the bank has a natural offsetting position; (2) the risk profile of the institution; and (3) price. Because futures contracts are standardized, they are cheaper than OTC contracts and are normally used as hedges. The terms of a futures contract, however, will rarely be identical to the terms of an OTC contract, leaving the bank with residual spot risk.

EXPOSURE TO CHANGES IN FORWARD PRICES (FORWARD GAPS)

Forward price risk arises from taking a long and a short

COMMODITY DERIVATIVE MARKETS**BANK PARTICIPATION AND RISKS**

position with different maturities, creating a forward gap. For example, a three-year long position that is hedged with a one-year short position would create a two-year gap. When there is a gap, the hedge will be fully effective only in the case of a parallel shift of the forward price curve. If the one-year and three year prices do not move by the same amount, then the bank would realize a net gain or a net loss.

Forward price risk usually arises when a bank enters into a contract whose maturity extends beyond the last futures contract available on the exchange. In this case, the risk manager cannot enter into offsetting futures contracts for the later repricing dates. Instead, the manager will "stack hedge" by buying or selling the last dates that are available on the futures exchange and then roll the hedges over as the maturity of the contract declines and new futures contracts become available. As mentioned, this hedging technique will not be effective if the slope of the forward price curve changes (rollover risk). This risk should be priced into the contract to cover the bank for possible losses due to the lack of hedging instruments.

There are other techniques that a bank may use to minimize rollover risk. A risk manager should identify which segments of the price curve have been historically most volatile and minimize gaps on this segment. Another technique is to use hedge contracts with different maturity dates to avoid a concentration of one date.

BASIS RISK

If a bank offsets a long position in one commodity with a short position in a second commodity, basis risk is created. Basis risk is the risk that the prices of two commodities used to offset each other do not move together. When risk managers or traders cannot profitably execute a hedge in the first commodity, they may use a second commodity whose price does not move in line with the first. A common example of a position subject to basis risk is a commodity swap based on jet fuel prices, which is hedged with an exchange-traded crude oil contract.

To control basis risk, management should demonstrate a high level of correlation between the movement of the two price indices over several time frames. The risk should also be priced into the contract to compensate the bank for possible losses due to lack of hedging instruments.

COMMODITY DERIVATIVE MARKETS**BANK PARTICIPATION AND RISKS**

OPTIONS RISKS

Caps, floors, and collars are option-based products and give rise to options risks. Specifically, the market value of these contracts is determined by: (1) the spot price or forward price; (2) the level of volatility; (3) interest rates; and (4) the remaining time to maturity. If any of these variables change, there will be gains or losses in the portfolio. The common risk measures used to control these exposures are:

- o Delta: the sensitivity of the market value of the option to changes in spot prices. If the bank has hedged the exposure to changes in spot prices, the delta of the portfolio will be near zero.
- o Gamma: the cost of rehedging the delta position after spot prices have moved. (Note: this exposure only occurs when the bank has sold options and is subsequently "short gamma.")
- o Vega (also known as kappa or tau): the sensitivity of the market value to changes in the level of volatility of the commodity price. Because the volatility of commodity prices is generally higher than the volatility of major currencies or interest rates, the exposure of commodity prices to changing volatility is consequently greater and needs to be closely monitored to ensure that the risks are prudently managed.

Credit Risk

Credit risk is the risk that the counterparty will not perform on the contract when it has positive value to the bank. The level of exposure is a fraction of the notional amount and is equal to the potential market gain on the contract. This represents the amount that the bank would lose if it were to replace the contract at current prices. There is minimal credit risk associated with futures contracts as the counterparty is the exchange. If the trade is executed through a broker, however, the bank is at risk if the broker does not correctly execute the trade or margin calls.

Different methods exist to calculate credit exposure for derivative products. These methods should take into consideration the following factors: (1) the current gain on the contract (the replacement cost); and (2) the amount

COMMODITY DERIVATIVE MARKETS**BANK PARTICIPATION AND RISKS**

by which the gain may increase. The latter is a function of the price volatility of the underlying commodity and the remaining time to maturity. Commodity prices tend to be more volatile than interest rates or foreign currency rates. Therefore, as a rule of thumb, the credit exposure of these contracts should be relatively greater as a percentage of the notional amount.

Model Risk

Banks generally use proprietary models to: (1) price commodity derivatives; (2) generate hedge ratios; (3) measure the risk arising from adverse changes in market variables; (4) mark-to-market the book, and (5) provide portfolio management capability. These models are based on many assumptions regarding the market, which may not be accurate. The integrity of the model and the validity of the assumptions are the most important factors in successfully managing a portfolio of commodity derivatives.

As these models are mathematically complex, their validation is generally beyond the ability of the internal audit function, and the bank may have to rely on an external consultant. In any case, the model should be evaluated by an expert outside of the trading function and the major assumptions documented.

LEGAL ISSUES**The Commodity Futures Trading Commission (CFTC)**

On July 17, 1989, the CFTC ruled that bank commodities derivatives would be exempt from CFTC rules and regulations as long as these transactions met the following conditions:

- (1) the terms of each transaction are individually tailored;
- (2) there is no exchange-style offset;
- (3) there is no clearing organization or organized margin system;
- (4) the transaction arises from the bank's general business; and
- (5) the transactions are not marketed to the public via a secondary market.

COMMODITY DERIVATIVE MARKETS**BANK PARTICIPATION AND RISKS**

The Comptroller Of The Currency

Prior to 1989, the OCC issued several no-objection letters for banks to engage in commodity swaps and options as long as the bank acted only as a broker and assumed no market risk. In January 1990, the authorization was extended to allow banks to "warehouse" transactions and hedge the market risk using available futures or other commodity derivative products. The no-objection letter does not allow banks, however, to take open positions in order to speculate on commodity price changes. In addition, the permission is contingent upon the bank's ability to identify and control the risks in a prudent manner.

Commodity Derivative Markets

RISK ASSESSMENT GUIDELINES

MARCH 1991

COMMODITY DERIVATIVE MARKETS**RISK ASSESSMENT GUIDELINES**

INTRODUCTION

These guidelines should be used as a supplement to the "Capital Markets Examination Procedures--Trading Activities" (January 1988) in The Source Book (previously The Multinational Source Book). The guidelines set out in "Trading Activities" as to policies and procedures, audit/internal control, risk assessment, credit risk, operations support, and evaluation of earnings generally apply to positions in commodity derivatives. The principal difference is that commodity derivatives, like interest rate swaps, are not traded but rather are held and managed in portfolio. These guidelines supplement the section on "Trading Activities" by addressing the risks and procedures that are specific to commodities markets.

POLICIES AND PROCEDURES**Scope Of Permissible Activity**

1. Ensure that the bank has developed a business plan that describes the nature of the prospective business, customer base, budget projections, etc.
2. Ascertain that the scope of permissible activity is defined and includes the following policy limitations:
 - a) the commodities on which the bank can execute contracts;
 - b) pre-approved counterparty credit limits;
 - c) the notional amount permissible by commodity or commodity group (e.g., energy-related, metals, agriculture);
 - d) the type of commodity derivatives that can be used (e.g., swaps, futures, options); and
 - e) the maximum tenor of derivatives by commodity or commodity group.

COMMODITY DERIVATIVE MARKETS**RISK ASSESSMENT GUIDELINES**

3. Ensure that the commodity policies and procedures have been approved by legal counsel, accounting, credit policy, and internal audit.

Risks And Controls

1. Ascertain that the bank has identified the major risks and the procedures for controlling these risks. At a minimum, risk management procedures should address the following:
 - a) liquidity;
 - b) spot price risk;
 - c) forward price risk;
 - d) basis risk between commodities;
 - e) options risks, if appropriate; and
 - f) credit risk.
2. Assess management supervision and ensure that the following controls are in place:
 - a) legal opinions are obtained that specify the permissible scope of the activity;
 - b) documentary controls are sound;
 - c) the confirmation process is segregated.

RISK MANAGEMENT**Liquidity**

1. Liquidity risk should be controlled by limiting bank participation to those segments of the market where the risk can be effectively hedged. Ascertain that:
 - a) the level of permissible activity in each commodity relates to the size of the underlying cash and forward markets.
 - b) there are limits on futures versus open interest volumes.

COMMODITY DERIVATIVE MARKETS**RISK ASSESSMENT GUIDELINES**

- c) maximum tenors are set for all products.

Market Risk

1. If the bank assumes market risk, i.e., manages the book on a portfolio basis, risk managers should: (1) identify the maximum level of acceptable losses arising from price risk (earnings at risk); (2) identify what would constitute a probable adverse move in the variables affecting the price based on statistical evidence; and (3) limit positions so that the loss limit would not be exceeded if price variables were to move against the position.

Depending on the nature of the portfolio, ensure that limits address earnings at risk arising from adverse movements in the following price variables:

- a) spot price (delta);
 - b) shifts in the forward price curve;
 - c) the level of volatility (vega) for options positions; and
 - d) the basis spread between two commodities that are used to offset each other (jet fuel versus diesel, for example).
2. Ensure that basis risk is limited by establishing a minimum level of price correlation required to hedge one commodity with a second commodity.

COMMODITY DERIVATIVE MARKETS**RISK ASSESSMENT GUIDELINES**

Credit Risk

1. Ensure that credit risk is measured, factoring in current and potential market gains, and is charged against the counterparty's global credit limit.
2. In evaluating the credit risk of the bank's counterparty, the bank should include potential liabilities resulting from the counterparty's off-balance-sheet positions such as derivative contracts. Commodity derivatives can be used for outright price speculation as well as hedging and can result in large market losses if the speculative position moves adversely.

REVALUATION PROCEDURES

1. Assess valuation procedures:
 - a) Are the assumptions used in the model to value the portfolio documented and checked for reasonableness?
 - b) Are all revaluation variables (e.g., spot prices, forward prices, volatilities) verified by sources independent of the trading area at least monthly?

ACCOUNTING**RAP**

1. The contract amount of commodity futures, forwards, swaps, and options should be reported on Schedule RC-L Off-Balance Sheet Items under Line 13, "Contracts on other commodities and equities." The contract amount is the quantity times the contract price per unit. For example, a contract to buy 10,000 barrels of oil at \$20 per barrel would have a contract amount of \$2million.
2. The market value of commodity futures and forwards should be calculated monthly, and gains or losses recognized under "Other Income" or "Other Noninterest Expense."
3. The premium value (price) of commodity options (including caps and floors) should be reported on Schedule RC-Balance Sheet. Purchased options are carried as "Other assets," and no gains or losses

COMMODITY DERIVATIVE MARKETS**RISK ASSESSMENT GUIDELINES**

are recognized until the expiration of the option. Written (sold) options are carried as "Other liabilities." Written options are carried on a higher of proceeds or market value basis, and gains and unrealized losses are recognized under "Other Expense."

GAAP

1. Futures should be carried on a market valuation basis per FASB 80.

INTERNAL CONTROLS/OPERATIONS

1. If the bank uses a model for the pricing, hedging or mark-to-market of commodity derivatives, ensure that the integrity of the model is validated by an expert source outside of the trading area.
2. Any changes to the assumptions in the model should be documented and justified by sources independent of the trading area.
3. Ensure that an official revaluation of the portfolio is done monthly by operations and that market prices are provided by, or checked against, independent sources.

RISK-BASED CAPITAL

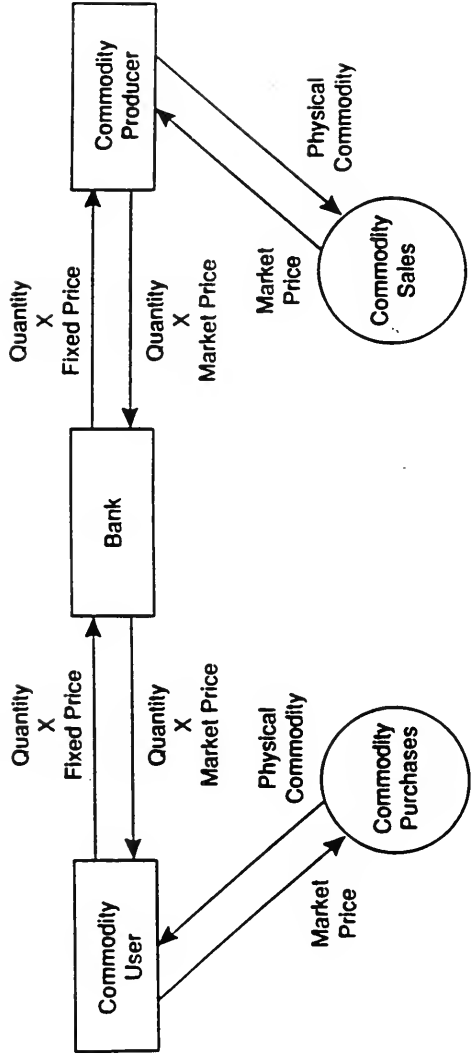
The credit risk associated with commodity derivatives should be calculated using the methodology for foreign currency. Credit risk is thus the sum of two factors:

- a) the current market gain on the position (the replacement cost); and
- b) an add-on equal to 1 percent of the notional amount for contracts with less than one year remaining to maturity and 5 percent for contracts with more than one year remaining to maturity.

Futures contracts with the exchange are excluded from the credit risk calculation, since the counterparty is the exchange.

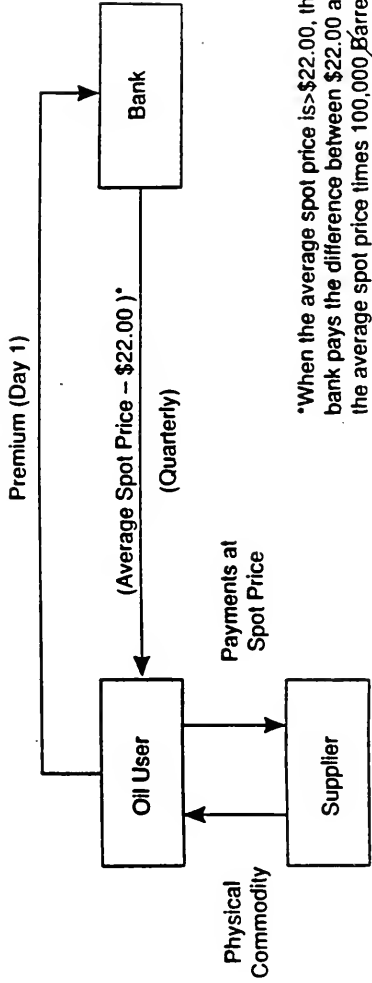
Commodity Swap

- Maturity: 2 Years
- Commodity Type: West Texas Intermediate Crude Oil
- Fixed Price: \$22.00 Per Barrel
- Quantity Per Settlement Period: 100,000 Barrels
- Settlement Period: Quarterly



Commodity Price Cap

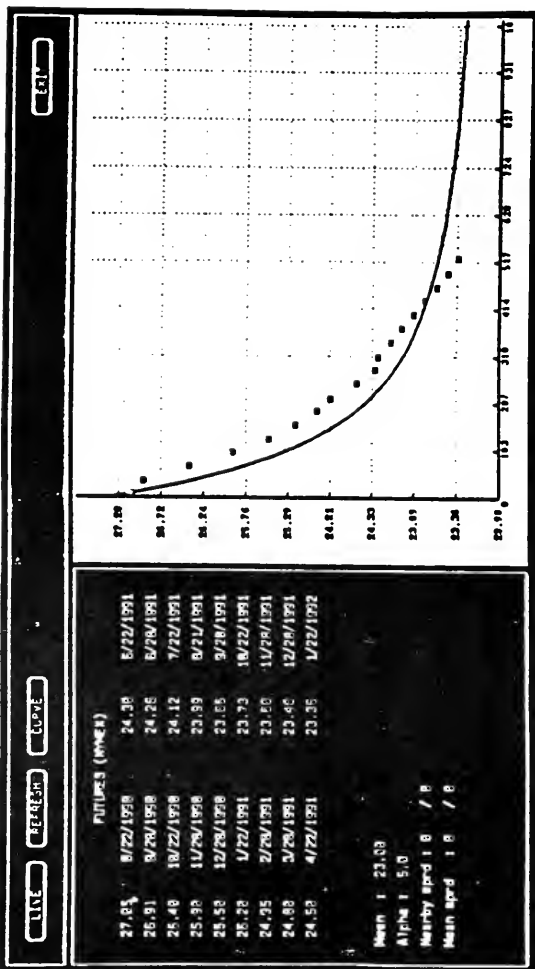
- Maturity: 2 Years
- Commodity Type: West Texas Intermediate Crude Oil
- Settlement Period: Quarterly
- Quantity Per Settlement Period: 100,000 Barrels
- Cap Level: \$22.00 Per Barrel



*When the average spot price is >\$22.00, the bank pays the difference between \$22.00 and the average spot price times 100,000 Barrels.

Crude Oil Forward Price Curve¹

\$/Barrel



Number of Days

¹Futures prices (NYMEX) indicated by boxes.

Foreign Currency Options and Risks

Risk Assessment Guidelines

Multinational and Regional Bank Analysis Division

OCTOBER 1989

FOREIGN CURRENCY OPTIONS AND RISKS**TABLE OF CONTENTS**

	Page
INTRODUCTION	
INTRODUCTION.....	1
DETERMINANTS OF MARKET VALUE.....	6
RISKS AND RISK MANAGEMENT.....	12
CURRENCY OPTIONS MARKET.....	23
EXAMINATION GUIDELINES	
FIRST DAY LETTER.....	26
EXAMINATION OBJECTIVES.....	27
NATURE OF CURRENCY OPTIONS ACTIVITIES.....	28
RISK LIMITS AND CONTROLS.....	29
RISK MANAGEMENT AND INFORMATION SYSTEMS.....	31
OPERATIONS.....	32
EARNINGS PERFORMANCE.....	33
POLICIES AND PROCEDURES.....	34
INTERNAL AUDIT.....	35
ACCOUNTING AND REGULATORY REPORTING.....	36

FOREIGN CURRENCY OPTIONS AND RISKS**INTRODUCTION**

INTRODUCTION

Option contracts give the buyer the right (but not the obligation) to buy or sell a product at a predetermined price (strike price). Unlike a futures contract, the buyer of an option determines whether the purchase or sale takes place.

Options may be viewed as insurance against changes in value of the underlying product, in this case, foreign currency. The seller (writer) of an option is analogous to the seller of an insurance policy. He receives a premium from the buyer in exchange for providing protection against an adverse movement in exchange rates. Options are referred to as asymmetrical contracts because the two parties have very different risk/reward patterns. The writer of an option has unlimited risk, if not hedged, and his maximum reward is the amount of premium received. The buyer, on the other hand, has unlimited upside potential and his risk is limited to the premium paid.

There are two types of options contracts: (1) call options and (2) put options. Call and put options may be used for creating speculative positions in foreign currency or for hedging existing currency risks.

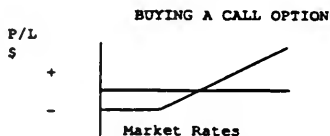
CALL OPTIONS

A call option gives the buyer the right to buy a specified amount of currency at a predetermined price for a specified period of time. In terms of profit potential, owning a call option is similar to owning the underlying currency. If the value of the underlying currency increases, the value or price of the option will also increase, though not on a one-for-one basis. The owner of a call option, though, does not have the same downside risk as owning the currency outright. If the value of the foreign currency declines, the most he can lose is the premium.

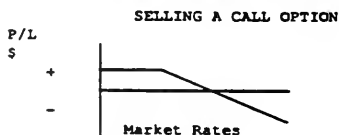
The following graph indicates the risk/reward tradeoff for the holder of a call option at expiration. When the market rate is below the strike price, the buyer loses the premium. At the strike price and above, gains on the option first offset the premium paid and then produce profits.

 FOREIGN CURRENCY OPTIONS AND RISKS

INTRODUCTION

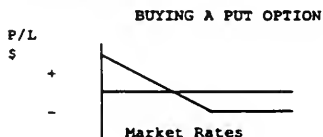


The writer of a call option is in the opposite position. He has the obligation to deliver the specified amount of currency at the strike price. As the currency rate increases, the amount the writer may lose increases as he may have to buy the currency at the higher market rate and deliver it at the lower rate (the strike price). As illustrated below, the most an option writer may earn is the premium.



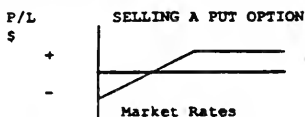
PUT OPTIONS

A put option gives the buyer the right to sell (or put) a specified amount of currency at a predetermined price, for a specified period of time. In terms of profit potential, owning a put option is similar to being short the underlying currency. As the market value of the currency declines, the market value of the option increases, though not on a one-to-one basis. The value of the option increases because the holder has the right to sell the currency at a rate (the strike price) which may be higher than the market rate. The buyer of a put option does not have the same downside risk as an investor who shorts the currency, as the most he can lose is the premium.



FOREIGN CURRENCY OPTIONS AND RISKS
INTRODUCTION

The writer of a put is again in the opposite position of the buyer. He has the obligation to accept deliver of the currency at the strike price. As currency rates decline, he may have to buy the currency at a higher rate (the strike price) than the market rate. In terms of reward, the most he or she can make is the premium.



Generally, banks not only write or buy options, but hold a portfolio consisting of written options, purchased options and positions in the underlying currency.

TERMINOLOGY

Call Option	The right but not the obligation to buy currency
Put Option	The right but not the obligation to sell currency
Strike Price or Exercise Price	The predetermined price at which the currency will be bought (call) or sold (put).
Spot Rate	The price of foreign currency deliverable within two business days.
Forward Rate	The price of foreign currency deliverable some time in the future.
Market Rate	Either the spot rate or the forward rate.
Expiration Date	The date at which the option expires.
Premium	The price paid for the option. The premium is also initially the market value of the option.

FOREIGN CURRENCY OPTIONS AND RISKS**INTRODUCTION**

American Style	An option that can be exercised at any time prior to expiration.
European Style	An option that can only be exercised at the expiration date.
Intrinsic Value	<p>For a call option, the positive difference between the market rate and the strike price, i.e. the amount by which the market rate exceeds the strike price.</p> <p>For a put option, the negative difference between the market rate and the strike price, i.e. the amount by which the strike price exceeds the market rate.</p>
Time Value	The part of the option's value reflecting the probability that the market rate may move in favor of the holder of the option prior to expiration.
In-the-money (ITM)	An option with intrinsic value.
At-the-money (ATM)	An option where the strike price is the same as the market rate.
Out-of-the-money (OTM)	An option which has no intrinsic value, only time value.
Volatility	The variability of the market rate. Past volatility is usually calculated by a standard deviation of historic movements over a given time period.

FOREIGN CURRENCY OPTIONS AND RISKS**INTRODUCTION**

BANK INVOLVEMENT IN THE CURRENCY OPTIONS MARKET

Banks perform very different roles in the currency options markets. Understanding the nature of a bank's activities is an essential first step to understanding the attendant risks. These activities are:

- o trading
- o market-making
- o brokering for customers
- o hedging

Trading consists of taking options positions in order to profit from anticipated changes in any of several market rates or variables. Foreign currency options may be used to take positions on the direction of currency rates, instability of currency rates, the level of volatility, or interest rate differentials between countries. (More sophisticated position-taking could involve positions on the correlation between two foreign currency rates ("crosses") or on the correlation of rate volatility between two foreign currencies.) Each trading desk differs in the type of positions it takes. Some, for instance, do not want to duplicate the foreign exchange trading operation by taking a position on the direction of foreign currency rates. Instead, the trader may take a position on the instability of the currency rate, and completely hedge the exposure to directional change.

Overlap exists between trading and market-making. Traders are also market-makers if they quote two-way prices. A market-maker, however, may only want to service customer needs and does not take deliberate positions. Profits are earned through realizing the bid-offer spread. By offering to either buy or sell options, however, a market-maker takes on position risk which must be measured and controlled. Unlike trading, this risk is a by-product of market-making and the level of position risk is usually much lower.

Brokers service their customers' needs without assuming position risk by offsetting the risk of each option sold (bought) to a customer by buying (selling) an identical option from another party. To eliminate position risk, the offsetting option must be identical in terms of currency, strike price,

FOREIGN CURRENCY OPTIONS AND RISKS**INTRODUCTION**

amount and maturity. Brokers assume very little risk and make little return.

Banks also use currency options to hedge future commitments where the bank may not want to use a forward contract. Generally only bought options are used as hedges. A bought option allows the hedger to offset any losses if the currency moves against him but still take advantage of gains if the currency moves in his favor. A forward contract on the other hand, eliminates potential losses and gains.

DETERMINANTS OF MARKET VALUE**INTRODUCTION**

The market value of an option reflects any intrinsic value plus time value. Intrinsic value is the amount by which the option is in-the-money. Time value represents the probability that the option will expire in the money and is determined by the interaction of the following variables:

- o the relationship of the market price to the strike price;
- o the volatility of currency rates;
- o the remaining time to maturity; and,
- o interest rate levels.

To understand price risk, it is necessary to understand how each of these variable affects the price, or market value, of the option. Moreover, the relative impact on price of changes in each variables is dynamic, and will change as time passes and the option approaches maturity. For instance, changes in currency rates will have a relatively small impact on the price of long dated options and a very large impact on the price of options that are nearer to expiration. Changes in the level of volatility, on the other hand, will have a large impact on the price of long dated options but will have a lesser effect on the price of an option near expiration.

 FOREIGN CURRENCY OPTIONS AND RISKS

INTRODUCTION

Following is a discussion on the relationship of each market variable to the market value of the option. This discussion uses a three month call option on Deutschemark (DM) 100,000 to illustrate the price impact of each variable. For clarity, the impact of changing a single variable will be illustrated keeping all other variables constant. In reality, all of the variables may be changing simultaneously, and understanding their interaction is at the heart of understanding how options prices move, and managing options portfolios.

EXAMPLE-INITIAL VALUES

THREE MONTH AT-THE-MONEY DEUTSCHEMARK CALL OPTION

Contract Terms	Contract	DM Call		
	Amount	100,000 DM		
	Expiration	3 months		
	Strike Price	1.748 DM/\$		
Market Variables	Spot	1.748 DM/\$	Forward	1.7303 DM/\$
	U.S Yield	8.938 %	DM Yield	4.885 %
	Volatility	11 %		
Price	Price	.0472 DM		

RELATIONSHIP BETWEEN THE MARKET RATE AND THE STRIKE PRICE

The relationship of the market rate to the strike price determines the option's intrinsic value. If the strike price is more favorable than the market rate to the holder of the option, then the option is in-the-money (ITM). If the market rate is more favorable than the strike price, then the option is out-of-the-money (OTM).

Changes in the market rate have a large impact on the price of an option. The following example gives the impact of a decline in the value of the DM on the price of the call option.

FOREIGN CURRENCY OPTIONS AND RISKS

INTRODUCTION

DECLINE IN THE VALUE OF THE DEUTSCHEMARK

Contract	DM Call		
Amount	100,000 DM		
Expiration	3 months		
Strike Price	1.748 DM/\$		
Spot	1.758 DM/\$	Forward	1.7303 DM/\$
U.S. Yield	8.938 %	DM Yield	4.885 %
Volatility	11 %		
Price	.0419 DM		

At the new rate of 1.758 DM/\$, the call option is out-of-the-money (OTM): it would be cheaper to buy DM directly from the market than through exercise of the option. The option price declines from .0472 DM to .0419 DM. In dollar terms, the holder (buyer) of the option contract would lose \$316.84 as the value of the contract declines from \$2,700.23 $[(.0472 * 100,000) / 1.748]$ to \$2,383.39 $[(.0419 * 100,000) / 1.758]$. The writer of the option would realize a gain of an equal amount on a mark-to-market basis. (For the holder of the option, the market value of his asset would decline; for the writer of the option, the market value of his liability would decline.)

Note that the decline in the value of the option (DM .0472 to DM .0419) is about one half the decline in the value of the DM (DM 1.758 to DM 1.748). If the DM were to appreciate, the value of an ATM option would increase similarly, again by about half as much as the value of the underlying contract. The delta value, which will be discussed later, indicates how much the option price will change for a given change in the market rate.

VOLATILITY OF THE FOREIGN CURRENCY RATE

The higher the volatility of the foreign currency rate, the higher the price of the option. If the volatility of the foreign currency is greater, then there is a higher probability that the option will move in-the-money prior to expiration and will be exercised. Recall that time value reflects the probability of exercise. An increase in volatility increases the time value of the option.

 FOREIGN CURRENCY OPTIONS AND RISKS

INTRODUCTION

The correct volatility in pricing options is the future volatility of the currency over the remaining time to expiration. Volatility is the only variable that is not known and must be forecast when calculating the price of an option. An option writer will observe the historic volatility of the currency to forecast expected future volatility, just as an insurance writer will rely on past actuarial trends to forecast future insurance actuaries. If the writer of an option underestimates volatility, he will lose money as he has essentially "undercharged" the buyer. Correspondingly, if he overestimates the level of volatility or "overcharges" the buyer, than he will make money. As there is an active market in most options, the market will come to a consensus as to what volatility will be in the future and this may be derived from the prices quoted by market makers (implied volatility). Market consensus is not necessarily correct, however, and a buyer or seller who has a better forecast of volatility may make money.

A buyer of an option is "long volatility" or has "bought" volatility because the value of the option will increase when the level of volatility increases. A writer of an option is "short volatility" because an increase in the level of volatility will result in a loss on the position on a mark-to-market basis.

In the following example, note that the increase in volatility from 11% to 12% causes an increase in the value of the option contract from \$2,700.23 $[(DM.0472 * 100,000) / 1.748 DM/S]$ to \$2,894.74 $[(DM.0506 * 100,000) / 1.748]$. The holder of this option would gain \$194.51 on a mark-to-market basis and the writer of the option would lose an equal amount.

INCREASE IN THE LEVEL OF VOLATILITY

Contract:	DM Call		
Amount	100,000 DM		
Expiration	3 months		
Strike Price	1.748 DM/\$		
Spot	1.748 DM/\$	Forward	1.7303
U.S Yield	6.938	DM Yield	4.885
Volatility	12 %		
Price	.0506 DM		

FOREIGN CURRENCY OPTIONS AND RISKS
INTRODUCTION**REMAINING TIME TO EXPIRATION**

The longer the time to expiration, the higher the price of the option.

The time value of an option is analogous to the time value of an insurance policy: the longer the coverage, the more valuable the policy. The value of an option is thus subject to time decay. As each day passes, the option loses value. For the buyer of an option, this would imply a market loss as the value of his asset declines. For the writer of an option, this would imply a market gain, as the value of his liability declines. The time value of an option is not a straight line function. For a long dated option, time decay does not have a relatively large impact on the price of the option. As the option approaches expiration, however, time decay increases in importance.

In the following example, the remaining time to maturity of the DM call option decreases from three months to one month. This causes a rather large decline in the value of the option from \$2,700.23 [(DM.0472*100,000) / 1.748DM/\$] to \$1,373.00 [(DM.0240*100,000) / 1.748DM/\$]. For a buyer of this option, time decay would create losses on a mark-to-market basis of \$1,327.23. The writer of the option would realize an equal amount of gains as the value of his liability declines. If this option had a longer tenor, a two month time decay would have had a much less dramatic impact on the price.

DECLINE IN REMAINING TIME TO EXPIRATION

Contract:	DM Call			
Amount	DM 100,000			
Expiration	1 month			
Strike Price	1.748 DM/\$			
Spot	1.748 DM/\$	Forward	1.7303	DM/\$
U.S. Yield	8.938 %	DM Yield	4.885 %	
Volatility	11 %			
Price	.0240 DM			

FOREIGN CURRENCY OPTIONS AND RISKS

INTRODUCTION

LEVEL OF INTEREST RATES

The relative interest rates between the two countries incorporate the cost of carry (hedging cost) into the price of the option. This is based on the presumption that options writers and buyers hedge the underlying currency exposure. Buying call options or selling put options create a long position in the foreign currency. (Buying a call option enables the buyer to own the foreign currency; selling a put option requires that the seller take possession of the foreign currency if the put is exercised.) To hedge this exposure, the dealer would have to borrow the foreign currency at foreign interest rates, sell it for dollars and invest the proceeds at dollar interest rates. Selling call options and buying put options create a short position in the underlying foreign currency. To hedge this exposure, the dealer would have to borrow dollars at U.S. rates, sell them for the foreign currency and invest the proceeds at foreign interest rates. The difference between the rate at which the option dealer borrows and invests is the cost of carry.

In reference to the example, the writer of this DM call option would create a long DM position. (The writer has to deliver DM if the option is exercised.) To hedge the possibility of exercise, the DM writer would borrow dollars at 8.94% and invest in DM at 4.89%. The writer would thus have a negative cost of carry of 4.05% which would be factored into the original option price of DM .0472. In the example below, a one percentage point increase in U.S. interest rates increases the cost of carry. The price of the option increases from DM .0472 to DM .0496. This would represent a gain for the holder of the option and a loss for the writer.

INCREASE IN U.S. INTEREST RATES

Contract:	DM Call		
Expiration	3 months		
Strike Price	1.748 DM/\$		
Spot	1.748 DM/\$	Forward	1.726
U.S. Yield	9.938	DM Yield	4.885
Volatility	11%		
Price	.0496 DM		

FOREIGN CURRENCY OPTIONS AND RISKS

INTRODUCTION

THE LEVEL OF DOMESTIC RATES

Although the level of domestic rates is a component of the interest rate differential, it also has a separate effect on the price of options. (The interest rate differential affects only currency or gold options, while the level of domestic rates affects the price of all options.) For the seller of an option, a higher interest rate means a higher return on the investment of the premium and consequently a lower price. From the buyer's perspective, the higher the interest he has to pay to borrow the premium amount (or the higher the opportunity cost in terms of foregone interest on the premium amount), the less he is willing to pay for the option. Therefore, the higher the level of domestic rates, the lower the price of an option.

Black-Scholes Based Pricing Models

Black-Scholes based models are used by traders and operations to calculate the price of an option on the basis of the following five variables: spot or forward rate, strike price, time to maturity, dollar interest rate, foreign interest rate, and volatility of the currency rate during the life of the option. An option trader or market-maker will use his forecast of volatility to price the option. Operations, in revaluing the position, will use the volatility implied by options prices in the market, which is a more objective measure of volatility. (Implied volatility is derived by entering the market price and all variables except volatility into the model. The model then calculates the level of volatility implied by the market price.)

RISKS AND RISK MANAGEMENT

Control of Price Risk

Management of price risk is quite complex and entails measuring and limiting exposure of the portfolio to changes in at least two and perhaps more market variables. At a minimum, the exposure to: (1) changes in currency rates; and, (2) changes in the level of volatility of currency rates, should be controlled. Depending on the nature of the portfolio, controls on exposure to time decay and interest rates may also be warranted. Following is a description of the sensitivity measurements used by risk managers to control price risk.

FOREIGN CURRENCY OPTIONS AND RISKS**INTRODUCTION**

Foreign Currency Exposure**The Delta Value**

The delta value measures the sensitivity of the market value of an option to an instantaneous change in the market rate of the underlying currency

$$\text{DELTA} = \frac{\$ \text{ change in option price}}{\$ \text{ change in market rate}}$$

The delta value converts the option position into its equivalent position in the underlying currency. For example, the currency exposure of an ATM DM call option on DM 100,000 with a delta of .50 is equivalent to being long DM 50,000.

Traders and risk managers use the delta value:

- (1) to take a position on the anticipated directional change of the foreign currency rate;
- (2) to calculate the exposure to a change in the foreign currency rate; and,
- (3) to hedge the exposure to a change in the foreign currency rate.

The delta value is related to the probability of exercise of the option. An option which is at-the-money has a delta of .50 which represents a 50/50 chance that it will be exercised. As the option moves deeper into the money, the probability of exercise increases and so does the delta. A deep in-the-money option has a delta nearing one and in terms of risk and reward, is about equivalent to owning the currency outright. A deep out-of-the money option has a low probability of exercise, a low delta, and represents a small currency position.

A positive delta sign corresponds to a long currency position as the market value of the position increases with an increase in the underlying foreign currency rate. (A bought call option or sold put option would have a positive delta sign.) A negative delta sign corresponds to a short currency position as the market value of the option decreases with an increase in the underlying foreign currency rate.

 FOREIGN CURRENCY OPTIONS AND RISKS

INTRODUCTION

The delta value of the options position can be used to hedge the currency risk, and is therefore referred to as the hedge ratio. An options book with a delta of 0 is neutral to small currency moves. To delta hedge, a manager may offset options with positive and negative deltas, or may use the spot or forward foreign currency market.

The following example illustrates how the currency exposure created by an options book can be offset by buying foreign currency in the spot market. In the example, the three options deals create the equivalent of a DM seven million short position. This position is delta hedged by purchasing DM seven million in the spot market. The resultant net effective position is zero.¹

A CURRENCY OPTIONS PORTFOLIO WHICH IS DELTA HEDGED

Current DM rate: 1.7 DM/\$			
(1) Deal	(2) Delta	(3) Notional Amount (DM)	(4) Effective Position (2) X (3)
Buy DM call OTM	.40	10 MM	4 MM
Sell DM call ITM	-.80	(20 MM)	(16 MM)
Sell DM put ATM	.50	10 MM	5 MM
Net options position			(7 MM)
Buy spot DM		7 MM	7 MM
NET EFFECTIVE POSITION			0

Recall that an options book which is delta hedged is neutral only to very small changes in currency rates. A normal currency move will change the delta values of the options (gamma risk), resulting in a change in the net effective position. Consequently, a risk manager would need to re hedge the position after currency rates change.

FOREIGN CURRENCY OPTIONS AND RISKS**INTRODUCTION**

The Gamma Value

The gamma value indicates the sensitivity of the delta to an instantaneous change in currency rates.

$$\text{GAMMA} = \frac{\text{Change in the delta}}{\$ \text{ change in market rate}}$$

A change in currency rates changes the delta of the option, which also changes the effective position. The amount by which the position changes for a given change in currency rates is the gamma. A position with high gamma has greater foreign currency exposure than a position with low gamma because a given change in the currency rate will produce a higher level of currency exposure.

Traders and risk managers use the gamma value:

- (1) to take a position on the stability or instability of foreign currency rates; and,
- (2) to measure the exposure of the position to a change in foreign currency rates.

The level of gamma depends on the remaining time to expiration and the relationship of the market rate to the strike price. For example, short dated options have greater gamma risk than long dated options, and thus the gamma risk has to be more closely controlled for short dated options. In terms of strike price, gamma risk is greatest for ATM options and declines the further the option is ITM or OTM.

The following example illustrates the impact of gamma risk on the options book which was delta hedged at DM 1.7/\$ by changing the currency rate to DM 1.8/\$. The depreciation of the DM changes the delta and the effective currency position of each option. Consequently, a three million net effective DM position is created from a book that was completely hedged at DM 1.7/\$. Note that the delta value and effective position of the option that was originally ATM changes by more than the other two options. Delta changes more for a given change in market rates as options approach ATM.

FOREIGN CURRENCY OPTIONS AND RISKS

INTRODUCTION

GAMMA RISK

Change in Net Effective Position from 0 to DM 3MM

Current DM rate: 1.8 DM/\$			
(1) Deal	(2) Delta	(3) Notional Amount	(4) Effective Position (3) X (4)
Buy DM call OTH	.30	10 MM	3 MM
Sell DM call ITM	-.70	(20 MM)	(14 MM)
Sell DM put ITM	.70	10 MM	7 MM
Net options position			(4 MM)
Buy spot DM		7 MM	7 MM
NET EFFECTIVE POSITION			3 MM

With respect to the original example, a more complete risk profile would indicate that the position is delta neutral at DM 1.7/\$, and has gamma risk of DM three million for a 6% change in the currency rate (DM 1.7/\$ to DM 1.8/\$). Risk reports of U.S. banks generally report gamma risk in terms of the change in the net effective position for a given change in currency rates.

In order to re hedge the position, the risk manager would have to sell three million DM at the new spot rate of DM 1.8/\$. This creates a hedging cost. The three million DM were originally purchased at DM 1.7/\$ for a dollar value of \$1,764,705.88. The sale of the DM at 1.8/\$ yields \$1,666,666.67. The cost of hedging is thus \$98,039.22, which will offset some of the premiums received by the holder of this position.²

This example illustrates a short gamma position (net options sold), which is taken to profit from stability of currency rates. If rates do not move, the trader may keep the premiums received. If rates do move, however, the trader must re hedge which produces a cost. When the cost is greater than the premiums received, the trader realizes losses.

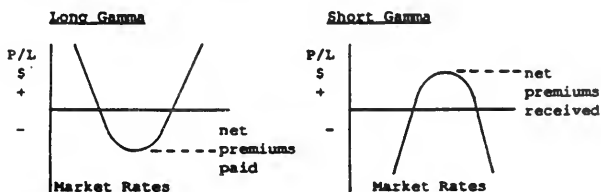
A long gamma position, which consists of net bought options, is taken to profit from instability of currency rates. When rates change, the rehedging of the position produces gains. The risk is limited to the premiums paid.

FOREIGN CURRENCY OPTIONS AND RISKS

INTRODUCTION

Traders take gamma positions to profit from anticipated stability or instability of currency rates. Unlike delta positions, which are taken to profit from anticipated directional change in rates, gamma positions are neutral to directional change. A long gamma position (net options bought) is usually profitable if rates move, either up or down. A short gamma position (net options sold) is usually profitable if rates do not move and it can lose money if rates do move, no matter whether up or down.

The risk/reward trade-off for long and short gamma positions is illustrated below.

*Managing gamma risk*

Because an options book usually consists of many different individual positions, the gamma risk of the entire book may vary greatly as market rates move. For instance, in the above example a decline in the DM from 1.7 DM to 1.8 DM produced a change in the net effective position of DM 3 MM. A further decline from DM 1.8 to 1.9 may have a much larger or smaller incremental impact. Management of the gamma risk is easier if the level of gamma risk (incremental change in the net effective position) is relatively even over a range of currency rates. For example, a portfolio which produced a \$10,000 exposure for every 10 point change in the DM rate would have even gamma risk.

Risk managers use various techniques to achieve even gamma risk. One technique is to diversify strike prices of options purchased and sold. As noted, an option which is at-the-money will have the highest gamma and gamma decreases as the option moves further in or out-of-the-money. If strike prices were concentrated at one rate, the gamma risk would shoot up as the currency rate approached the strike price and a large number of options neared ATM. Risk management guidelines frequently indicate diversification of strike prices as a desirable

 FOREIGN CURRENCY OPTIONS AND RISKS

INTRODUCTION

practice. Another technique is to minimize the impact of options nearing expiration because gamma levels are highest for shorter-dated options.

Eliminating gamma risk

The only way to eliminate gamma risk is to offset the position by buying or selling an identical option. This would be appropriate for banks which act as brokers for their customers and do not want to manage options risk. Market makers by definition take some gamma risk as they deal at two prices to earn the bid-offer spread, and so the options are not identical. In addition, market-makers are often willing to assume mis-matches in strike price and maturity to enhance their yield. This also generates gamma risk. Traders deliberately incur gamma risk when taking options positions.

Exposure to the level of volatility

The Vega Value

The vega value indicates the sensitivity of option price to changes in volatility. (The greek letter used to designate this exposure changes from bank to bank and may be referred to as vega, zeta, kappa or tau.)

$$\text{VEGA} = \frac{\$ \text{ change in value of option}}{1 \% \text{ change in volatility}}$$

The sensitivity of market value to changes in the level of volatility is an important measurement of options risk, particularly for longer dated options. A change in the level of volatility has a greater price impact on longer dated options. Banks that deal in options with maturities of greater than three months should measure the sensitivity of their position to probable adverse changes in the level of volatility.

An options buyer is long volatility and the value of the position will increase if volatility increases. An options writer is short volatility and the value of the position will decline if volatility increases. Generally a position that is long gamma is also long volatility because both positions arise from buying options in anticipation of rate instability or changes in the levels of volatility. Generally a position that is short gamma is also short volatility because both positions arise from selling options in anticipation of price stability or a decline in the level of volatility.

FOREIGN CURRENCY OPTIONS AND RISKS**INTRODUCTION**

Exposure to the Passage of Time**The Theta Value**

The theta value indicates the sensitivity of the option price to passage of time.

$$\text{THETA} = \frac{\$ \text{ change in price of option}}{\text{decrease in time to expiration}}$$

The value of options suffers from time decay, although not at an even rate. Price sensitivity to the passage of time is least for longer dated options and increases the closer the options are to maturity. For this reason, many risk managers try to minimize the volume of bought options which have less than three months to expiration which is when theta is highest.

Risk Management Software Systems

There are many software systems commercially available to measure and manage options risk. In choosing a system, a bank should evaluate the capabilities of a wide variety of software systems to determine which is most appropriate for its type of business. Two of the more common systems are described below.

Devon

Devon is a software package used for pricing, risk management and operations support. Its "Toolkit", which is designed for the trading desk, calculates prices based on Black-Scholes derived models and gives the price sensitivity measures needed for risk management. Its operations function processes trades, consolidates the book and provides management reports.

TOG

TOG provides on-line access to the Philadelphia Stock Exchange, the Chicago Mercantile Exchange, and Comex. It provides implied volatilities of every option price traded on these exchanges. It also calculates historic volatility over the past 10,30,50 and 250 days. TOG has pricing and risk management capabilities, but does not offer operations support.

FOREIGN CURRENCY OPTIONS AND RISKS

INTRODUCTION

Construction of Risk Limits

Risk limits should be expressed in terms of earnings at risk given an adverse change in one of the market variables (foreign currency rate, level of volatility, relative interest rates and time). In other words, the bank establishes the maximum level of acceptable losses should one of these variables move against the position. The move in the variable can be based on a probable adverse change or an extraordinary adverse change, depending on the purpose of the risk limit. Simple foreign currency position limits are not sufficient because they do not limit gamma risk or exposure to changes in the level of volatility.

To calculate earnings at risk, the risk manager needs:

- (1) a price (market value) sensitivity measurement for each market variable; and,
- (2) an assumption regarding the possible change in the market variable.

The sensitivity measurements are the delta, gamma, vega and theta values discussed previously. These values indicate the change in the market value for a given change in one of the market variables.

The second component of an earnings at risk limit is the assumed change in the market variable. In order to limit risk on a reasonable basis, risk limits should be based on a probable adverse change in a market variable. Probability relates to the amount by which a variable is expected to change within the bank's "reaction period." For trading portfolios in liquid instruments, a bank's reaction period is usually twenty four hours, and so risk may be limited based on a probable overnight move. For positions in illiquid instruments, the period needed to close the position may be significantly longer and the risk limit may be based on a probable move over a much longer period.

To determine what is a probable move in a given market variable within the reaction period, management often relies on historical changes. Changes in the market variable are observed over the past two to three year period. The magnitude of historical rate changes are then expressed in terms of standard deviations from the mean. A one standard deviation change captures the rate movement approximately 66% of the time and a two standard deviation change captures approximately 95%

FOREIGN CURRENCY OPTIONS AND RISKS**INTRODUCTION**

of historic rates movements. An earnings at risk limit based on a two standard deviation move would encompass larger rate moves and so would be a more conservative risk limit.

Some banks choose to limit earnings at risk based on implied volatilities rather than based on historical observations. This entails observing the volatility implied in the options market. Implied volatilities are available for foreign currency rates and interest rates. Limits based on implied volatility are conservative because they effectively require positions to be reduced in volatile markets. For example, if the implied volatility of foreign currency rates were 10%, then the risk manager would be required to limit the earnings at risk based on a 10% change in rates. If the implied volatility increased to 20%, then the risk manager would have to measure earnings at risk in terms of a 20% change in rates, which would decrease the maximum allowable position.

A bank may not need to establish earnings at risk limits for each of the market variables. The exposure of the portfolio depends on the nature of the business. At a minimum, banks that take options positions should limit earnings at risk relative to:

- (1) a probable adverse change in foreign currency rates; and,
- (2) a probable adverse change in the level of volatility.

In addition, limits should be established on the exposure to changes in interest rates for long dated books, i.e., significant positions greater than one year. Banks that typically hold long options positions may also choose to limit earnings exposure to the passage of time.

Credit Risk and Limits

A bank incurs credit risk when it buys an option because the bank is dependent on the counterparty to perform. The amount of risk is equal to at least the replacement cost or market value of the option. Credit risk from options bought should be charged against the overall credit limits of the counterparty. A written option generally does not bear credit risk, except for settlement risk upon exercise of the option. (If the premium is received at expiration of the option, which is not market convention, a written option would have credit risk.)

FOREIGN CURRENCY OPTIONS AND RISKS**INTRODUCTION**

A bank faces settlement risk on both options purchased and sold if exercised for delivery. The exercise of an option generates a spot transaction for delivery of currencies. The bank should book settlement risk (clean risk) against the counterparty's spot foreign currency line of credit.

Operations

Options are more complex than other traded commodities and the operations manager needs to understand the product in order to ensure that the operations functions are effectively performed.

Often, there will be disagreements on the level of volatility used by the traders for pricing and the values used by operations, which are obtained from independent sources. This is because the level of volatility used affects the trader's profit and loss statement as well as the size of his risk position. In a disagreement between the traders and operations, the traders should have to justify the discrepancy. If operations still disagree, the conflict should be resolved by senior management.

Trading and operations managers should keep each group informed on anticipated volumes and new business development. Inadequate communication can create problems in handling increased volume and adequately tracking the risks and profitability of new products.

The key functions of the operations area are:

- (1) confirmation of trades;
- (2) reconciliation of traders positions and profit and loss statements; and
- (3) independent revaluation of position and profit and loss statements.

The revaluation of options positions using independent sources of rates is more complex than the revaluation of non-options trading positions. First, operations staff must independently determine the five variables affecting price. While foreign currency rates and interest rates are easily obtained from independent sources, the volatility level for non-standardized options can be difficult to obtain. (For standardized options, the implied volatilities are easily obtained from the

FOREIGN CURRENCY OPTIONS AND RISKS**INTRODUCTION**

Exchanges.) This is particularly true for options on illiquid currencies or long dated options. If the bank deals in illiquid segments of the market, the examiner should review operations' data sources to ensure that they are objective and not subject to manipulation by the traders.

Liquidity Risk

Liquidity risk is an important consideration in currency options because it is a relatively small market with few global players. The market began in 1981 and is now considered liquid only in the major currencies and within three year maturities. Sizeable options deals outside this segment of the market may be difficult to manage, as the bank may not be able to find a counterparty with which to effect offsetting trades. Where options markets are illiquid, the bank can offset the currency exposure using the spot and forward markets. The bank would not, however, be able to offset the options risks such as gamma or vega.

The options markets are liquid for the following major currencies: DM, yen, sterling, Swiss franc, Australian dollars and Canadian dollars. These are traded on the exchanges and in the OTC market. The minor option currencies are quoted by two to eight market-makers in the U.S. and are typically managed through positions in the underlying currency or with options on a highly correlated currency. These include French francs, Pesetas, guilders, New Zealand dollars (Kiwis), and the Scandinavian currencies. Other currencies are considered "exotic" with few market-makers.

The bank should have limits to control liquidity risk. These may include total position or volume limits by currency, limits on approved currencies, and limits on maximum tenors. In general, total position limits should be designed so that the bank cannot exceed a certain percentage of the market. Exceptions may exist when a bank introduces a new product where no market exists or deals in an exotic currency. In these cases, the bank should be compensated for the additional risks.

CURRENCY OPTIONS MARKETS**Options Exchanges**

Exchange-traded options contracts are standardized as to amount, strike price and maturity. The longest maturity on the exchanges is nine months and a limited number of currencies are

FOREIGN CURRENCY OPTIONS AND RISKS**INTRODUCTION**

available. Options trades are cleared by the exchange, and the risk of non-performance of the counterparty is borne by the exchange. Currency options exchanges exist in Chicago (CME), Philadelphia (PHLX), Amsterdam, Montreal and London. The standardization of these contracts has facilitated a strong over-the-counter market.

The Over-the-Counter Market (OTC)

The OTC market is dominated by commercial banks, investment banks and multinational corporations. In contrast to exchange-trade options, the terms of OTC options can be tailored to meet the needs of the buyer. OTC options can be written on any currency, and generally have longer maturities than exchange-traded options.

FOREIGN CURRENCY OPTIONS AND RISKS**ENDNOTES**

- 1 On risk management reports of US banks, the net exposure is typically expressed in terms of dollars. For instance, a long DM call option is expressed as a short dollar position. The two are equivalent since the owner of the call option must deliver dollars to purchase the DM.
- 2 In actuality, the hedging cost would be less because the risk manager would be incrementally hedging as the rate moved from DM 1.7/\$ to 1.8, with the average rate for selling DM at 1.75. For this reason, the gamma exposure to a 6¢ decline in the DM would normally be considered as DM 1.5 MM instead of DM 3 MM. An exception to this would be a devaluation where rates would move instantaneously from DM 1.7/\$ to 1.8, and the risk manager would, in fact, have to re hedge the whole amount at the new rate.
- 3 An exception to this occurs when a trader sells short dated options and buys long dated options. In this case, the combined portfolio would be short gamma and long volatility because gamma has a relatively larger impact on short dated options and volatility has a relatively larger impact on long dated options.

FOREIGN CURRENCY OPTIONS AND RISKS**EXAMINATION GUIDELINES**

FIRST DAY LETTER

The bank should provide the following items.

1. Bank policies covering foreign currency options activities
2. A listing of all internal limits covering foreign currency options including:
 - o Individual customer limits
 - o Limits on earnings at risk (or position limits).
 - o Stop-loss limits
 - o Individual currency limits
 - o Maximum maturity
3. A list of over-the-counter options outstanding which includes:
 - o Counter-party
 - o Amount
 - o Strike Price
 - o Currency
 - o Trade Date
 - o Maturity Date
4. Copies of risk and position reports including:
 - o Current market values
 - o Exposure to changes in currency rates
 - o Exposure to changes in the level of volatility of currency rates
5. A profit and loss statement by month for the current year-to-date and quarterly totals for the prior two years
6. Accounting policies relating to the balance sheet valuation of options and recognition of profits and losses
7. A copy of the audit program and results of the last two audits, including management's response to any criticisms
8. An organizational chart
9. Description of any pending litigation

FOREIGN CURRENCY OPTIONS AND RISKS**EXAMINATION GUIDELINES**

EXAMINATION OBJECTIVES**FOCUS**

Trading of foreign currency options incurs all the risks of foreign currency trading, and the same types of controls should be in place (see "Foreign Exchange Activities-Risk Assessment Guidelines"). In addition, options positions present more complex price risks that can be difficult to control. Options exposure may increase exponentially relative to changes in the value of the foreign currency as options represent highly levered positions in foreign exchange. In examining currency options activities, the examiner should focus on management's understanding of the risks, the effectiveness of risk measurement, hedging activities and risk limits.

EXAMINATION OBJECTIVES

- o Determine the nature of foreign currency options activities, market strategies and growth prospects.
- o Evaluate the quality of options activities taking into consideration the expertise of management and traders, the level of profitability and the quality of management's supervision of risks.
- o Evaluate bank controls (risk measurement and limits) on options risks, including position risk, liquidity, and credit risk.
- o Evaluate operation's performance of key tasks including independent revaluation of positions, reconciliation of accounts and confirmation and processing of trades.
- o Assess the adequacy of the audit process.
- o Ensure that accounting on regulatory reports is correct and bank accounting policies are reasonable.

FOREIGN CURRENCY OPTIONS AND RISKS**EXAMINATION GUIDELINES**

NATURE OF CURRENCY OPTIONS ACTIVITIES

Ascertain the nature of currency options activities, particularly in regard to the following:

1. How is the bank using currency options? Specifically, do they engage in trading, market-making, brokering, hedging or some combination of the above? Is the bank writing, or buying options, or both?
2. What is the bank's customer base? What share of currency options are exchange-traded versus over-the-counter?
3. Does the bank trade only in major currencies or would they also deal in minor or exotic currencies? Does the bank deal in cross-currency options?
4. What is management's estimate of the bank's share of the total currency options market. Does the bank dominate the market in any one currency or tenor?
5. What is management's philosophy regarding the assumption of risk? What type of trading positions does the bank take, if any?
6. What are the plans for growth in terms of increased volume, new currencies and new options products?

FOREIGN CURRENCY OPTIONS AND RISKS**EXAMINATION GUIDELINES**

RISK LIMITS AND CONTROLS

1. Assess the adequacy of limits on earnings exposure resulting from options positions (price risk). Earnings exposure should be limited relative to probable adverse changes in the following variables:

- a. The foreign currency rate

The delta value indicates the potential profit or loss for a given move in the foreign currency, and is used to hedge this exposure. The delta value should be used to limit earnings exposure.

The gamma value indicates by how much the deltas, and thus the net effective position in each currency, will change for a given move in foreign currency. Limits on earnings exposure need also to consider the gamma risk. Gamma risk is often controlled through limits on concentration of strike prices and expiration dates.

- b. The level of volatility of the foreign currency rate

The vega value indicates the sensitivity of the position to changes in the level of volatility and is a necessary measure to control this risk.

Depending on the nature of the options book, the bank may also need to control earnings exposure resulting from changes in the following variables:

- c. The level of interest rates, which particularly affects longer-dated options.
- d. The passage of time (time decay), which is only a risk for purchased options.

2. Assess the adequacy of limits on credit risk.

- a. Purchased options give rise to counterparty risk, which should be allocated against the customer's overall line of credit. The amount should be equal to at least the market value or replacement cost of the option. The amount may also include an add-on that recognizes that the value of the option, and thus the credit exposure, may increase.

FOREIGN CURRENCY OPTIONS AND RISKS**EXAMINATION GUIDELINES**

- b. In cases when a credit line is not available, a counterparty may post margin with the bank to offset the bank's credit exposure. In this case, check that the margin consists of liquid assets and that the value adequately covers the credit exposure. Also, ensure that the margin system provides for timely increase in margin should the exposure increase.
3. Does the bank have foreign exchange lines available to cover settlement risk (clean risk). A bank faces settlement risk when an option is exercised, as exercise generates a spot transaction. Foreign exchange lines, or daily settlement lines, should be available for each customer to cover maturing deals, as well as the possibility of options exercise.

For practical purposes, credit risk and settlement risk only occur with OTC options. For exchange traded options, the counterparty is the exchange and the assumption is that its financial strength eliminate credit and settlement risk.

4. Ensure that limits exist on the bank's exposure to illiquid segments of the market.
- a. Are there limits on the currencies in which the bank may deal?
- b. Are there limits on the absolute volume of a bank's foreign currency options business by currency?
- c. If the bank deals in minor or exotic currencies, does the bank have procedures for recognizing and offsetting the options risk. In these currencies, there are few dealers and the bank may not be able to close the position, especially in a falling market?

FOREIGN CURRENCY OPTIONS AND RISKS**EXAMINATION GUIDELINES**

RISK MANAGEMENT AND INFORMATION SYSTEMS

1. Is the risk management function independent from the trading function?
2. Does management demonstrate a thorough understanding of the product and risks?
3. Are position and risk reports comprehensive in scope?
 - a. Do reports indicate the exposure of options positions to changes in currency rate; and changes in the level of volatility?
 - b. Are profit and loss reports prepared daily for each trader and each currency?
4. Does the risk manager review positions daily to ensure compliance with established limits?
5. Are procedures in place to ensure that exceptions are immediately recognized and corrected?
6. Are procedures in place to independently validate changes to pricing models.

FOREIGN CURRENCY OPTIONS AND RISKS**EXAMINATION GUIDELINES**

OPERATIONS

1. Does operations management demonstrate a thorough understanding of the product and the risks?
2. Check that there is a daily reconciliation between the traders' position statements and operations' independently generated positions statement. Ensure that discrepancies are promptly resolved?
3. At least monthly, operations should revalue the traders' position statements using independent sources of rates. Ensure that operations' sources are independent and objective. Operations must obtain the following rates to revalue the book:
 - a. Foreign currency spot or forward rate
 - b. Domestic interest rates
 - c. Foreign interest rates
 - d. The level of volatility implied by another market-maker's prices

If the bank is dealing in an illiquid market and operations cannot obtain an independent quote on volatility, then the volatility rates used should be checked for reasonableness and objectivity.

4. Are procedures in place to resolve any disagreements between traders and operations staff regarding the level of volatility used to revalue the options book?
5. Does operations confirm all trades either through a recorded telephone line or by mail (telex)?
6. No operating procedures for exercising a bank's purchased options ensure that all are exercised prior to expiration.
7. Is operations regularly informed of future business plans so that the systems are in place to handle increased volume or new products?

FOREIGN CURRENCY OPTIONS AND RISKS**EXAMINATION GUIDELINES**

EARNINGS PERFORMANCE

1. Review monthly earnings for the year to date, and the previous two years earnings.
 - a. Compare earnings performance to budgeted earnings and discuss the reasons for any significant differences with management.
 - b. Is the level of earnings sufficient to compensate the bank for the risk assumed?
2. Analyze the sources of earnings. Are earnings derived mainly from position-taking, market-making, or brokering?
3. Investigate the reason for any significant losses.

FOREIGN CURRENCY OPTIONS AND RISKS**EXAMINATION GUIDELINES**

POLICIES AND PROCEDURES

1. Review bank policies covering foreign currency options. At a minimum, policies should address:
 - a. A description of the product and risks.
 - b. Limits on the scope of the bank's foreign currency options business.
 - c. Procedures for dealing with limit exceptions and discrepancies between traders and operations.
 - d. Procedures addressing after-hours and off-site trading.
 - e. Accounting methods
 - f. Approval procedures for the introduction of new options products or expansion of current business.

FOREIGN CURRENCY OPTIONS AND RISKS**EXAMINATION GUIDELINES**

INTERNAL AUDIT

1. Review the audit function for frequency and completeness. At a minimum, the audit function should include the following checks.
 - a. A periodic review of all bank policies, limits, internal controls and procedures.
 - b. Testing of operations functions including:
 - o testing of transactions and confirmation controls
 - o revaluation of traders positions and a check of rates used by traders
 - o review of rates and sources used by operations in their revaluation of traders positions
 - o confirmation of outstanding options
 - o review of receipt and payment controls.
 - c. An assessment of unusual situations such as deals at off-market rates, unusual changes in volume, and after hour and off-premise trading.
 - d. Review of brokerage costs and testing for accuracy.
 - e. Independent verification of the accuracy of the options pricing model.
2. Review the last several audit reports.
 - a. Note material criticisms or deficiencies, and management's response. Has corrective action been taken?

FOREIGN CURRENCY OPTIONS AND RISKS**EXAMINATION GUIDELINES**

ACCOUNTING AND REGULATORY REPORTING

1. Review Schedule RC-L of the call report to determine that options are accurately reported according to regulatory accounting policy.
2. Review banking accounting policies covering options for reasonableness. Although there is currently no official accounting standard, it is standard market practice that: (1) traded options are carried on a mark-to-market basis; and, (2) options purchased to hedge historic cost positions are carried on a deferral basis.
3. Check the accuracy of general ledger balances to determine that they agree with subsidiary ledgers. Test check for the following:
 - a. Premium accounts
 - b. Contingent accounts
 - c. Profit/loss accounts
 - d. Expense accounts.

Comparative Risk Table

Risk Assessment Guidelines

Multinational and Regional Bank Analysis Division

AUGUST 1987

COMPARATIVE RISK TABLE*

INSTRUMENT	BUY	MARKET	SETTLEMENT	LIQUIDITY
Currency Option	Write for premium buyers for cost paid, rebalances until exercised.	limited for buyer, unlimited for seller, buyer for cost of premium.	Premium amount on buyers side, but both parties exercise. None party pays currency A, one pays currency B.	Exchange and OTC options, new liquidity underlies, untested of exchanges, superior to OTC markets, also partially dependent on liquidity of market for underlying.
Interest Rate Option	Same as currency option.	Same as currency option.	Same as currency option, except one party delivers cash and the other securities if exercised. (Could be settled in cash.)	Same as currency option.
Currency Swap	Default cancellations. Risk limited to replacement cost. Risk is agreed in original contract.	Equal to, rate change on principal and interest amount.	Contractual amount on successive payment dates.	All OTC contracts, limited liquidity.
Interest Rate Swap	Default cancellations, future option to replacement cost. No principal risk.	Complex, equivalent maturity, on fixed side. Risk to fixed payer in swap if rates have fallen, to fixed receiver if rates rise. Small amount risk principal amount.	Interest payment amount on successive payment dates.	All OTC contracts, limited liquidity.

*Excerpt from RECENT TRENDS IN INTERNATIONAL BANKING, April 1986, published by Bank for International Settlements.

COMPARATIVE RISK TABLE - continued

INSTRUMENT	CREDIT	MARKET	SETTLEMENT	LIQUIDITY
VIP/RUP	Principal amount for the case as other quarters of standbys.	Writers of standbys face called on to lend at below market spreads if market conditions change.	Principal amount on payment date for borrower.	Liquidity of paper untested.
Forward Rate Agreement	Mostly cash settled with credit amount of market risk.	Equal to market. Risk on deposit.	Limited to amount of market risk if cash settled.	Small market, limited liquidity.
Eurobond	Same as domestic bond.	Same as domestic fixed rate bond.	Largely same as domestic market.	Markets well developed but liquidity less developed than major domestic markets.
FRNs	Same as a bond.	Same as domestic fixed rate bond.	Largely same as domestic market.	Relatively new market. Liquidity untested, thin secondary market.
Securitized Credit	Derivative from credit risk of underlying asset, sometimes with explicit insurance backup.	Same as conventional instrument of similar maturity.	Generally equal to similar conventional instruments although some have payment date concentrations	Markets well developed for long-standing instruments. Less clear for new instruments. Thin secondary markets.

COMPARATIVE RISK TABLE - continued

Asset Sales (with recourse)	Equal to credit institutions.	Fixed by terms of selling	Limited: of sale.	Limited liquidity.
Asset Sales (without recourse)	Buyer takes credit risk of underlying debtor.	Set by terms of underlying credit.	Limited.	Limited liquidity.

Risk Analysis Framework

Risk Assessment Guidelines

Multinational and Regional Bank Analysis Division

AUGUST 1987

 FOREIGN CURRENCY OPTIONS AND RISKS

INTRODUCTION

 LEVEL OF INTEREST RATES

The relative interest rates between the two countries incorporate the cost of carry (hedging cost) into the price of the option. This is based on the presumption that options writers and buyers hedge the underlying currency exposure. Buying call options or selling put options create a long position in the foreign currency. (Buying a call option enables the buyer to own the foreign currency; selling a put option requires that the seller take possession of the foreign currency if the put is exercised.) To hedge this exposure, the dealer would have to borrow the foreign currency at foreign interest rates, sell it for dollars and invest the proceeds at dollar interest rates. Selling call options and buying put options create a short position in the underlying foreign currency. To hedge this exposure, the dealer would have to borrow dollars at U.S. rates, sell them for the foreign currency and invest the proceeds at foreign interest rates. The difference between the rate at which the option dealer borrows and invests is the cost of carry.

In reference to the example, the writer of this DM call option would create a long DM position. (The writer has to deliver DM if the option is exercised.) To hedge the possibility of exercise, the DM writer would borrow dollars at 8.94% and invest in DM at 4.89%. The writer would thus have a negative cost of carry of 4.05% which would be factored into the original option price of DM .0472. In the example below, a one percentage point increase in U.S. interest rates increases the cost of carry. The price of the option increases from DM .0472 to DM .0496. This would represent a gain for the holder of the option and a loss for the writer.

INCREASE IN U.S. INTEREST RATES

Contract:	DM Call		
Expiration	3 months		
Strike Price	1.748 DM/\$		
Spot	1.748 DM/\$	Forward	1.726
U.S. Yield	9.938	DM Yield	4.885
Volatility	11%		
Price	.0496 DM		

FOREIGN CURRENCY OPTIONS AND RISKS

INTRODUCTION

THE LEVEL OF DOMESTIC RATES

Although the level of domestic rates is a component of the interest rate differential, it also has a separate effect on the price of options. (The interest rate differential affects only currency or gold options, while the level of domestic rates affects the price of all options.) For the seller of an option, a higher interest rate means a higher return on the investment of the premium and consequently a lower price. From the buyer's perspective, the higher the interest he has to pay to borrow the premium amount (or the higher the opportunity cost in terms of foregone interest on the premium amount), the less he is willing to pay for the option. Therefore, the higher the level of domestic rates, the lower the price of an option.

Black-Scholes Based Pricing Models

Black-Scholes based models are used by traders and operations to calculate the price of an option on the basis of the following five variables: spot or forward rate, strike price, time to maturity, dollar interest rate, foreign interest rate, and volatility of the currency rate during the life of the option. An option trader or market-maker will use his forecast of volatility to price the option. Operations, in revaluing the position, will use the volatility implied by options prices in the market, which is a more objective measure of volatility. (Implied volatility is derived by entering the market price and all variables except volatility into the model. The model then calculates the level of volatility implied by the market price.)

RISKS AND RISK MANAGEMENT

Control of Price Risk

Management of price risk is quite complex and entails measuring and limiting exposure of the portfolio to changes in at least two and perhaps more market variables. At a minimum, the exposure to: (1) changes in currency rates; and, (2) changes in the level of volatility of currency rates, should be controlled. Depending on the nature of the portfolio, controls on exposure to time decay and interest rates may also be warranted. Following is a description of the sensitivity measurements used by risk managers to control price risk.

RISK ANALYSIS FRAMEWORK

	DESCRIPTION	CONTROLS
RISK CREDIT	Borrower does not repay principal or interest.	- analysis - payoff/liquidation - payoff/guidelines - collateralization
INTEREST RATE	Net interest margin is reduced by the impact of interest rate movements on the balance sheet.	- rate sensitivity positioning - futures/options hedge - mismatch limits - reporting systems
LIQUIDITY	Inability to obtain sufficient cash at a reasonable price.	- forecasting plans - contingency plans - reporting systems - liquidity parameters
OPERATIONAL	Processing or record keeping errors caused by high volume and/or complexity of transactions.	- staffing - training - review - systems (qualitative and quantitative)
FOREIGN EXCHANGE	Market fluctuation of an asset or liability denominated in a foreign currency.	- FX position management - limits/forwards hedge - reporting systems
SETTLEMENT	The counterparty does not simultaneously deliver the funds of instrument to consummate the transaction.	- credit analysis - customer settlement limits - collateralization
COUNTRY	Nationalization, expropriation, devaluation, adverse repatriation of debt or repatriation of profits.	- analysis - reporting systems
FRAUD	Unauthorized use of removal of funds; assets, and/or information through fraudulent means.	- separation of duties - audit review - management review - physical safeguards - systems safeguards

RISK ANALYSIS FRAMEWORK - continued

RISK	DESCRIPTION	CONTROLS
MARKET	Decline in the value of an instrument because of market changes before a transaction is consummated.	<ul style="list-style-type: none"> - inventory limits - hedging - operational efficiency - counterparty review - analysis
PRICE	Mispriced assets or liabilities because of inability to quantify risks or assets, provisions or expected returns, also, inadequate compensation risks assumed.	<ul style="list-style-type: none"> - analytics - independent valuations - management review - instrument limits
LEGAL	Litigation and/or compensatory expenses resulting from lawsuits.	<ul style="list-style-type: none"> - local counsel review of activities & documents - knowledge of applicable regulations
PLANNING	Long-term risk that actions may reduce the firm's competitive advantages.	<ul style="list-style-type: none"> - strategic planning - control systems - contingency plans - independent assessments - flexibility
MICRO	Focusing on risk of one activity which may inadvertently increase risk in other areas.	<ul style="list-style-type: none"> - portfolio management - control of strategic planning process
COMPETITION	Inability to conduct activity successfully because of an over abundance of institutions participating in this line of business.	<ul style="list-style-type: none"> - profit/success goals - reporting systems - strategic planning
Basis	The risk of differing cash and off balance sheet market price movements.	<ul style="list-style-type: none"> - hedging guidelines - hedging limits - management review - repointing systems

Note: In some cases, insurance can be purchased to protect against risk exposure.

APPENDIX 2

Interest Rate Risk

Risk Assessment Guidelines

Multinational and Regional Bank Analysis Division

MARCH 1990

INTEREST RATE RISK
TABLE OF CONTENTS

Page

INTRODUCTION

INTRODUCTION.....	1
THE NATURE OF INTEREST RATE RISK.....	3
MEASUREMENT OF INTEREST RATE RISK.....	9
ORGANIZATION OF THE RISK MANAGEMENT FUNCTION.....	21

EXAMINATION GUIDELINES

OBJECTIVES.....	25
PREPARING: OVERVIEW OF THE BANK.....	26
ORGANIZATIONAL STRUCTURE.....	27
INTEREST RATE RISK EXPOSURE.....	33
THE MEASUREMENT OF INTEREST RATE RISK.....	39
CONSTRUCTION OF RISK LIMITS.....	57
CONCLUSION: QUALITY OF MANAGEMENT; LEVEL OF RISK.....	62

INTEREST RATE RISK**INTRODUCTION**

INTRODUCTION

All banks assume interest rate risk as part of their normal banking operations. Many banks also take interest rate risk as a means to enhance profitability. The assumption of interest rate risk, however, introduces volatility to bank earnings and to the value of the bank. An excessive level of risk can threaten future earnings, create liquidity problems and ultimately threaten solvency. Assessments of a bank's interest rate risk exposure should consider both the actual level of exposure and management's ability to measure and manage that exposure. Banks with large exposures and inadequate risk management systems should be required to hold capital above the risk-based capital minimums to compensate for this risk¹. The purpose of these examination guidelines is to ensure that banks have effective systems to manage and control interest rate risk.

These guidelines expand the scope of what has traditionally been considered as interest rate risk. Interest rate risk typically has been defined as risk to net interest income arising from repricing differences in a bank's historic cost business. Interest rate risk can be more completely defined as:

- o Risk to a bank's earnings arising from a bank's historic cost business and from its positions carried on a market valuation basis; and,
- o Risk to the market value of portfolio equity, arising primarily from a bank's long-term fixed rate positions².

Risk to earnings and risk to the market value of portfolio equity represent two distinct perspectives on interest rate risk. In these guidelines, risk to earnings is considered under the accounting perspective. Risk to the market value of portfolio equity is considered under the economic perspective. Both perspectives have merit and should be considered in a comprehensive risk management system. Part One of the guidelines describes interest rate risk under these two perspectives and the measurement systems that capture earnings exposure and economic exposure.

INTEREST RATE RISK

INTRODUCTION

These guidelines establish the following expectations for multinational and regional banks regarding the management and control of interest rate risk.

- o Bank policy should establish the level of interest rate risk that management is willing to assume and define a measurement and control system which monitors and limits the risk.
- o The bank should have a risk measurement system that captures risk to earnings arising from historic cost positions (gaps) and market valuation positions (trading).
- o Management should evaluate risk to market values arising from significant long-term fixed rate positions that could potentially impair capital under adverse interest rate scenarios.
- o Risk limits should exist on risk to earnings. Limits on risk to the market value of portfolio equity may also be appropriate for some institutions.
- o Risk reports should allow management to monitor compliance with limits and to evaluate risk to earnings arising from interest rate movements.

A high quality and comprehensive measurement system is the key to effective management of interest rate risk. Specifically, the guidelines recommend that banks use measurement systems which capture the specific sources of their exposure to interest rate risk. This may entail use of a combination of the following systems: gap reports, simulation models or market value sensitivity systems such as duration-based models.

The guidelines are divided into two parts. The first contains an overview of the nature of interest rate risk, risk measurement systems and the organization of the risk management function. The second part consists of examination guidelines to assist the examiner in evaluating the sources of a bank's exposure and the quality of the risk management process. The two parts of the guidelines are meant to be used together.

INTEREST RATE RISK**INTRODUCTION**

THE NATURE OF INTEREST RATE RISK**OVERVIEW**

The management of interest rate risk is fundamental to sound banking practice. If poorly managed, a bank can experience earnings and capital adequacy problems, or suffer a decline in the market value of portfolio equity. Interest rate risk, therefore, is best viewed from two distinct perspectives.

Accounting Perspective

The accounting perspective considers the impact of future changes in interest rates on reported earnings. Changes in rates affect reported earnings through changes in two accounts: (1) net interest income ("income risk"), and (2) the market value of trading accounts or assets held for resale carried on a market valuation basis ("investment risk"). The focus of the accounting perspective is on the risk to reported earnings in the near term, typically up to one or two years.

Economic Perspective

The economic perspective considers the impact of future changes in interest rates on the market values of assets, liabilities, and off-balance sheet contracts, and therefore, the market value of portfolio equity. The focus of the economic perspective is on the sensitivity of the market value of portfolio equity to changes in interest rates.

ACCOUNTING PERSPECTIVE

The focus of the accounting perspective is on risk to reported earnings in the near term. This perspective is important because reported earnings determine the book value of equity and are often the focus of stock analysts and investors' determination of value, or the worth of the firm. Reported earnings affect a bank's cost of capital, its liquidity and its cost of funds. Under the accounting perspective, interest rate risk arises from two sources: (1) income risk from a bank's historic cost business; and, (2) investment risk from positions carried on a market valuation basis. To control the risk to reported earnings, the bank should separately measure and limit risk arising from these two sources.

The principal target account from the accounting perspective is risk to net interest income (income risk). Income risk arises from changes in the rates of accrual on assets, liabilities and

INTEREST RATE RISK

INTRODUCTION

off-balance sheet instruments carried on a historic cost basis. Differences in the timing of accrual changes (gap risk), changing rate relationships (basis risk) and options positions will impact net interest income. Gap reports and simulation models are typically used to measure income risk.

Investment risk arises when changes in interest rates cause changes in the market value of fixed income instruments and accounting rules require that those changes be recognized as gains or losses in the income statement. The target account, then, is risk to the market values of instruments carried on a market valuation basis (either mark-to-market or lower-of-cost-or-market). To measure the sensitivity of market values to changes in rates, banks typically use market value sensitivity systems, such as duration-based models and options pricing models.

For both income and investment risk, the earnings exposure from adverse rate movements should be considered. These rate movements will differ from the interest rate forecast a bank may use for profit planning and should capture the risk from a broader range of possible rate changes.

Disadvantages of the Accounting Perspective

The accounting perspective provides an incomplete picture of the interest rate risk of a bank for several reasons. First, its focus on near-term earnings can miss the potentially destabilizing risk of repricing gaps that exist in the future. For example, a portfolio of thirty-year Treasury bonds funded by five - year certificates of deposit (CDs) would show no earnings exposure under a short-term horizon. Beyond year five, however, the bank is clearly exposed to an increase in rates. While there is no apparent risk to near-term earnings, a rate increase causing a negative spread in the portfolio beginning in year five could deplete capital over time.

Second, recognition of investment risk under the accounting perspective is arbitrary. The market value of all fixed rate contracts will change when interest rates change. Whether this change is recognized, however, depends on accounting conventions. For example, if a bond is booked in the trading account, changes in market value will be recognized and flow through earnings. If the same bond, however, is held in the investment account, changes in the market value will not be recognized and will have no effect on earnings, unless sold.

INTEREST RATE RISK

INTRODUCTION

Finally, investment risk considers the market value sensitivity of assets that are carried on a market valuation basis but does not consider the funding of these assets, since liabilities are generally not marked to market. Focusing on only one side of a transaction, the asset, and not the funding, may lead to an inaccurate assessment of the actual risk inherent in a position. A long-term fixed rate asset that is match-funded does not give rise to interest rate risk because the interest spread on that investment is protected. On the other hand, the same asset funded by overnight liabilities gives rise to significant interest rate risk because the interest spread will vary with changes in overnight rates.

While the accounting perspective is important in assessing risk to near-term earnings, it should be complemented by an assessment using the economic perspective to capture the full dimension of interest rate risk.

ECONOMIC PERSPECTIVE

The focus of the economic perspective is on the risk to the net worth of the bank arising from all repricing gaps and other interest rate sensitive positions, such as options, across the full maturity spectrum of the bank. The economic perspective focuses on the market value of the bank in today's interest rate environment and the sensitivity of that value to changes in rates. In contrast to the accounting perspective, the economic perspective identifies risk arising from longer term interest rate gaps. Gaps that remain open far into the future can be more important than the near-term gaps identified under the accounting perspective, since the impact of a sustained adverse rate movement can be more severe.

The economic perspective to interest rate risk transcends accounting conventions. To measure the market value of portfolio equity, the value of all assets, liabilities and off-balance sheet contracts are determined. The resulting net market value of portfolio equity reflects the value of all future cash flows in the current interest rate environment. The change in net value from the prior period reflects the economic earnings of the institution for the period. The risk to the bank arises from the impact of interest rate changes on these market values, and specifically on the market value of portfolio equity.

By capturing the impact of interest rate changes on the value of all future cash flows, the economic perspective can provide a more comprehensive measurement of interest rate risk. For

INTEREST RATE RISK**INTRODUCTION**

regulators, this perspective is particularly relevant because changes in the market value of portfolio equity can be a leading indicator of future earnings and book values.

Disadvantages of the Economic Perspective

While conceptually a powerful tool, the economic perspective is more difficult to apply than the accounting perspective. Measurement of risk under the economic perspective involves making assumptions as to the repricing of numerous accounts, including long-term funding sources such as savings and demand deposits. Deposits with noncontractual repricing dates generally constitute a large share of a bank's liability structure. Measurement of economic exposure, therefore, can be extremely dependent on the assumptions regarding the repricing of these accounts.

The economic perspective does not identify the timing of the accounting recognition of interest rate risk. For example, it does not indicate the accounting period in which a decline in earnings will appear. From a risk management perspective, an open position in the near term may be more important than a position which will appear much later.

Finally, because the economic perspective is not yet widely understood, risk managers may have difficulty conveying to senior management its relevance and importance.

THE ACCOUNTING VS. ECONOMIC PERSPECTIVE--A NUMERICAL EXAMPLE

The following example illustrates the distinctions between the accounting and economic perspectives in measuring interest rate risk. The bank in the example is exposed to interest rate risk arising from the repricing gap between a five-year asset and a one-year liability. The bank's assets are carried at historic cost, so from the accounting perspective, the account at risk is net interest income. Because this perspective generally focuses on changes to near-term net interest income, we use a two year time frame. The account at risk under the economic perspective, on the other hand, is the market value of portfolio equity.

INTEREST RATE RISK

INTRODUCTION

The first box below highlights the value of the two target accounts if rates remain at 10%. The second box highlights the sensitivity of the value of the two accounts to an immediate four percentage point increase in rates.

FIVE-YEAR ASSET FUNDED BY ONE-YEAR LIABILITY

RATES AT 10%							
	Market Value	Book Value	Net Interest Income				
			Y1	Y2	Y3	Y4	Y5
Asset	100	100	10	10	10	10	10
Liability	90	90	9	9	9	9	9
Capital	10	10	NII 1	1	1	1	1

RATES INCREASE TO 14%-IMPACT ON TARGET ACCOUNTS							
	Market Value	Book Value	Net Interest Income				
			Y1	Y2	Y3	Y4	Y5
Asset	86	100	10	10	10	10	10
Liability	87	90	9	13	13	13	13
Capital	-1	10	NII 1	(3)	(3)	(3)	(3)

The example illustrates that, viewing interest rate risk under the accounting perspective, the bank has no risk to net interest income in year one and risk of \$4 (the difference between a \$1 profit and \$3 loss) in year two. Under the economic perspective, the interest rate risk appears more severe. An increase in rates of four percentage points would eliminate the positive market value of equity. This reflects the future income losses over the full maturity spectrum of the bank, including years three through five, which were not captured under the accounting perspective. Note that the change in the market value of portfolio equity is a leading indicator of future net interest income and the book value of

INTEREST RATE RISK

INTRODUCTION

equity. If interest rates were sustained at the new level, the book value of equity would also turn negative as future income losses deplete equity.

It is important to recognize that the two perspectives, accounting and economic, are complementary. Both are necessary to capture the interest rate risk of a bank in a comprehensive manner. The economic perspective focuses on the value of the bank in today's interest rate environment and the sensitivity of that value to changes in interest rates. It captures future accounting exposure by evaluating the impact of potential rate changes on market values of all assets, liabilities and off-balance sheet contracts.

The accounting perspective indicates the timing of income effects, which is important to interest rate risk management. In the above example, the accounting perspective indicates that earnings problems will not develop until year two. This would be important information for risk managers in determining what action to take regarding the exposure.

BUSINESS RISK

Banks are typically vulnerable to periods of rising interest rates because of their business mix. Loans to certain economic sectors will do poorly under rising rates, resulting in a higher level of problem loans. Also, the volume of a bank's transaction related business may decline with an increase in rates, resulting in less fee income.

The extent of a bank's interest rate exposure should therefore be evaluated with regard to the sensitivity of a bank's business mix to changes in interest rates. For instance, a consumer-oriented bank with prepayable assets funded by long-term liabilities is exposed to a decline in interest rates. The severity of this exposure may, however, be mitigated by the bank's business: in periods of declining rates the bank may generate more mortgages, with the increase in fees partially offsetting the decline in net interest income. A bank with a significant amount of LDC debt is highly exposed from a credit risk perspective to an increase in rates, which could be exacerbated by its interest rate risk. If the bank had long-term assets funded by short-term liabilities, a rise in rates would produce deterioration both in net interest income and in the credit quality of its LDC debt exposure.

INTEREST RATE RISK
INTRODUCTION

MEASUREMENT OF INTEREST RATE RISK
THE RISK MATRIX AND MEASUREMENT SYSTEMS

Since interest rate risk manifests itself differently under the accounting and economic perspectives, no single measurement system captures all dimensions of rate risk. Banks employ different measurement techniques to capture various aspects of rate risk. These include gap reports, simulation models and analyses of market value sensitivity such as duration. The following risk matrix divides interest rate risk into four discreet components. This matrix will be used to demonstrate how each measurement system relates to the different components of interest rate risk.

	Current Position	New Business
Tactical Horizon		
Strategic Horizon		

The matrix looks at interest rate risk arising from a bank's current position and from its new business. The current position refers to the interest rate risk arising from positions already contracted. It includes a bank's existing assets, liabilities, off-balance sheet contracts and firm commitments. New business represents the reinvestment and refunding of maturing assets and liabilities. It also includes the incremental assets and liabilities a bank generates as it grows. Typically, management will want to assess interest rate risk not only from the current position but also from forecasts of future positions. Management may also want to understand how new business products or strategies will impact the current interest rate position. This allows new products or strategies to be tailored towards the desired interest rate profile.

The matrix looks at a bank's current position and new business in two time frames. The tactical horizon is shorter term, typically up to one or two years. Interest rate risk in this horizon is often the result of deliberate actions by management to profit from anticipated changes in interest rates. Management is typically more willing to assume rate risk under the tactical horizon because of greater confidence in

INTEREST RATE RISK**INTRODUCTION**

short-term interest rate forecasts and greater facility to hedge the risk if rates move against the bank.

The strategic horizon consists of longer term positions which typically arise from the structural nature of a bank's business or from discretionary investments in long-term fixed rate instruments. Examples include long-term fixed rate mortgages or investments in long-term bonds which are funded by interest sensitive deposits.

Interest rate risk under the strategic horizon generally remains stable since it reflects the nature of the bank's core business. Risk managers are more averse to long-term strategic interest rate risk because they have less confidence in longer term interest rate predictions and because the consequences of wrong predications can be more severe. The implication of changes in the level of risk under the strategic horizon should be fully understood by management.

Different measurement systems are needed to capture different components of interest rate risk. Gap reports are best suited to measure income risk arising from the current position. To achieve an objective measurement of the current position, the measurement usually assumes that 1) no new business is generated and, 2) all maturing assets and liabilities are reinvested at overnight rates or in identical instruments. Gap reports often are used to measure risk only within the tactical horizon, but they can also be designed to capture risk within the strategic horizon.

Simulation models allow banks to simulate future business, and can be used to measure interest rate risk arising from both current and future positions. Simulation allows for a more dynamic evaluation of risk and is a useful tool for business and profit planning. Simulation models usually address risk only over the tactical horizon.

Systems that measure market value sensitivity may be used to capture the interest rate risk of all current positions over the tactical and strategic horizons. Often these systems are based on duration analysis. Such systems frequently are used to establish position or earnings-at-risk limits for trading portfolios.

INTEREST RATE RISK
INTRODUCTION**GAP REPORTS****General**

Gap reports typically are used to measure risk to net interest income arising from instruments carried at historic cost. In terms of the risk matrix, gap reports capture risk arising from the current position over the tactical and often over the strategic horizon.

	Current Position	New Business
Tactical Horizon		
Strategic Horizon		

Differences in the repricing dates of assets, liabilities and off-balance sheet contracts are a primary component of risk to net interest income. A typical gap report stratifies all current and contracted positions by repricing date. Net repricing balances indicate the sensitivity of net interest income to a change in interest rates. The amount of risk depends on the size of the repricing imbalances, how long the imbalances remain open, and potential movements in interest rates.

Gap reports can be presented on either a stock or flow basis. The more common method, the flow approach, depicts the volume of instruments repricing in each time frame. The stock approach, on the other hand, depicts the volume of instruments not subject to repricing in that or earlier periods, i.e., the volume of instruments whose rates remain fixed. Positions in each time frame may be expressed as assets less liabilities, or as liabilities less assets. The net positions computed under these various conventions should be identical in absolute terms.

INTEREST RATE RISK
INTRODUCTION

The following is a simplified example of a gap report based on the flow approach. The net balances represent assets repricing less liabilities repricing.

REPRICING GAPS:

MONTHS	1	2-6	7-12	13-24	25-36
(in millions)					
ASSETS	25	50	0	75	200
LIABILITIES	25	100	100	100	25
PERIODIC GAP	0	(50)	(100)	(25)	175
CUMULATIVE GAP	0	(50)	(150)	(175)	0

Measurement of Risk and Risk Limits

The product of the gap report is a series of net repricing balances, which by themselves do not provide a good indication of risk to net interest income. To measure risk to net interest income, the net repricing gaps should be translated into the amount of income at risk under an adverse interest rate scenario. For example, consider the impact on net interest income of an immediate two percentage point increase in rates. Under this scenario, with all repricing assumed to occur at the beginning of each period, the gap report in the above example would translate into risk to net interest income of -\$1.92 million in year one, -\$3.50 million in year two, and no risk in year three.³ The timing of repricings within a given time frame (maturity bucket) is an important assumption. For instance, if repricings in this example are assumed to occur in the middle of each maturity bucket rather than at the beginning, the resulting net interest income exposure would be -\$1.21 million in year one, -\$3.25 million in year two and -\$1.75 million in year three.⁴

Many banks, rather than relating repricing imbalances to net interest income at risk, simply limit the size of their gaps. For instance, a bank may limit the size of the one-year cumulative gap to 25% of total assets or the ratio of rate sensitive assets to rate sensitive liabilities to a given range, such as .90 to 1.10. Such limits are imprecise and may be unnecessarily constraining. To measure and limit interest rate risk, gap balances are best expressed in terms of the account at risk, net interest income.

INTEREST RATE RISK

INTRODUCTION

Advantages and Limitations

Gap reports provide a measurement of net interest income at risk and indicate the timing of the risk, within certain constraints. They are particularly useful in identifying sources of risk arising from existing assets, liabilities and off-balance sheet contracts. In this respect, gap reports can be a more objective measure of risk exposure than other methods which may include more subjective forecasts of reinvestment rates and future business mix.

Gap reports are subject to limitations, however. They generally cannot capture basis risk, investment risk or exposure from intraperiod gaps. Basis risk is the risk that different yield curves or pricing indices do not move together. For instance, a bank may match fund a loan that reprices off of prime with a certificate of deposit (CD) of a similar maturity. Most gap reports would not show any exposure for this position since repricing maturities are matched. The bank could suffer a decline in net interest income, however, if the prime rate has declined at the repricing date but the CD rate has not changed. Gap reports generally are used to measure risk to net interest income and do not easily incorporate risk to market values (investment risk). Mark-to-market items are often shown as overnight instruments because they effectively reprice daily and are always at current yields. A separate system is then used to measure the risk to market values arising from those accounts. Another limitation in most gap reports is that significant risk may be hidden within the individual repricing time frames of the report. For instance, a gap report that is based on quarterly time frames and has a zero net repricing imbalance at the end of the first quarter indicates no risk.⁵ In fact, up to 25% of annual net interest income is exposed.⁵

Options exposures affect net interest income but are normally not captured in a gap report. In particular, many retail banks have large exposures arising from options positions that are embedded in their loan and deposit products. These options generally give the customer the right to fix the interest rate at a future date at a level that is favorable to the customer and detrimental to the bank. Examples are caps on floating rate loans (a customer's option to convert a floating rate to a fixed rate loan), the customer's right to prepay a mortgage in a lower rate environment, and the customer's right to renew a CD at a rate higher than current market rates. When prevalent, these options positions can pose significant risk to net

INTEREST RATE RISK
INTRODUCTION

interest income and their effects are not easily incorporated into a gap report.

Finally, a gap report does not generally capture risk arising from future business. The analysis from a gap report is generally a poor predictor of levels and variations of net interest income because all business is assumed to run off at its repricing maturity, which is usually an unrealistic assumption. To address the limitations inherent in many gap reports, banks may complement gap report analysis with simulation.

SIMULATION⁶**General**

Simulation models analyze interest rate risk in a forward-looking or dynamic context. They are used to evaluate risk arising from both the bank's current position and its forecasted future business. Typically, simulation runs are performed only within the tactical horizon because the confidence in interest rate and business forecasts is less beyond the short-term horizon. Also, many simulation models are dynamic in that business plans can be altered in response to changing interest rates as part of the analysis. As the time horizon is extended, the assumptions underlying alternative business plans become more critical and more tenuous.

In terms of the risk matrix, most simulation models target the following areas:

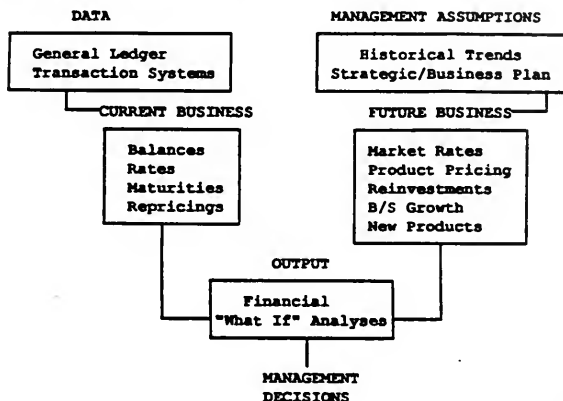
	Current Position	New Business
Tactical Horizon		
Strategic Horizon		

Simulation models may be used for a variety of purposes. Risk to net interest income can be measured by projecting the future composition of the bank and applying different interest rate scenarios. Simulation can also test the effect of different business plans on a bank's risk profile and provides a useful link between strategic planning and risk management. Or, simulation may be used to test how a discretionary investment

INTEREST RATE RISK
INTRODUCTION

or funding plan would affect the interest rate risk of the bank. This allows the bank to assess the potential impact of a decision before implementation.

The main components of a simulation model are presented in the following chart.



Data from general ledger and transactions systems generally provide information on a bank's current position. This information is similar to that used for a gap report and includes current balances, rates, repricing and maturity schedules. Information on new business and reinvestment plans is generally more subjective and is based on management's assumptions. Those assumptions might be derived from historical trends, business plans, or econometric models. Both market interest rates and business mix are forecasted. Forecasts of interest rates involve forecasts of directional change, the future shape of the yield curve and the relationship among the various indices that the bank uses for pricing loans, deposits and other products. Business mix includes forecasts of: 1) the reinvestment and refunding of current assets and liabilities as they mature; and, 2) future business growth. In addition to the type of new business, the maturity mix of that business is forecasted since product pricing often varies with maturity structure. Obviously simulation runs are very assumption intensive.

INTEREST RATE RISK
INTRODUCTION

The output of a typical simulation run consists of: 1) future balance sheet and income statements under the various interest rate and business mix scenarios; 2) an analysis of the impact of the different scenarios on the value of the target account; and 3) graphic representations of the analysis, which are important tools for communicating with senior management and the board.

Measurement of Risk and Risk Limits

Risk is expressed in terms of changes in the value of the target account under different interest rate scenarios. The target account is usually net interest income, although many models may also be able to assess changes in the book value of capital and the market values of portfolio equity or other specific instruments. For comparison purposes, several business scenarios and rate scenarios usually are run. Rate scenarios typically include rising, flat and declining rates as well as a most probable scenario.

The following is an example of a report generated by a simulation model. The report shows variation in net interest income under alternative interest rate scenarios using a flat rate scenario as a base. Similar reports are often developed to show the variation in net interest income from alternative business mixes and strategies.

NET INTEREST INCOME SENSITIVITY
(dollars-millions)

	<u>NII</u> <u>FLAT</u>	<u>Change in NII</u>	
		<u>Up 200 BP</u>	<u>Down 200 BP</u>
Qtr 1	100	-5	5
Qtr 2	90	-5	5
Qtr 3	95	-10	15
Qtr 4	<u>110</u>	<u>-10</u>	<u>15</u>
	395	-30	40

Risk limits are expressed in terms of changes in the account at risk (generally net interest income) for a defined interest rate scenario over a defined time period. For example, the bank in the above example might limit the variation in annual net interest income from a 200 basis point change in rates to ten percent of the base net interest income. Risk limits are best defined using probable adverse rate scenarios rather than most likely rate scenarios. Most likely scenarios indicate

INTEREST RATE RISK**INTRODUCTION**

management's expectation of what will happen. Risk measurement and limits are designed to control what may happen if outcomes deviate from expectations.

Advantages and Limitations

Simulation models allow for relaxation of some of the assumptions underlying gap based risk measurements. For instance, gap measurements of rate risk assume a onetime shift in interest rates. Simulation models can handle a varying interest rate path, including variations in the shape of the yield curve. Also, gap risk measurements usually assume that all current assets and liabilities run off and are reinvested overnight. This may be objective but is not probable. A simulation model can accommodate various business forecasts and allow more flexibility in running sensitivity analyses. For instance, basis risk can be evaluated by varying the spreads between the various indices from which the bank prices its products.

Although offering greater versatility, simulation may provide a less objective indicator of the bank's current risk position by introducing more assumptions on future business. Changes in the target account arise from predicted balance sheet changes as well as interest rate changes, making it difficult to determine which variable produces changes in the value of the target account. For this reason, simulation is best supplemented by a measurement that isolates the risk inherent in the existing balance sheet.

MARKET VALUE SENSITIVITY AND DURATION

Techniques that measure market value sensitivity can capture the interest rate risk of the current position over both the tactical and strategic horizons. These systems are often based on duration analyses.

Duration - General⁷

Duration is a measurement of the sensitivity of market values to small changes in interest rates. For instance, if interest rates increase, the market value of a fixed income instrument will decline. Duration indicates by how much. The duration of a fixed income instrument measures the percentage change in the market value of the instrument due to a change in market interest rates. For instance, the market value of a bond with a duration of five will roughly decline by 0.5% if interest rates increase by ten basis points.

INTEREST RATE RISK
INTRODUCTION

Under the accounting perspective, duration may be used to measure risk arising from instruments carried on a market valuation basis. A bank may also use duration to measure the sensitivity of the market value of portfolio equity to changes in interest rates. This captures the risk of the entire current position under both the tactical and strategic horizon.

	Current Position	New Business
Tactical Horizon		
Strategic Horizon		

Duration is based on an instrument's remaining time to maturity and intermediate cash flows. If a fixed income instrument has only one cash flow, such as a zero coupon bond, duration will equal the maturity of the instrument: a zero coupon bond with five years remaining to maturity has a duration of five years. If coupon payments are received before maturity, the duration of the bond declines, reflecting the fact that some cash is received before final maturity. For example, a five year 10% coupon bond has a duration of 4.2 years in a 10% interest rate environment.

Properties

In general, duration exhibits the following characteristics:

- o The higher the duration, the greater the price sensitivity of the bond.
- o For two bonds with the same maturity, a high coupon bond will have a lower duration than a low coupon bond and will also be less price sensitive. With a high coupon bond, a larger proportion of a bond's cash flows will be received sooner and thus the average time to receipt of the cash flows will be less.
- o A given fixed income instrument will have a higher duration in a low interest rate environment than in a high interest rate environment.

INTEREST RATE RISK**INTRODUCTION**

- o Duration may be positive or negative. A long bond position would have a positive duration and an increase in interest rates would generally produce a decline in the market value of the bond. A short bond position would have a negative duration and an increase in interest rates would generally produce an increase in the market value of the bond position.
- o Durations are additive when weighted by the amount of the contract. For example, if a portfolio consists of two bonds of equal market value, one with a duration of six and the other with a duration of two, the duration of the portfolio would be four.

Risk Measurement -- Instruments Carried on a Market Valuation Basis

Duration can measure the risk to market values of a single contract or a portfolio of contracts carried on a market valuation basis. The duration of a portfolio of fixed income contracts is calculated by adding together the durations of the individual contracts on a weighted basis. The duration of a portfolio indicates the risk to earnings arising from that position if interest rates move adversely. For example, the market value of a \$100 million bond position with a duration of five will increase by \$50,000 for every one basis point decline in interest rates. If a probable adverse change in interest rates overnight is ten basis points, then earnings at risk from this position would be \$500,000 overnight.⁸

Risk Measurement -- Portfolio Equity at Risk

Banks are exploring the use of duration to measure or hedge the sensitivity of the market value of portfolio equity to changes in interest rates. The duration of equity is derived from the duration of all assets, liabilities and off-balance sheet contracts.

To understand how the duration of equity measures risk, the market value of portfolio equity may be viewed as a net bond position. Assets are analogous to long bond positions with positive durations and liabilities are analogous to short bond positions with negative durations. The duration of equity indicates whether the market value of the net bond position -- which is portfolio equity -- will increase or decline with a change in rates.

INTEREST RATE RISK**INTRODUCTION**

A bank with long-term assets funded by shorter term liabilities will generally have a duration of equity which is positive. The market value of portfolio equity of this bank will decline if interest rates increase. A bank with short-term assets funded with long-term liabilities will generally have a negative duration of equity. The market value of portfolio equity of this bank will increase with an increase in interest rates and will decline with a decline in rates. The higher the duration of equity, the more sensitive is the market value of portfolio equity to changes in rates.

Advantages and Limitations

Duration provides a useful tool for setting risk limits either on the market value of portfolio equity or for trading accounts, including portfolios of off-balance sheet interest rate contracts. In many cases, banks limit investment risk through simple position limits, which are usually based on maturity. Although position limits provide rough parameters on the level of earnings risk, they do not precisely assess the sensitivity of market values to changes in rates. Limits based on duration can be an improvement.

Limits based on duration analysis are best expressed in terms of dollar change in market value. Duration, however, measures the percentage change in market value, not the actual dollar change. To calculate exposure to the account at risk (the market value of equity) the durations of assets, liabilities and off-balance sheet accounts must be weighted by their respective market values.

In theory, the duration of portfolio equity indicates with a single number the risk of the bank under the economic perspective. It is based on the assumption that cash flows are known, however, which is not the case for commercial banks. For many types of banking products, management must make estimates regarding the future repricing of these accounts. The quality and accuracy of these assumptions can significantly affect the reliability of the use of duration of equity as a measurement of risk.

Duration as a measurement of market value sensitivity also has limitations. Duration only accurately indicates the change in market value for a small change in rates, less than one percentage point. The margin of error increases with the increase in the size of the change in rates. Another problem is that the duration of contracts with different cash flows evolve at different rates with the passage of time.

INTEREST RATE RISK

INTRODUCTION

Therefore, a portfolio which is duration hedged may become increasingly unhedged over time. The complexity of duration calculations increases as certain simplifying assumptions (such as flat yield curves and parallel shifts in yield curves) are relaxed. Users of duration should assess the sensitivity of their results to the assumptions implicit in their duration formulas.

ORGANIZATION OF THE RISK MANAGEMENT FUNCTION

The board of directors is ultimately responsible for an institution's exposure to interest rate risk, and should set its overall strategic policy and be aware of the level of risk the bank is assuming. The board usually will delegate responsibility for establishing specific interest rate risk, liquidity and capital adequacy policies to a committee of senior managers. This senior management committee is often referred to as the Asset/Liability Management Committee (ALCO) or the Finance Committee.

ALCO usually manages the structure of the institution's business and the level of interest rate risk it assumes. It is responsible for ensuring that measurement systems adequately reflect the bank's exposure, and that reporting systems adequately communicate relevant information regarding the level and sources of exposure. Annually, ALCO should make a comprehensive report to the board addressing current interest rate risk measurement techniques and management practices.

In the tactical horizon, ALCO should establish limits on the level of interest rate risk assumed. These limits are best expressed in terms of earnings components and market values, the accounts at risk to adverse rate movements. Gap balances are best translated into net interest income at risk. Duration or other measures of market value sensitivity are best expressed as market value at risk. At a minimum, limits should cover income risk of items carried at historic cost and investment risk of items carried on a market valuation basis.

ALCO should demonstrate a good understanding of the nature of the bank's interest rate risk under the strategic horizon, even if systems are not in place to quantify it. The OCC is encouraging banks with significant long-term positions to develop the ability to measure the market value sensitivity of these positions.

INTEREST RATE RISK**INTRODUCTION**

ALCO usually delegates day-to-day operating responsibilities to the treasury department, and ALCO should establish specific policies and limits governing treasury operations. Treasury personnel are typically those responsible for managing the discretionary portfolios (investment securities, eurocurrency time deposits, domestic wholesale liabilities, off-balance sheet interest rate contracts, etc.). The treasury department can influence the level of interest rate risk in several ways. The treasury is usually responsible for implementing the policies of the ALCO regarding strategic and tactical positions. In addition, the treasury may have the latitude to take incremental tactical positions, as well as very short-term positions (trading).

INTEREST RATE RISK
ENDNOTES

-
- 1 The risk-based capital standard, which becomes effective December 31, 1990, requires banks to hold capital equal to a specified minimum percentage of risk-adjusted assets (7.25 percent until December 31, 1992 and thereafter, 8.00 percent). The risk adjustment is based only on credit risk.
 - 2 The term "market value of portfolio equity" is used in this paper to describe the net present value of an institution's existing assets, liabilities, and off-balance sheet instruments. Obviously other factors besides interest rates influence market values of specific financial instruments and institutions. This paper focuses only on the influence of changes in interest rates on market values.
 - 3 Year 1: $(2\% \times -\$50 \text{ MM} \times 5/12) + (2\% \times -\$150 \text{ MM} \times 6/12)$
 $= -\$1.92 \text{ MM}$
 Year 2: $(2\% \times -\$175 \text{ MM} \times 1) = -\3.50 MM
 Year 3: $(2\% \times 0 \times 1) = \0
 - 4 Year 1: $(2\% \times -\$50 \text{ MM} \times 5/12 \times 1/2) + (2\% \times -\$50 \text{ MM} \times 6/12)$
 $+ (2\% \times -\$100 \text{ MM} \times 6/12 \times 1/2) = -\1.21 MM
 Year 2: $(2\% \times -\$150 \text{ MM}) + (2\% \times -\$25 \text{ MM} \times 1/2) = -\3.25 MM
 Year 3: $(2\% \times -\$150 \text{ MM}) + (2\% \times -\$25 \text{ MM}) + (2\% \times \$175 \text{ MM} \times 1/2) = -\1.75 MM
 - 5 For example, a bank with a \$10 million loan that reprices daily and a \$10 million deposit that reprices on the last day of the quarter, shows a zero gap in the 0-90 day maturity bucket. The bank, however, is exposed to a decline in interest rates during those ninety days.
 - 6 Simulation models vary greatly in terms of design and capabilities. This discussion is based on a generic model.
 - 7 Duration was proposed by Frederick Macaulay in 1938 to measure the timing of a bond's cash flow. This became known as Macaulay's duration. Later, this measure was modified to express the price sensitivity of a bond to a given percentage change in interest rates; this is known as "modified duration". Modified duration is simply duration divided by $(1 + (\text{market yield}/ \text{the number of coupon payments per year}))$. In this section, the term duration will refer to modified duration and will focus on its use as a measure of market value sensitivity.

INTEREST RATE RISK MANAGEMENT**ENDNOTES**

⁸ Percentage change in bond's price =
(Mod. Duration) X $\frac{\text{Change in rates in basis points}}{100}$

$$-5 \times \frac{10}{100} + -.5\%$$

$$-.5\% \times \$100 \text{ MM} = -\$500,000$$

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

OBJECTIVES

1. Assess the quality of interest rate risk management through a review of organizational structure, policies and limits, formulation and execution of strategies, internal reporting, and the quality of supervision of treasury activities.
2. Determine whether rate risk measurement systems are comprehensive, objective and reliable.
3. Determine whether the data needed to measure interest rate risk is available and complete. Determine whether the assumptions used regarding customer behavior are based on informed analysis and are documented.
4. Determine whether there are risk limits in place that effectively: (a) limit risk to the variance of earnings; and, if appropriate, (b) limit risk to the value of portfolio equity.
5. Through a review of reported exposures, limits, and the strategies and tactics employed to manage rate risk, determine the level of interest rate risk that is routinely accepted and that management is willing to assume.
6. Make recommendations for improvements as appropriate. Discuss deficiencies with management and determine what corrective actions management intends to undertake.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

PREPARING: OVERVIEW OF THE BANK

Hold an initial discussion with senior ALCO management. Determine the following:

1. Management's perception of the bank's interest rate risk in terms of its structural risk and its tactical or trading positions.
2. Management's philosophy towards assumption of interest rate risk.
3. Management's current interest rate expectations and the degree of confidence placed in that outlook.
4. The organization of the interest rate risk management process:
 - a. Who are the main participants in the process and how do they relate to each other;
 - b. What types of risk limits are in place;
 - c. What types of risk measurement systems are used and what are they designed to measure;
 - d. Who prepares internal reports on interest rate risk, and how they are used.
5. Which sections of the bank assume and manage interest rate risk, i.e. the business units or, through a funds transfer pricing system, the treasury.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

ORGANIZATIONAL STRUCTURE**RISK MANAGEMENT FUNCTIONS**

The organization of the risk management function will differ among institutions. The following are the key components of any comprehensive management structure:

- o Policy Statements
- o Risk Limits
- o Risk Measurement Systems
- o Management Reporting

From discussions with management and a review of bank policies:

1. Determine the persons or committees responsible for each of these functions;
2. Ensure that clear lines of authority and communication exist between the parties responsible for risk management and control.

THE BOARD OF DIRECTORS

The board of directors has ultimate responsibility for the level of risk assumed by the bank.

Review bank policies and practices to determine that:

1. The board has specifically designated or approved senior managers responsible for establishment of interest rate risk policy;
2. Bank policy and practice is consistent with the board's expressed tolerance for the assumption of interest rate risk;
3. Senior management periodically reports to the board of directors on the level of risk to reported earnings;
4. Senior management periodically reports to the board on established risk limits and any proposed changes to these limits.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

THE ASSET/LIABILITY COMMITTEE (ALCO)

ALCO is typically responsible for establishing policy and defining both the limits and types of risk measurement systems used to implement this policy. To be effective, ALCO should have representation from each major sector of the bank which assumes interest rate risk. In addition, there should be regular communication between the risk management and strategic planning functions to facilitate evaluations of risk arising from future business. ALCO members should be senior managers with clear lines of authority over the units responsible for establishing and executing interest rate positions. A channel must exist for clear communication of ALCO directives to these line units. It is also essential that reports on the current risk of the bank are prepared and provided to ALCO in a timely fashion.

1. Review policies to determine whether ALCO has:
 - a. Established specific limits on the acceptable level of interest rate risk on a consolidated bank basis;
 - b. Defined risk measurement systems which capture risk to the target accounts in a comprehensive manner;
 - c. Delegated responsibility for implementation and execution of strategies in a clear and unambiguous manner.
2. Ensure that ALCO members have the necessary authority over those line managers who can assume interest rate risk. In general, senior managers responsible for both structural risk and tactical portfolio positions should be represented on ALCO.
3. Review internal reporting to ascertain whether reports provide sufficient information to allow ALCO to:
 - a. Determine the level of interest rate risk in the consolidated institution, and the major legal entities;
 - b. Determine compliance with policy;

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

- c. Evaluate the results of past strategies;
- d. Assess the potential risks and returns of proposed strategies.

TREASURY

The treasury is typically responsible for the implementation and execution of interest rate strategies over the strategic and tactical horizon. Risk under the strategic horizon represents the risk resulting from the structural business of the bank or long-term investment positions. This risk may either be assumed and managed by individual business units or transferred to treasury through an internal funds transfer pricing system.

ALCO may direct treasury to reduce the level of risk presented by the structural books, or to increase this "natural" exposure. These strategic adjustments might, for example, involve the use of long-term fixed rate assets or liabilities, or interest rate swaps. In addition, treasury may have responsibility for implementing and executing strategy over the tactical horizon, as well as taking very short-term trading positions. Tactical positions may be assumed through active management of investment portfolios, which may include bonds, Eurodollar deposits, or CDs. These portfolios often are referred to as the bank's discretionary portfolios.

Review policies, directives and limits to determine whether:

1. The role of treasury is clearly defined regarding the management of interest rate risk over the strategic and tactical horizons, and that treasury is operating under clear directives from ALCO;
2. Treasury is operating under clear limits regarding permissible levels of interest rate risk resulting from the investment portfolios and trading operations;
3. Exceptions to limits are identified, reported, and approved by management on a timely basis.

PORTFOLIO MANAGEMENT

Securities portfolios may either be held to maturity for liquidity purposes or may be actively managed. The goal of active management is to maximize return for a given level of

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

risk. Techniques used in active portfolio management include: 1) interest rate forecasting and either immunizing the portfolio to protect yields from rate changes or positioning the portfolio to profit from anticipated changes; 2) bond swaps to profit from anticipated changes in spreads between different types of bonds; and 3) buying or writing options.

Options on securities are purchased for hedging purposes or to increase revenues. Buying put options is a form of protection against depreciation of the security. Buying a call option is a form of investment. Both involve limited risk.

Selling (writing) options is done to increase revenues, and may introduce significant risk. This risk varies, however, depending on whether the underlying security is part of the portfolio. A call option written on a security owned is a "covered call" option, and has limited risk. Call options on securities which are not owned are "naked calls" and introduce unlimited risk. This activity should not be undertaken in the investment portfolio. Writing a put option may require the option seller to purchase a security at a price which is higher than the market price, resulting in immediate unrealized losses in the portfolio.

Although the investment portfolio is booked on a historic cost basis, negative variations in the market value of the portfolio are very significant in the market's perception of the strength of the bank. Unrealized losses are disclosed in external reports and may adversely affect a bank's liquidity or cost of funds. For liquidity considerations, it is important for a bank to measure and limit the risk to the market value of the investment portfolio arising from adverse changes in interest rates.

Discuss the following with each of the key managers of the discretionary portfolios:

1. The nature of their activities:
 - a. What is the purpose of the portfolio and how is it managed;
 - b. What types, maturities, and levels of investment instruments are permissible and actually held.
2. The measurement of risk in terms of market values.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

3. If the portfolio contains mortgage backed securities or derivatives, whether the risk measurement system allows for different prepayment speeds under different interest rate scenarios (embedded options feature).
4. Management's understanding of the system of limits under which they operate.

FUNDS TRANSFER PRICING SYSTEM

An evaluation of the organizational structure of risk management requires understanding where in the bank, risk is assumed and managed. A bank may allow each individual business unit to manage the interest rate risk of its books independently and within limits. Alternatively, a bank may use a transfer pricing system to centralize the risk in one part of the bank and manage that risk on a consolidated basis. The goal of a transfer pricing system is to isolate in a central unit, usually the treasury, all major interest rate risk management decisions, and to induce pricing decisions by line officers that are consistent with the interest rate risk management objectives of ALCO and treasury.

The transfer pricing system works to remove interest rate risk profits and losses from individual business units. For example, treasury assigns a cost of funds to the commercial lending units for the loans they make, based on the maturity and repricing characteristics of the loans. A fixed rate five-year loan, for example, might be assigned a cost of funds equivalent to the rate paid by treasury to borrow five year money. The treasury essentially will "loan" five year money to the commercial lending unit at its marginal rate and borrow from the commercial lending unit at the unit's effective deposit rate. In this way, the lending units do not assume interest rate risk as the repricing maturities of their assets and liabilities are matched. The spread earned by the units will relate only to the level of credit risk assumed by the units.

Profit and losses arising from interest rate mismatches are transferred to a central unit, generally the treasury department. The treasury is responsible for funding the loans and may either match fund the loans or maintain a deliberate repricing mismatch. If loans are matched funded, then no interest rate risk is assumed by either the lending units or treasury. Alternatively, treasury may decide to create a mismatch, perhaps by funding a five-year fixed rate loan with a

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

one-year deposit. In this case, treasury would earn the difference between its actual funding costs and what it has charged the lending units. For example, if treasury charges the lending units 10% for five-year funds and raises one-year money at 9%, treasury would earn a 1% spread. Obviously, however, the treasury unit has assumed interest rate risk, for if rates were to rise, the spread earned could decline or even become negative.

Review the funds transfer pricing system to determine:

1. The purpose of the system;
2. The effectiveness of the system in isolating the spread received for the assumption of interest rate risk versus the spread received for the assumption of credit risk.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

INTEREST RATE RISK EXPOSURE**STRATEGIC HORIZON****Description**

Strategic positions are those involving longer term portfolio positions or positions related to the bank's structural business mix. The losses suffered by mortgage lenders when deposit rates were deregulated is a classic example of the possible ramifications of a significant structural position. Most institutions prefer to minimize structural interest rate risk, or at least have a diminished tolerance for risk in their longer term positions. ALCO and treasury's activities often involve hedging the risks presented by the bank's longer term assets and liabilities.

Long-term positions are particularly important in the assessment of interest rate risk. From the economic perspective, it is the longer term fixed rate instruments whose market value will fluctuate most given any change in interest rates. If rates move against the institution's strategic position, a significant reduction in the market value of the portfolio equity would result, eventually leading to pressure on reported earnings.

Risk Measurement Systems

Strategic risk is often not apparent in risk measurement systems such as gap reports or simulations that extend only over the tactical horizon and focus only on risk to current earnings. Similarly, review of net interest margins will not indicate the nature of strategic risk as the net interest spread on long-term positions may be fixed over the short term. Only risk measurement systems that evaluate risk across the full maturity spectrum will capture the risk of these positions. These systems include: (1) gap reports containing reliable repricing detail over the full maturity spectrum and incorporating options risk; and (2) market value systems that measure the sensitivity of the market value of portfolio equity and include options risk. Options positions can significantly alter the risk profile of an institution's strategic positions (see Options, page 43). These positions are difficult to incorporate into risk measurement systems but should be considered when assessing an institution's exposure within the strategic horizon.

INTEREST RATE RISK MANAGEMENT

EXAMINATION GUIDELINES

At a minimum, ALCO management should demonstrate a thorough understanding of the interest rate sensitivity of their strategic positions. This understanding should encompass both the risk arising from current positions and the potential impact on that position from anticipated future business. Future business plans are particularly important if they involve expansion into new activities or acquisition of banks with different rate risk characteristics.

Examiners should come to an independent evaluation of the strategic risk of the bank, taking into consideration:

1. The repricing characteristics of the bank's main lines of business and products. (A gap report that extends across the full maturity spectrum of the bank may illustrate this);
2. The nature of longer term securities positions and the effectiveness of any hedging activities;
3. The significance of short options positions, such as caps on loans;
4. The impact of any future business plans.

Evaluate senior management's understanding of the interest rate risk of the bank under the strategic horizon, including:

1. Management's assumptions underlying their assessment of the bank's strategic risk, and whether these assumptions appear to be informed and reasonable;
2. The degree to which management understands how the bank's strategic plan will affect its structural risk, and the quality of communication and coordination between the strategic planning and risk management functions.

TACTICAL HORIZON

Description

Assuming a fairly well balanced structural position, the tactical horizon is where management usually takes deliberate positions to benefit from anticipated changes in interest rates. These positions are typically implemented through the bank's discretionary portfolios. In addition, ALCO will often allow treasury a certain degree of latitude to assume

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

incremental tactical positions in the discretionary portfolios. Besides potential profits, other benefits accrue from these activities, such as maintaining funding access, providing a timely source of information regarding the financial markets, and increasing overall financial flexibility.

In the money market discretionary portfolios (maturities generally under one year), management will typically create maturity gaps, perhaps funding short term assets with even shorter term liabilities. These positions will create short-term earnings risk. More risk can be assumed through the capital market portfolios, such as Treasury notes and bonds, and Eurobonds, which also typically will be short funded. In addition to presenting a risk to short-term earnings, these positions can give rise to realized or unrealized valuation losses. Derivative market portfolios, such as swaps, futures, and interest rate options, produce exposures similar to those instruments (money or capital market) upon which the products are based.

Risk Measurement Systems

Examiners should ascertain that the risk to current earnings over the tactical horizon is measured and controlled. Gap reports and simulation models are often used to measure the risk to current earnings from historic cost items. These systems may be supplemented with systems that measure market value sensitivity for discretionary and trading portfolios. Although investment portfolios are not marked to market, management should control the risk to market values arising from changes in interest rates.

Based on a review of internal management reports, risk reports and limits, evaluate:

1. The level of tactical risk, either actual or permissible, relative to the strategic risk of the institution;
2. Whether risk measurement systems capture the sensitivity of the accounts at risk to an adverse change in interest rates;
3. Whether limits exist for: (1) the risk to earnings over the tactical horizon; (2) the risk to market values for discretionary portfolios.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

TRADING POSITIONS**Description**

Trading positions arise from the buying and selling of financial instruments to profit from short-term interest rate movements and realization of the difference between the bid and offer prices. Positions are typically measured at the close of business each day.

Risk Measurement Systems

As trading positions are marked to market, a risk measurement system must capture risk to market values arising from an adverse change in interest rates. Typically, banks will use duration-based systems, which are discussed below, to measure this risk. For trading portfolios that include options contracts such as caps and floors, the options risk also must be measured. Options risk refers to the sensitivity of market values of options to changes in the level of interest rates as well as changes in the volatility of interest rates. Measurement of this sensitivity requires an options pricing model.

Risk Limits

To control exposure from trading activities, risk managers rely on intraday position limits, overnight limits, earnings-at-risk limits and stop-loss limits. Intraday limits are limits on the size of the total position that may be taken by the trading unit during active trading. Overnight position and earnings-at-risk limits are designed to limit the amount of losses that could arise from adverse market movements while trading is closed. These limits should be based on the sensitivity of market values to changes in rates and the expected volatility of rates on an overnight basis. Finally, stop-loss limits require that positions that have generated losses up to the limit be liquidated or closed.

Based on a review of internal reports and risk measurement systems, evaluate:

- 1) The level of trading risk, either actual or permissible, relative to the tactical and strategic risk of the institution;

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

- 2) Whether risk measurement systems capture the sensitivity of market values to an adverse movement in interest rates; and whether the systems permit different trading positions to be combined so that senior management is aware of the combined risk arising from all trading positions;
- 3) The strengths and weaknesses of risk limits, and in particular whether position limits are based on an evaluation of price sensitivity and rate volatility;
- 4) Earnings from trading activities both in terms of variance and trend.

NET INTEREST MARGINS

A bank's net interest margins should be evaluated in terms of (1) level, and (2) variance. The level of a bank's interest rate margins is a significant element in analyzing the severity of a bank's interest rate exposure from the accounting perspective. Large net interest margins provide a cushion against adverse changes in interest rates. The difference in margins between different types of institutions can be quite significant. Typically consumer banks with retail deposit bases have wide spreads between the average cost of funds and average yield on assets. On the other hand, wholesale banks, which purchase money at market rates, operate on much narrower spreads. For two institutions with the same level of risk, an adverse change in interest rates could translate into losses for a wholesale bank while it might imply only a decline in net interest margins for a consumer bank.

Variance of net interest margins can be an important indicator of interest rate risk. Past gap positions will result in both positive and negative changes in net interest income as interest rates move. Factors other than gap positions, such as changes in tax rates or collections on nonperforming loans, can, of course, influence trends in net interest margins. When analyzing margin trends, the impact of unusual items should be excluded to discern the underlying trend performance. While variance of net interest margins may be an important indicator of the size of tactical positions assumed in the past, it does not indicate the risk assumed over the strategic horizon or the risk of the current position.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

Analyze quarterly financial performance for the last two or three years, particularly in regard to the following:

1. The level and stability of net interest margins and whether they appear to provide a significant cushion against interest rate risk;
2. The quarterly trend and variance of net interest income, net interest margin, and net interest spread;
3. Whether declining trend lines are a reflection of market or competitive pressure, or are the result of rates moving against intentional or unintentional positions;
4. The cause of large variances.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

THE MEASUREMENT OF INTEREST RATE RISK**QUALITY OF DATA**

The quality of data is a key determinant of the reliability of a risk measurement system, and the examiner should devote considerable time to ensuring that the data is accurate, timely and complete. There are two types of data requirements for the measurement of interest rate risk: (1) contractual data on a product's repricing maturity, and any interest rate caps or floors that would affect the repricing; and, (2) data based on assumptions regarding the repricing of products without contractual maturities or products where the expected repricing differs from the contractual maturity.

The quality of data may frequently need improvement. Management assumptions should be based on observations of past consumer behavior and should also include the impact of bank marketing plans on future volumes. In practice, however, assumptions are often arbitrary and not verified against experience. In regard to contractual data, frequent deficiencies are: (1) incomplete data for all of the bank's operations; (2) and lack of information on caps and floors. The reliability of any type of risk measurement system will only be as good as the underlying data and assumptions. Examiners should encourage improvements, where appropriate, in the area of data quality.

Unspecified Repricing Dates

Products with unspecified repricing dates include demand deposit accounts (DDA), passbook savings, credit card loans, and nonaccrual loans. Management must estimate when in the future these balances will reprice. For example, many institutions commonly make the assumption that a core volume of DDA balances reflects long-term fixed rate funding. Balances above the core amount are considered rate sensitive and repricable within a short period, say one week. Another subjective item which is significant for certain banks is LDC debt. This may be formally on nonaccrual status but may actually be paying interest on a floating rate basis. In this and similar cases, the repricing date of the loan should reflect its actual repricing and not its accounting status. Products with unspecified repricing dates often comprise a large portion of the business in retail banks.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

Embedded Options

Instruments whose repricing dates vary depending on future interest rates, include most fixed rate consumer loans and many deposit accounts. For example, if rates decline, customers may prepay existing fixed rate loans by refinancing at a lower rate. If rates rise, customers may withdraw long-term fixed rate deposits and reinvest the funds at the higher market rate. The right to prepay in a lower interest rate environment, or withdraw in a higher interest rate environment is, in effect, an embedded option.

The prepayment right on a fixed rate mortgage is equivalent to owning a call option on the debt. If rates decline, the market value of the customer's liability increases and the customer may "call" the debt. Similarly, the withdrawal of a deposit is equivalent to owning a put option. When rates increase, the market value of the customer's deposit declines, and the customer has the right to "put" the deposit back to the bank. Customer behavior is not based only on economic considerations, however, and customers will not always exercise their option even when it has value to them. Management must thus make assumptions regarding prepayments and withdrawals in varying interest rate environments based both on the economic value of the options and observations regarding past customer behavior.

When a bank is simultaneously "short" options on its assets and liabilities, it may be in a position where both an increase and a decline in interest rates will depress the net interest margin. For example, if a bank issues a five-year CD with an embedded put option and invests in a fifteen-year mortgage with an embedded call option, the bank could be hurt by either an increase or decline in rates. If rates increase, the holder of the CD may exercise his option and withdraw the money; the bank would have to replace the funds at a higher rate. If rates decline, the mortgage holder may exercise his option and prepay the mortgage. In this case, the bank would have to reinvest the funds at lower rates.

Embedded options are difficult to value and to hedge because there is no explicit strike price as with other options. If banks have a significant amount of embedded options in the balance sheet, measurement systems should have the ability to vary repricing volumes over different rate environments. Many simulation models have this capability.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

Explicit options

Options that have an explicit "strike" or exercise price such as caps and floors on floating rate loans are considered explicit options. These positions are not marked to market when embedded in retail products but may have a large impact on a bank's rate exposure. For the bank, a cap is equivalent to being short (selling) a put option on a fixed income security and a floor is equivalent to being long (owning) a call. The cap or floor rate of interest is the strike price. When the interest rate exceeds the cap rate, the borrower's option moves "in-the-money" because the borrower is paying interest at a rate lower than market. Similarly, when interest rates decline below the floor, the bank's option moves "in-the-money" as the rate paid on the loan is higher than the market rate. If a bank has a significant amount of floating rate loans with caps and floors, data on the volumes should be incorporated into the risk measurement system.

Review the quality of data collection and the assumptions underlying the risk measurement system to evaluate:

1. Whether assumptions and estimates regarding withdrawals and prepayments are reasonable. Whether appropriate analysis has been performed to estimate the rate maturities of instruments with noncontractual repricing dates, such as DDA, savings accounts and credit cards, taking into consideration seasonal fluctuations, historic volume trends, and customer behavior patterns;
2. Whether information on contractual repricing maturities is available for all significant parts of a bank's business on a consolidated bank basis;
3. Whether cap and floor rates are available on a bank's floating rate products, if these amounts are significant;
4. Whether data is sufficiently disaggregated to permit valuation or analysis of embedded options;
5. Whether the quality control process reviews assumptions against actual behavior and makes adjustments when necessary;

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

6. Whether data used for risk measurement models is verified and reconciled to primary transactions and general ledger systems.

GAP REPORTS**Construction***Inclusion of Accounts*

As a general rule, all assets, liabilities and off-balance sheet items for a currency or currency group should be included in a gap report. At a minimum, all earning assets and paying liabilities should be included, but consideration should also be given to potential repricings or maturities of all nonearning assets and noninterest bearing liabilities. Nonaccrual loans, for example, may at some point be collected or renegotiated, and would become repriceable.

All material positions in off-balance sheet instruments should be captured in a gap report if their value is a function of interest rate movements, or if they convert positions in one currency to a position in another currency. Off-balance sheet items which give rise to interest rate risk include: 1) interest rate contracts, such as swaps, futures, and forwards; 2) exchange rate contracts, such as forward contracts and currency swaps; and, 3) option contracts, such as caps, floors, and options on futures.

Multicurrency Books

If the bank operates significant books in currencies other than the dollar, a separate gap report should be prepared. This is because the volatility and directional change of interest rates differs between countries. A significant currency book would be one which represented at least 10% of total business. Many banks choose not to run gap risk within foreign currency books.

Time Frames

The repricing time frames should be sufficiently narrow to capture risk over the specified horizon. If the gap report is used to capture risk to current earnings, the narrower the maturity buckets, the more accurate the risk measure. Ideally the report would have at least monthly detail over the first

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

year and quarterly over the second. If the GAP report is used to capture risk over the strategic horizon, then the time frames should extend to the maturity of the last asset or liability.

Maturity buckets in the longer time periods, such as beyond ten years, may appear quite wide - for instance, they may cover five years. These wider frames are justified, however, because the sensitivity of market values does not vary greatly beyond ten years.

Market Valuation Accounts

Items that are carried on a market valuation basis give rise to investment risk. In a gap report, mark-to-market items are usually included as overnight assets because they effectively reprice daily and are always at current yields. The risk to market values stemming from mark-to-market accounts is best measured separately.

Hedges

Hedges that qualify for deferral accounting should be slotted in the repricing time frame of the item being hedged to accurately capture the timing of the income effect. For example, to hedge the interest rate exposure of a five-year \$100 bond position funded by a one-year deposit, a risk manager could sell one year forward four-year bonds of an equal amount. The forward transaction is equivalent to extending the repricing of the deposit and offsetting the price risk of the bond through the forward sale.

Alternatively, a risk manager may choose to sell one year forward eight-year bonds which are twice as price sensitive as four-year bonds to changes in interest rates. (This is known as duration hedging). In this case, only half the amount of bonds, that is \$50, would have to be sold to achieve the same hedge effect. To capture the timing of the income effect of this hedge, the amount of eight-year bonds would not be included in the nine-year repricing time frame. Rather, it would be converted to a five-year equivalent on the basis of its price sensitivity (\$100) and included against the item being hedged.

INTEREST RATE RISK MANAGEMENT
EXAMINATION GUIDELINES

The following charts show two gap reports. In the first chart, the forward contracts are shown on a five-year equivalent basis, illustrating the timing effect of the duration-based hedge. The second chart is prepared using the actual maturities of the forward contracts. In this latter chart, it is more difficult to discern the effectiveness of the hedge transaction.

Forward Hedge in GAP Report on Five-Year Equivalent Basis							
	Y1	Y2	Y3	Y4	Y5	...	Y9
Asset					100		
Liabilities							
Deposit	100						
Forward	(100)				100		
Periodic GAPS	0	0	0	0	0		0

Forward Hedge in GAP Report on Contractual Basis							
	Y1	Y2	Y3	Y4	Y5	...	Y9
Asset					100		
Liabilities							
Deposit	100						
Forward	(50)						50
Periodic GAPS	(50)	0	0	0	100		(50)

Options

As discussed, many consumer products have embedded options, where the customer has the right to change the terms of a contract or to act when warranted by market conditions. When a customer "exercises" his option, the bank will lose market value or forego income. Therefore, banks should incorporate these positions into their measurement of risk.

In a product with an embedded option, the expected repricing of the account will depend on the path of interest rates. Therefore, different interest rate paths need to be considered

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

to capture the effect of options, as the repricing dates will change accordingly. It is difficult to incorporate options into a single gap report because it allows for only one repricing date.

Following is a discussion of several methods that banks use to incorporate options exposures in gap reports. These methods vary greatly in terms of effectiveness. Other methods may exist and the examiner should analyze whether these methods incorporate the asymmetrical impact of options on future net interest income under different interest rate scenarios.

The first method may be called the "all-or-nothing" approach. It essentially considers the option to be fully effective over the remaining life of the product, or to have no impact over the remaining life of the product. Following is an example of an all or nothing approach to an option, in this case a cap on a floating rate loan. Consider a ten-year \$100,000 floating rate loan. The loan reprices every six months but is subject to a 12% lifetime cap. If market rates exceed 12%, the loan will not reprice. The all-or-nothing approach considers the loan to be a six-month floating rate loan when rates are below 12% and a fixed rate loan with a ten year repricing maturity when rates exceed 12%.

This approach has several weaknesses. First, this treatment does not correctly indicate exposure of net interest income to future changes in interest rates. For example, assume the loan is slotted as a six-month repricing asset and is match-funded with a six-month CD. The gap report would not indicate any interest rate risk. If interest rates were to rise, however, the rate on the loan would not exceed 12% but funding costs would continue to rise, and interest rate margins would decline. Second, this treatment does not indicate how this exposure may be hedged. Neither hedging the asset as a six-month floating rate asset nor as a ten-year fixed rate asset would be appropriate.

A second method to incorporate options into a gap report is based on the delta value of the option. The delta value is a mathematically derived weighting between 0 and 100% which reflects the probability that the option may expire in-the-money. In the case of the 12% lifetime cap described above, the cap would have a delta between 50% and 100% when rates were greater than 12%. The high level of the delta indicates a high probability of the cap being effective over the life of the loan. If market rates were at 8%, however, the

INTEREST RATE RISK MANAGEMENT
EXAMINATION GUIDELINES

delta would be much lower reflecting a lower probability of the cap being effective over the life of the loan.

Following is an example of incorporation of options into a gap report based on the delta value. The table illustrates the treatment of a \$100,000 floating rate loan with a 12% cap under various interest rate scenarios. The loan is divided into fixed and floating rate components based on the delta value of the cap under each rate scenario. Note that in a low interest rate scenario, only a small portion of the loan is considered to be fixed rate. When rates exceed 12%, a much higher portion of the loan is considered to be fixed rate, reflecting the higher delta value and probability of the cap being effective over the life of the loan.

Interest Rate	Delta	Fixed Rate Portion	Floating Rate Portion
8%	.20	20,000	80,000
10%	.40	40,000	60,000
12%	.50	50,000	50,000
14%	.90	90,000	10,000

The strength of the delta method is that it indicates the funding maturities that can hedge the interest rate risk of the loan on an economic basis. For example, if interest rates are at 12%, half of the loan could be funded at floating rates and half at fixed rates to hedge the interest rate exposure. This method does not, however, indicate the exposure of net interest income on an accounting basis to future changes in interest rates.

A third method to capture the risk associated with options is to prepare different gap reports for different interest rate scenarios. This method gives an accurate measurement of the sensitivity of net interest income to future changes in interest rates and captures the timing of the income effect. For instance, to measure sensitivity of net interest income to an increase in interest rates, a gap report would be prepared which would slot capped floating rate loans as fixed rate assets. To measure sensitivity of net interest income to a decline in interest rates, the gap report would show the same floating rate loans as assets which reprice every six months.

INTEREST RATE RISK MANAGEMENT
EXAMINATION GUIDELINES

Finally, a bank may "strip" the options from the floating rate loans and manage the options risk separately. In this case, the loans are slotted according to their repricing date, e.g. as six-month assets. The options risk is then measured and hedged separately in an options portfolio.

Measurement of Risk to Net Interest Income

To measure risk to net interest income, gaps are best translated into the amount of net interest income at risk. To measure exposure over several periods, the formula is:

Cumulative gap X Change in rate X Time period = Change in NII

This formula is a simplistic measure of net interest income at risk, based on several assumptions and will provide an accurate measurement only to the extent that these assumptions are met. Sensitivity of the results to these assumptions may be tested using simulation models.

Assumptions

Repricing maturities are independent of future events and conditions;

All repricing maturities within a maturity bucket occur simultaneously, (the above formula), typically at the beginning, middle or end of the period;

All maturing assets and liabilities are reinvested at the overnight rate;

No other new business is booked;

There is an instantaneous change in the overnight rate to a new and constant level;

All interest rates move by the same amount.

Violations

All options;

Actual repricings will occur throughout the period;

Actual reinvestments will be at various rates;

New business;

Future rate changes will be incremental;

Rate movements among various indices will diverge (basis risk).

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

Limitations of Gap Reports*Basis risk*

The focus of a gap report is on the level of net repricings. The assumption is that assets that reprice fully offset the risk to net interest income of liabilities that reprice and vice-versa. In practice, however, assets and liabilities price off of different yield curves or indices and these do not precisely move together. The risk that different yield curves or indices do not move together is known as basis risk.

Basis risk can create exposure to net interest income that would not be revealed through an exclusive focus on net repricings in a gap report. For example, assume loans reprice based on the Treasury yield curve and deposits reprice based on LIBOR. If the Treasury yield curve were to shift upward by 50 basis points and the LIBOR curve were to increase by 100 basis points, the bank would lose 50 basis points in net interest margin.

Basis risk exists between different indices to varying degrees and it requires experience to understand whether this risk is substantial or minimal. There is usually a strong correlation between changes in the Treasury and LIBOR yield curves, for instance. There is a much lower correlation, however, between changes in the Treasury yield curve and the mortgage yield curve. A bank that uses Treasuries to hedge its interest rate exposure from a mortgage portfolio is usually exposed to substantial basis risk.

To facilitate an interpretation of basis risk, some managers group instruments with similar basis relationships into separate line items within the report, and report average rates and yields relating to those groups. Nonetheless, intuition and judgement are required to assess the exposure of earnings to basis changes when measuring risk with a gap report.

Intraperiod Gaps

Gap reports rely on stratifying balances into broad time frames, but do not detect imbalances within those time frames. Some managers have partially overcome this weakness by reporting the weighted average repricing maturity within each time frame. Another method is to reduce the size of the time frames.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

New Business

A gap report that measures risk arising only from a bank's current position, will miss exposures created by new business and the reinvestment risk from maturing instruments. To capture these exposures, gap reports are often supplemented with other measurement tools such as simulation models.

Examiners should review the construction, quality and use of gap reports based on the following points:

1. Determine that all significant U.S. dollar positions are included in the gap report on a consolidated bank basis.
2. Determine whether separate reports are prepared for each of the major currencies in which the company has a significant level of operations. (A foreign currency book that equals at least 10% of total assets would be significant.)
3. Determine whether the gap report is designed to capture income risk over the tactical or strategic horizon and whether time frames are sufficiently narrow and extended to capture the targeted risk.
4. Evaluate whether the report captures the major sources of risk to net interest income.
 - o Identify the options in the bank's activities and evaluate the adequacy of their treatment in the gap analysis;
 - o Determine whether the degree of product detail is sufficient to capture basis risk.
5. Critically evaluate the interpretation of the gap report. Ascertain whether the gap report is translated into net interest income at risk.
6. Determine that key assumptions underlying the risk measurement model are documented and reasonable. Determine if the bank tests the sensitivity of results to significant assumptions.
7. Evaluate the usefulness of the output of the gap report. Is it a timely and comprehensive indicator of risk to net interest income? Do the results reflect

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

actual performance over time and if not, can variances be explained?

SIMULATION**Purpose of Bank Simulation Models**

Simulation models may be used for measuring interest rate risk arising from current and future business scenarios. In addition, they may be used for analyzing alternative business decisions and profit planning.

Vendor Models

Simulation models are either designed by the bank or purchased from an outside vendor. If the bank has the ability to develop an in-house model, it may be preferable as the model can be tailored to the bank's unique business mix. Vendor models run the risk of being all things to all banks and nothing to one. For instance, if a bank invests in mortgage backed "strips", the model may not be able to handle this product. Vendor models also run the risk of becoming "black boxes" to inexperienced users. Output is easy to obtain without fully understanding the modeling process. This can result in undetected errors and misleading or incorrect results. Vendor models, however, often offer back-up support and can reduce the bank's dependence on one or two key individuals to run the system. In addition, the use of vendor models may free the bank's staff from programming efforts, and allow more resources to be devoted towards the qualitative issues of interest rate risk management.

The following are desirable features for either in-house or vendor simulation models. The necessity of each feature will depend upon the complexity of a bank's business mix.

- o Ability to handle intermediate principal amortizations such as on installment loans;
- o Ability to handle caps and floors on adjustable rate loans and prepayments of mortgages or mortgage backed securities under various interest rate scenarios (embedded options);
- o Ability to handle nonstandard swaps and futures contracts;

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

- o Capability to change spread relationships to capture basis risk;
- o Ability to test for internal consistency among assumptions;
- o Analysis of investment risk as well as risk to interest income.

Limitations of Simulation

- o Vendor models are designed for a wide range of diverse institutions and may not be able to incorporate individual products offered by banks.
- o Simulation is assumption intensive. These assumptions can bias results and, if not reviewed and updated on a timely basis, can produce misleading results.
- o Simulation usually includes projections of new business and different reinvestment strategies for maturing instruments, making it difficult to isolate the interest rate risk arising from the bank's current position. With the myriad of assumptions involved, simulation may be a less objective measurement technique than those which focus only on the risk stemming from the bank's current business.
- o Simulation does not fully reflect the risk of the current position if the simulation horizon is shorter than the remaining life of the current position. Typically simulations are performed over a short time horizon and miss risk within the strategic horizon.

Based on discussions with staff familiar with the model and a review of model capabilities, the examiner should evaluate:

1. What role the simulation model serves in the risk management function;
2. Whether the model is capable of handling the risk characteristics of the bank's business lines and products;
3. Whether bank staff understands the internal structure and equations of vendor models;

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

4. Whether vendor models are upgraded and kept current;
5. The support staff and maintenance functions of an in-house model:
 - a. Whether the model is actively maintained in terms of incorporating new products and activities;
 - b. Whether the support staff function is dependent on one person and therefore vulnerable to the departure of that person, or has been institutionalized.
6. Whether computer based systems are routinely backed-up and stored off-site;
7. The quality control function:
 - a. Are simulation runs evaluated against actual results to identify and understand any weaknesses in the model;
 - b. Are assumptions periodically reviewed for validity; are major assumptions documented and their sensitivity tested and communicated to management;
 - c. Does the simulation model test for internal consistency among the assumptions and forecasts;
 - d. Can the components of interest rate risk be broken out by those arising from current business, new business, reinvestments, and changes in spread relationships.
8. Is the output of the simulation model synthesized into a clear decision-making framework for senior management.

MARKET VALUE SENSITIVITY SYSTEMS**General**

There are various methods to measure the sensitivity of market values to changes in interest rates. These include net present value techniques, duration and the price value of a basis point (PVBP). Net present value techniques entail revaluing the portfolio at different levels of interest rates to measure the absolute change in the market value of the portfolio. Duration (modified) indicates the percentage change in the price of a

INTEREST RATE RISK MANAGEMENT
EXAMINATION GUIDELINES

fixed income instrument given a change in rates. The PVBP gives the absolute dollar change in the market value for a one basis point change in rates. Duration is a common technique to measure investment risk, and so the following discussion will use a duration framework.

Investment Risk

Many banks use duration to measure and limit the risk of a portfolio of fixed income contracts. This is a much more precise risk measurement than simply limiting the amount of securities a bank may hold of different maturities. Duration also allows portfolio managers to combine the risk of different contracts based on their market value sensitivity and hedge the net risk on a portfolio basis. For instance, a single trading portfolio may consist of long and short positions in bonds, futures, swaps etc. The portfolio manager, with the help of computer software, may calculate the duration of each position, add them together on a weighted basis, and then enter into a hedge on the basis of a single duration number.

The following is an example of how duration may be used to calculate the interest rate risk of a portfolio of fixed income contracts.

Instrument	Amount	Modified Duration	Weighted Duration
Long positions			
6 year swap (Receive fixed)	100,000	5.0	2.00
3 year Eurofuture strip	50,000	2.5	.50
1 year Euronotes	100,000	0.8	.32
			<u>2.82</u>
Short positions			
6 year swap (Receive 6 mo. floating)	100,000	(0.5)	(0.20)
4 year cap (delta value)	75,000	(3.5)	(1.05)
2 yr Euronotes sold	75,000	(1.5)	<u>(0.45)</u>
			(1.70)
Duration of portfolio			1.12

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

The weighted duration of the portfolio is 1.12, reflecting a net long position, or exposure to an increase in rates. If interest rates were to increase by 1 percentage point, the market value of the portfolio would decline by about 1.12% or \$2,800. The risk manager could hedge this risk by selling short \$250,000 of a fixed rate contract with a duration of 1.12.

Economic Risk - The Duration of Equity

Several banks are using duration to measure or hedge the sensitivity of the market value of portfolio equity to changes in interest rates. The duration of equity is derived from calculating the durations of assets and liabilities, adjusted for off-balance sheet contracts. If the duration of assets and liabilities, weighted by their respective market values, are roughly matched, then a change in interest rates would have an offsetting impact on the market values of assets and liabilities. The market value of portfolio equity, which is the difference between the market values of assets and liabilities, would therefore remain constant under different interest rate scenarios.

Normally, a bank would not choose to immunize the market value of portfolio equity to changes in interest rates. Immunization of equity would increase the volatility of earnings and could adversely affect liquidity. Therefore, a bank may choose to simply minimize fluctuations in the value of portfolio equity. The bank may choose an optimal level or range for the duration of equity, based on a balance between liquidity, protection of net interest income, and protection of the market value of portfolio equity.

Limitations of Duration Based Systems**Duration as a Measurement of Volatility**

- o Duration only accurately measures changes in market value for small changes in interest rates. The margin of error, which increases with the size of the interest rate change, is called convexity.
- o The duration of different instruments will change at different rates as time passes (duration drift). This means that a portfolio which is initially completely hedged on a duration basis will become unhedged over time.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

- o Duration is based on cash flows or repricing balances. It is more difficult to use duration to measure the sensitivity of market values for instruments with uncertain known cash flows, such as mortgages subject to prepayments.

Duration of Portfolio Equity

- o Many of a bank's accounts have indeterminate repricing dates and the duration of these accounts must be estimated. The level of the duration of portfolio equity may be very sensitive to these assumptions, and may not be an accurate indicator of risk. If the assumptions are held constant, changes in the level of duration of portfolio equity may provide more meaningful information than the absolute level.
- o Duration of portfolio equity does not indicate the timing of interest rate risk, which is important when managing risk from the current earnings perspective.
- o Management of interest rate risk based on the duration of equity may increase the volatility of earnings.
- o Duration measures the percentage change in market value rather than actual dollar exposure.

Examiners should review the measurement of investment risk and the risk to the market value of portfolio equity with particular regard to the following points:

1. Does the bank have a measurement system which captures the sensitivity of market values to adverse changes in rates;
2. Are positions combined to allow for measurement of investment risk on a consolidated bank basis;
3. If duration is used as a basis for the system, are durations frequently recalculated to compensate for convexity and duration drift;
4. If management measures the sensitivity (duration) of the market value of portfolio equity, determine how this measurement is used to position or hedge the bank with respect to changes in interest rates;

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

5. Determine whether key assumptions underlying the calculation of the duration of equity are documented, reasonable, and whether results are tested for sensitivity to these assumptions.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

CONSTRUCTION OF RISK LIMITS**GENERAL**

Senior management should identify an acceptable level of earnings at risk, and, if appropriate, an acceptable level of portfolio equity at risk. Risk limits should be defined in terms of changes in the value of the target account given an adverse change in rates. In choosing an appropriate rate scenario, consideration should be given to the historical volatility of rates and to the length of time the bank would realistically need to react to close the position. Limits should apply to the bank on a consolidated basis and be allocated to the sections of the bank that assume rate risk.

Other limits such as stop-loss limits and position limits on individual portfolios may also be used to control interest rate risk. These may be important ancillary controls, but it is not possible to add them together to capture the potential risk to earnings or market values on a consolidated basis. Also many of these limits address risk arising from past changes in interest rates and do not address the exposure of the target account to future changes in rates.

Risk Limits Based on Earnings at Risk

Risk limits should be based on earnings at risk, given a potential adverse change in rates, and applied to the bank on a consolidated basis. The foundation of this system is: 1) identification of the target account, and 2) identification of what constitutes a probable or potential adverse movement in rates.

Identification of the Target Account

Limits should be expressed in terms of the amount of the target account at risk. Earnings at risk consists of two target accounts: net interest income at risk and the risk to market values of accounts carried on a market valuation basis (investment risk). Under the economic perspective, the target account is the market value of portfolio equity. Risk is defined as the dollar amount of loss given an adverse change in interest rates.

INTEREST RATE RISK MANAGEMENT

EXAMINATION GUIDELINES

Identification of an Adverse Movement in Rates

The identification of a potential movement in rates is usually based on observations of historical changes in rates over several years. Statistical analysis is performed to determine the historical volatility of rates, i.e. how often rates moved by a given amount over a given time period. The magnitude and frequency of rate moves often are expressed as standard deviations from the norm. To capture a wider range of potential rate movements, a larger standard deviation is used. For example, a risk limit based on a two standard deviation movement in rates would be more conservative than the same limit based on a one standard deviation movement.

Note that limits based on historical rate changes may not capture the risk to earnings ensuing from an extraordinary rate move. It is thus advisable that a bank have two limits: one limit based on probable movements, which are usually defined as a one to two standard deviation range, and another based on an extraordinary or "worst case" movement which may be based on a six standard deviation range. The latter would allow for a greater amount of losses as the probability of the rate movement is less.

Another consideration in determining a potential adverse rate move is the length of time within which a bank can and will realistically act to close a position. The period of reaction time may vary from overnight to a year or more. Trading positions in liquid instruments represent very short-term positions which can normally be quickly closed. In this case, the bank may consider a probable overnight movement of rates to be an appropriate time frame. Trading positions in less liquid contracts may require more time to close and so a longer period should be the basis for determining the interest rate change. Structural positions may require a year to alter, in which case annual rate movements may be an appropriate benchmark.

In determining the appropriate reaction period, the bank must realistically assess what management can do to close a loss position and what they actually will do. Rather than closing a position and recognizing a loss, a manager may be tempted to leave a position open, in the hope that rates move back in the bank's favor.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

Options positions carried on a market valuation basis are exposed not only to a change in the level of rates but also to a change in the volatility of rates. Rate volatility is one of the determinants of an option's market value, and is particularly significant for long dated options. If the level of volatility increases or decreases, it will change the market value of a bank's option portfolio. Risk limits which cover interest rate options, including caps and floors, must thus separately cover the sensitivity of market value to a change in the level of rates and to a change in the volatility of rates.

Investment Risk - Other Limits*Position Limits*

Position limits set parameters on the amount at risk. They can, however, be imprecise and do not measure the possible earnings impact of a change in rates. Good position limits will be based on the different sensitivities of various instruments to the potential changes in the level and volatilities of rates. Position limits are difficult to combine to capture risk on a consolidated basis, unless they are reduced to a common denominator.

Stop-Loss Limits

Stop-loss limits are used to limit the losses on mark-to-market positions arising from past adverse changes in rates. The assumption underlying stop-loss limits is that future rates may continue to move against the position. Stop-loss limits require the position to be liquidated, or hedged, once accumulated losses have reached the limit. For stop-loss limits to be effective, there must be sufficient liquidity in the market to close out the position. To address the liquidity constraint, stop-loss limits may be used in conjunction with limits on market concentration.

Stop-loss limits are useful in managing trading positions. They only capture losses from past rate movements, however, and do not measure the sensitivity of the position to future rate movements. They also may not be combined with other risk limits to measure risk on a consolidated basis.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

Limits on Number of Contracts Outstanding

These limits, whether expressed on a gross or net basis, are neither a measurement of risk nor a limit. They give no indication of the exposure of the position to changes in rates.

Income Risk -- Other Limits*Gap As a Percentage of Assets*

Cumulative gap as a percentage of total assets is used by some banks to measure and limit interest rate risk. This is not an effective risk limit. Assets may not be a meaningful benchmark against which to relate a gap position and the limit may be overly constraining to a risk manager.

Gap as a Percentage of Capital

Although capital is a more meaningful benchmark than assets, this limit does not measure risk to net interest income in a meaningful way. As a limit, it may also be overly constraining and prevent management of risk on an economic basis.

RSA/RSL

This measurement relates rate sensitive assets to rate sensitive liabilities. An acceptable range for this ratio is designated and used by some banks to limit interest rate risk. This ratio also suffers from the problems of the former two measurements: it does not measure risk to net interest income and may not be flexible enough to allow managers to reduce economic risk.

The Cost to Close

The cost to close typically is used to measure and limit the interest rate risk of a Eurodollar book of placements and takings based on past movements of interest rates. The Eurodollar book is an interbank deposit book that is carried on a historic cost basis. The cost to close measures what it would cost in today's interest rate environment to close current gap positions. For instance, if a bank has booked a one-year placement at 10% funded by a one-month taking at 8%, the cost to close would be the cost of buying eleven-month money one month forward. It is equivalent to marking to market a position which is booked on a historic cost basis.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

The examiner should review the construction of risk limits to ensure that:

1. Limits address earnings at risk, including the risk to net interest income and the risk to market values of positions carried on a market valuation basis;
2. Earnings at risk limits apply to the bank on a consolidated bank basis;
3. Position limits are related to the sensitivity of market values to rate changes;
4. Stop-loss limits have ancillary controls which address liquidity;
5. Exceptions to limits are identified, reported, and approved by management on a timely basis;
6. Limits accurately reflect management's appetite for risk and include realistic assessments of the reaction time required to close or unwind positions.

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

CONCLUSIONS: QUALITY OF MANAGEMENT; LEVEL OF RISK

Evaluate the adequacy of the bank's interest rate risk management system relative to its exposure to interest rate risk. A bank with more exposure to interest rate risk should be expected to have a more sophisticated and comprehensive risk management system than a bank with a low level of exposure. Exposure to interest rate risk may stem from a bank's structural business or from deliberate position-taking. The relative size of net interest margins also affects a bank's exposure as narrow margins do not provide a cushion against the impact of an adverse interest rate movement.

The examiner should also take into consideration the bank's level of activity in the derivative markets when evaluating the adequacy of the risk management system. A bank that engages in more complex transactions which give rise to substantial off-balance sheet exposure is expected to have a more sophisticated system to measure and manage that risk.

Finally, a bank's interest rate risk exposure should be evaluated in the context of the institution's total risk posture. For example, a bank that takes an aggressive posture towards credit risk may need to have a more conservative position towards the assumption of interest rate risk. Conversely, banks with strong asset quality, ample liquidity and ready access to diverse funding markets may be able to tolerate higher levels of interest rate exposure.

In the conclusion, comments on the quality of the risk management system and the level of risk should include an evaluation of the following points:

1. The role of the board of directors;
2. The effectiveness of ALCO or other senior management committee in limiting the risk to earnings and evaluating the risk to the market value of portfolio equity arising from adverse changes in interest rates;
3. The level of interest rate risk in terms of the strategic horizon, the tactical horizon and trading positions;
4. The effectiveness of interest rate strategies in terms of formulation, execution and monitoring of results;

INTEREST RATE RISK MANAGEMENT**EXAMINATION GUIDELINES**

5. The quality of the risk measurement systems in terms of the ability of the systems to measure risk from the accounting perspective (net interest income and investment risk), and, if appropriate, the economic perspective (risk to the market value of portfolio equity.);
6. The quality of data collection and research, particularly in terms of the completeness of data on contractual repricings, the quality of assumptions and the availability of data on a bank's options positions;
7. Whether risk limits are based on the sensitivity of value of the target account to a probable adverse movement in interest rates;
8. The organization of the risk management function.

Liquidity Risk

Risk Assessment Guidelines

Multinational and Regional Bank Analysis Division

APRIL 1987

LIQUIDITY RISK**TABLE OF CONTENTS**

	Page
INTRODUCTION	
EXECUTIVE SUMMARY.....	1
MEASURING LIQUIDITY.....	2
MANAGING LIQUIDITY.....	6
EARLY SIGNS OF LIQUIDITY PROBLEMS.....	10
CREDITOR BEHAVIOR.....	13
COMPONENTS OF AN EFFECTIVE ALCO PROCESS.....	15
LIQUIDITY MIS.....	17
CONTINGENCY FUNDING PLANNING.....	19
LIQUIDITY CRISIS ACTION PLAN.....	21
EXAMINATION GUIDELINES	
WHOLESALE BANK LIQUIDITY EXAMINATION PROCEDURES.....	25

LIQUIDITY RISK

INTRODUCTION

EXECUTIVE SUMMARY

A DEFINITION OF LIQUIDITY

- o Liquidity is the ability to accommodate efficiently decreases in deposits and other purchased liabilities and fund increases in non-liquid assets.
- o Funds must be available at reasonable prices relative to competitors.
- o Funds must be available in maturities required to prudently support medium to longer term assets.

FACTORS INFLUENCING BANK LIQUIDITY

- o Market perception of current and future asset quality.
- o Present and future earnings capacity from regular sources.
- o The distribution of funding sources by customer type.
- o The level of direct liability marketing.
- o The extent of asset-side credit concentrations.
- o The level of asset liquidity.
- o Overall balance sheet symmetry (loans/deposits, etc.).
- o The variety of funding markets available to the bank.

EFFECTIVE LIQUIDITY MANAGEMENT

- o The increased risks in the money and capital markets have rendered the old theories of liquidity management inadequate.
- o An effective liquidity management program must address the factors that influence bank liquidity. Liquidity risk cannot be managed in a vacuum, but rather only in the context of the credit, interest rate, operational, and external economic risks being assumed by the bank.
- o All wholesale-funded banks should have liquidity risk controls/guidelines providing:
 - Maximum funding volumes by liability customer;
 - Maximum funding volumes by market (Fed funds, Euros, etc.);
 - Maximum overnight and short maturity funding volumes;

LIQUIDITY RISK

INTRODUCTION

- Minimum liquid asset levels; and
 - Balance sheet symmetry ratios (loans/deposits, loans/capital, liquid assets/volatile liabilities, etc.).
- o These controls/guidelines should be revised as market conditions and a bank's financial strength changes.
 - o Banks should have certain reports that enable management to monitor and evaluate liquidity. These reports include:
 - asset and liability contractual maturities (not just repricing dates).
 - creditor concentrations.
 - o Bank management should periodically conduct a formal liquidity evaluation. This regular evaluation should address the bank's liquidity position, risk and strategy.
 - o All wholesale funded banks should have a current, realistic contingency plan, which identifies potential sources and uses of funds in a liquidity emergency.

MEASURING LIQUIDITY

BACKGROUND DEFINITIONS OF LIQUIDITY

The Funds Management section of the Comptroller's Handbook for National Bank Examiners states that liquidity represents the ability to accommodate most efficiently decreases in deposits and/or the runoff of other liabilities, as well as fund increases in the loan portfolio. Marcia Stigum and Rene O. Branch, Jr., in their book Managing Bank Assets and Liabilities, define liquidity as "the ability to ensure the availability of funds to meet commitments at a reasonable price at all times." Citicorp management define liquidity more simply, "as having access to one more dollar, pound sterling, yen, etc., than is needed at the time at a reasonable price."

TRADITIONAL LIQUID ASSET LIQUIDITY THEORY

In the past, liquidity was often measured by the volume of liquid assets. However, liquid assets are sometimes irrelevant in wholesale-funded banks, since these assets are funded by volatile liabilities. The erosion of funding

LIQUIDITY RISK

INTRODUCTION

sources will quickly deplete liquid assets. Furthermore, banks have drastically reduced holdings of liquid assets because of thin profit spreads and capital adequacy ratios.

Sometimes banks cannot easily liquidate liquid assets. For example, investment securities may be pledged against public deposits and repos, or be heavily depreciated. Trading portfolios cannot be materially reduced because banks must maintain adequate trading inventories. On one occasion, a money center bank with earnings problems routinely sold bonds for profit purposes. The markets learned of the sales, and a damaging rumor that the bank was in trouble soon circulated.

Similarly, fed funds and placements must be maintained at certain minimum levels, or else markets realize that the bank can only "deal one way." If a bank consistently borrows from these markets without lending, markets perceive funding problems, impose predatory prices on transactions, and eventually reduce the lines available to the bank.

In short, liquid assets do not guarantee good liquidity in wholesale-funded banks. The banks must have ample funding capacity, which depends on strong liquidity management, market perception, earnings, asset quality, and other factors.

A MODERN DEFINITION OF LIQUIDITY

- o Liquidity is the ability to accommodate efficiently decreases in deposits and other purchased liabilities, and fund increases in non-liquid assets.
- o Funds must be available at reasonable prices relative to competitors.
- o Funds must be available in maturities required to support prudently medium to longer term assets.

MEASUREMENT OF LIQUIDITY

Liquidity should be measured and analyzed at a point in time and over a selected period. In the past, the OCC measured liquidity on a historical basis -- usually for the period between examinations. As liquidity risks increased for wholesale funded banks, it became apparent that the OCC and banks should also attempt to project future liquidity. The recommended factors for determining wholesale bank liquidity incorporate several items (asset quality, liability customer

LIQUIDITY RISK

INTRODUCTION

mix, etc.) that allow for informed projections. Liquidity projections are necessary for use as a backdrop to measure the effect of possible bank, industry or regulatory induced events (management changes, loan charge-offs, loan provisions, etc.) on a particular institution or group of institutions.

The following ratios and calculations can be used to quantify the subjective measurement of liquidity. All banks, whether wholesale or retail funded, should use some form of liquidity analysis or measurement to supplement interest rate sensitivity control.

BALANCE SHEET RATIO LIMITS

- o Total loans/Total deposits
- o Total loans/Total equity capital
- o Purchased funds/Total assets
- o Total fee paid commitments/Total equity capital

These ratios attempt to measure and limit overall volume of non-liquid assets that must be funded. The denominators of the calculations can be altered to total assets, primary capital, total deposits plus borrowings, etc., depending upon management preference or circumstance. Other illiquid assets, such as longer term time deposits with other banks or investment securities could also be combined with loans or measured separately.

CASH FLOW RELATED CALCULATIONS

- o Total and Net Overnight Funding Volume/Total Assets

This ratio reveals the level of footings that must be purchased in the overnight funding markets. This ratio can vary significantly based on the bank's view on interest rates. Therefore, it should be analyzed over time. Levels exceeding 15% (total) should be viewed carefully.

- o Liquid Assets - Short Dated Liabilities

This basic surplus calculation measures the extent that liquid assets provide a cushion to required funding needs over a predetermined time period. The time frame should not exceed 90 days.

LIQUIDITY RISK

INTRODUCTION

o New Money Required/Total Outstanding Purchased Funds

This ratio should be calculated for funding requirements over the one to six month time periods. The numerator is calculated by comparing current purchased liabilities outstandings to the level anticipated in the future period being analyzed. This difference, if using a three month time frame, must be added to all overnight and term purchased funds maturing during the 90-day period.

o Weighted Liquidity Index

Many banks weigh the interest rate mismatches computed from the repricing timing differences between assets and liabilities over various maturity ranges (interest rate gaps). Longer dated gaps are assigned higher weights to reflect the increased liquidity risks associated with longer term funding markets. Similar theory can be applied to actual contractual maturity mismatches (maturity gaps). Some banks contend that the subjective weighting required can distort results so they set absolute maturity gap limits in dollar terms throughout the various maturity periods. An example of a weighted liquidity index is presented below:

Nominal Maturity	Assets (\$MM)	Liabilities (\$MM)	(Arbitrary) Weight	Weighted Value of Assets (\$MM)	Weighted Value of Liabilities (\$MM)
Current	\$ 5,350	\$ 6,375	1	\$ 5,350	\$ 6,375
1-month	15,500	16,225	2	31,000	32,450
3-month	3,525	4,125	3	10,575	12,375
6-month	6,230	4,535	4	24,920	18,140
Beyond 6-months	8,520	7,865	5	42,600	39,325
Total weighted values of assets and liabilities				\$114,445	\$108,665
Weighted liquidity index =		$\frac{\text{Total weighted liabilities}}{\text{Total weighted assets}}$		$\frac{108,665}{114,445} = .95$	

LIQUIDITY RISK**INTRODUCTION**

SOURCE LIMITS

- o Liability customer concentration limits.

Limits for funding reliance on one customer or group of customers (i.e., largest 25), either in dollar terms or as a percentage of total deposits, purchased funds, or total liabilities, serve to control a bank's reliance on too few providers of wholesale funds.

- o Limits on use of broker/dealers.
- o Limits for maximum use of a particular wholesale funding market.

Some banks limit the volume of domestic and euro negotiable CD's issued in order to control the liquidity risks associated with the secondary market aspects of these instruments.

CONCLUSION

These ratios and limits are not intended to provide an all inclusive list of possible calculations or guidelines. There are numerous other possibilities and variations. However, all banks should be using some type of liquidity controls and calculations as part of an overall funds management program.

MANAGING LIQUIDITY**RATING FACTORS**

A wholesale bank's liquidity strength is the result of many factors. The primary factors affecting liquidity in a wholesale funded bank include:

- o Present and anticipated asset quality;
- o Future earnings capacity;
- o The level of liquid assets;
- o The level of credit concentrations;
- o Overall balance sheet composition as measured by loans to capital and deposits, volatile liabilities to total liabilities, volume of off-balance sheet items related to potential funding requirements, etc.;

LIQUIDITY RISK

INTRODUCTION

- o Mix of direct versus indirect liability marketing (brokers/dealers);
- o Variety of available retail and wholesale funding markets; and
- o Most importantly, the distribution of the funding base among corporate, interbank, fiduciary, money market fund, etc. customers.

Since these factors have a direct effect on liquidity, bank management and bank supervisory ratings of liquidity should include analysis of these factors.

METHODS OF MANAGING BANK LIQUIDITY

Banks that understand liquidity use a variety of guidelines or limits that are designed to control the factors or risks associated with daily funding. It is important to note that good management of liquidity risk in today's environment does not guarantee stable funding. The institution must also manage interest rate, credit, and operational risks on a daily basis. Liquidity cannot be managed in a vacuum with inadequate recognition of these other risks.

There are five major types of liquidity related management controls that should be used in all wholesale funded banks. The five types are described below. All liquidity related guidelines should be determined by bank asset liability management committees (ALCOs) and approved by committees with director representation.

1. Liability Customer Controls

- o Maximum limits on dollar amount or percent of total assets from any one liability customer.
- o Maximum limits on liability outstandings from a predetermined number of the largest customers.
- o Maximum limits on use of broker/dealers.

2. Wholesale Market Reliance Controls

- o Funding management should determine realistic maximum volumes that can be accessed from particular markets. The following markets should be considered:

LIQUIDITY RISK**INTRODUCTION**

- Federal funds
 - Domestic CD
 - Euro CD
 - Euro interbank
 - Commercial paper
 - Repos
 - Public funds
 - Retail accounts
 - . IRA's
 - . MMF's
 - . Other
- o Historical maximums are often used as a basis for establishing realistic funding market limits.
3. Cash Flow Controls
- o Total and/or net overnight funding as a percent of total assets or liabilities.
 - o Short-date funding volume as a percent of total assets. (Several multinationals use 7 days as the time period.)
 - o Average life of purchased funds levels ("basic maturity").
 - o Weighted liquidity index - longer dated contractual maturity mismatches (gaps) are assigned higher weighted rates to reflect the increased liquidity risks associated with longer term gaps.
4. Liquid Asset Level Targets
- o Minimum liquid assets as a percent of total assets.
 - o Minimum liquid assets as a percent of wholesale liabilities (serves to ensure growth in liquid assets as volatile funding sources increase.)
5. Balance Sheet Composition Ratios
- o Loans/deposits
 - o Loans/capital
 - o Commitments to lend/loans outstanding
 - o Commitments to lend/capital
 - o Purchased funds/total assets

LIQUIDITY RISK

INTRODUCTION

EFFECTIVE LIQUIDITY MANAGEMENT

It is vital that liquidity be managed with an eye to the future. The levels of liquidity risk permitted under management guidelines should be reduced as asset quality control systems determine portfolio deterioration that might be viewed unfavorably by funding market participants, analysts, and/or rating agencies. For example, as nonperforming assets increase, the level of permissible overnight funding reliance could be reduced. Also, broker/dealer reliance could be reduced in anticipation of an adverse reaction to published quarterly results. This forward approach of liquidity management should be conducted with the concurrence and full knowledge of an ALCO type committee. Significant liquidity/funding policy changes should receive director approval.

Liquidity risk must be managed daily considering the levels of credit, interest rate, and operating risks also being assumed by the bank. An effective liquidity management program must be ongoing and include the elements noted below.

- o Quality ALCO Function - Should serve as the focal point for liquidity management since an effective ALCO deals with all of the risks related to banking.
- o Realistic Liquidity Management Controls - Guidelines controlling liability customer concentrations, reliance on particular wholesale funding markets, cash flow volumes, minimum liquid asset levels, and balance sheet symmetry must be in place with compliance monitored by ALCO.
- o Quality MIS - Management information systems must be sufficient to support the needs of treasury personnel, ALCO, and monitoring adherence to ALCO controls.
- o Formal Liquidity Evaluation - Management should periodically evaluate current and projected liquidity positions. Management should carefully consider the risks and vulnerability of wholesale market dependence.
- o Updated Contingency Funding Plan - A plan encompassing the major elements must be kept current. Semiannual review of the plan by ALCO is appropriate.

LIQUIDITY RISK**INTRODUCTION**

The Liquidity Management Controls and Contingency Funding Plan elements of the program should be changed as asset quality, nonperforming loans, earnings or other problems are identified internally. Liquidity controls, such as the permissible volume of euro CD's outstanding or the volume of authorized overnight funding, should be tightened to prepare for expected adverse market reactions. This type of program gives proper recognition to the effect of bank asset quality and perceived future earnings capacity on wholesale market funds availability.

EARLY SIGNS OF LIQUIDITY PROBLEMS

In recent years the banking industry has faced several cases of impaired liquidity at wholesale funded banks. The early signs of market resistance to a particular bank are visible through the type of wholesale liability transactions booked, and in some cases not booked, before significant change occurs on the balance sheet. Although markets react somewhat differently in every case, there are similarities. Certain trends will occur before standard balance sheet analysis (Bank Performance Reports) will reveal a problem.

FEDERAL FUNDS MARKET

- o Quasi-government institutional lenders (Federal Home Loan Bank System, Freddie Mac) will rescind their credit lines based on Keefe, Bruyette & Woods, Inc. ratings.
- o Federal funds brokers become reluctant to show actively the bids of a "troubled" bank.
- o Smaller (downstream) correspondent banks react more slowly to adverse news about a "troubled" bank, but the gradual erosion of this source can force increased purchasing through the more sophisticated broker segment of this market.
- o Adverse pricing is less apparent in federal funds than in other wholesale funding markets. Significant numbers of transactions at interest rates near or exceeding the published daily high rate indicate increasing liquidity pressures.

DOMESTIC/EURODOLLAR CD MARKET

- o These markets react very quickly in terms of credit line availability and pricing to adverse news regarding a

LIQUIDITY RISK**INTRODUCTION**

particular institution. This is especially true for Euro CD's.

- o Pricing premiums can be significant in both the domestic and Euro segments of the CD market. The negotiability aspect of this market also makes containing the pricing effect difficult, since increased secondary market trading at premium yields publicizes the problem.
- o Increased secondary market trading of domestic and Euro CD's will harm the bank's future new-issuing capacity.
- o Increased pricing costs, sudden lack of broker/dealer interest, requests for early redemption, the need to purchase own issue paper from the secondary market, and the need to arrange market-maker support lines with friendly dealers are all signs of investor resistance.

EUROCURRENCY DEPOSIT MARKET

- o The size of individual deposit transactions decreases.
- o The ability to raise term maturities (over one month) becomes increasingly difficult.
- o Counterparty resistance becomes evident even in the short dates (1 month or less) and overnight segments of this market.
- o Counterparties begin demanding higher interest rates relative to the bank's normal bid/offer pricing range. Offer side to offer plus 1/8% pricing is indicative of market resistance for multinational and large regional U.S. banks.
- o As market resistance increases, the names of interbank market participants willing to lend changes.
- o The bank will receive requests to "break" (pay out before maturity) deposits from less sophisticated interbank market players.
- o The bank is forced to deal direct with willing counterparties, since the volume of turndowns is too high through the conventional broker network.

LIQUIDITY RISK

INTRODUCTION

- o Foreign exchange market swaps are required to fund foreign currency denominated assets from Eurodollars.

COMMERCIAL PAPER MARKET

- o This market reacts quickly in terms of price when the credit standing of the bank declines. Five to ten basis point premiums are common.
- o Commercial paper purchasers are extremely rating (Moody's, S&P, Keefe) sensitive. P-2 and Keefe C and C/D ratings will result in immediate loss of capacity.
- o Euro commercial paper investors are very sensitive to press reports regarding a particular bank and/or the U.S. banking system as a whole.
- o Since significant amounts of bank holding company commercial paper are issued in bearer form, the same type of secondary market risks associated with CD's apply.
- o Parent holding company balance sheets with illiquid assets funded by commercial paper are most vulnerable. After a liquidity crisis has developed, sudden use of commercial paper back-up lines from other banks further damages reputation.
- o Increased pricing costs, shorter maturities, lack of dealer interest, a change in dealer quotes (request for 5 to 10 basis points more than usual pricing for comparable maturities), loss of direct placement funds providers, and increased secondary market trading are all signs of liquidity pressures before erosion in outstandings is noticed.

EUROBOND MARKET

- o The market acceptance of fixed rate (Straights) and floating rate Eurobonds (FRN's) issued by U.S. bank holding companies changes rapidly after adverse rumors or actual bad press reports are circulated.
- o The Eurobonds issued by a troubled U.S. bank holding company will quickly be offered for sale by investors and dealers. Daily price declines exceeding 50 basis points for fixed rate and 30 basis points for floaters could reflect serious market resistance to the name.

LIQUIDITY RISK

INTRODUCTION

- o The entire U.S. bank Eurobond market is subject to periodic price declines as exchange rate, country, and U.S. banking system risks are discussed in the press and among market participants. The performance of the Eurobonds issued by a particular holding company must therefore be analyzed in the context of current market conditions.
- o Significant price declines compared to similar Eurobonds issued by top U.S. bank holding companies, active market turnover, lack of permanent investor ("retail") interests, widening bid/offer quotes, active positioning of own issues from the secondary market, and the need to arrange market-maker support lines with friendly dealers are all signs of investor resistance.

FOREIGN EXCHANGE MARKET

- o Although counterparty resistance develops less rapidly in foreign exchange related activities than in the wholesale money markets, a troubled bank will lose FX credit lines as its condition deteriorates.
- o Increased incidence of counterparty credit resistance in forwards beyond 3 months will develop. The size of acceptable FX forward transactions will decline. The percentage of counterparty credit turndowns will increase particularly in periods beyond 3 months. Broker service declines, and more direct dealing is required.
- o As the bank's name continues to deteriorate, the number of switches (the broker being forced to change the original spot FX transaction counterparty) increases. Broker service will deteriorate, and direct dealing must increase to maintain volumes.

CREDITOR BEHAVIOR

Real or rumored deterioration in the financial condition of a bank due to asset quality, fraud, or external economic events will have an adverse effect on wholesale funding. The extent of the adverse reaction depends not on the money market used to access funds, but rather the types of liability customers or funds providers involved. It is important to quantify with reasonable accuracy the volume and nature of liability changes that a bank might experience should its financial condition weaken. This section explains the factors affecting the credit decisions of funds

LIQUIDITY RISK

INTRODUCTION

managers and wholesale depositors, and will rank the types of funds providers according to their risk appetite.

UNDERSTANDING THE LIABILITY CUSTOMER BASE

Funds availability at reasonable prices and maturities depends totally on market confidence. Consequently, the wholesale funded bank can only protect itself by pursuing liability customer diversity, marketed primarily by direct contact. For the purpose of assigning an accurate liquidity CAMEL rating to a multinational or wholesale funded regional bank, the nature of the liability customer mix is more important than the financial instruments used to attract funds.

FACTORS AFFECTING LENDERS' CREDIT RISK TOLERANCE

- o Personal risk of the money market trader.
- o The obligations to fiduciary investors such as money market funds, trust funds, pensions, etc.
- o The growing influence of the Keefe, Bruyette and Woods, Inc. rating firm on funds provider behavior. Keefe ratings of C and below require some funds providers to reduce or eliminate funding support. Moody's and Standard & Poors have less of a direct effect on money market funds availability than Keefe, although debt markets are often affected. Bylaws or internal guidelines may require investors to avoid banks with low ratings.
- o Major multinational banks are influenced by the above factors, plus enlightened self interest. For example, the major international banks maintained some level of interbank market funding in Continental Illinois for the good of the marketplace.
- o Providers that do not publish their investment holdings are more risk tolerant.
- o The higher the perceived level of U.S. Government support is to the bank in question, the more risk tolerant the funds provider will be.
- o Providers with a personal contact at the bank who provides timely and accurate information about the financial condition of the bank are generally more risk tolerant.

LIQUIDITY RISK

INTRODUCTION

- o Providers who have few policy constraints or senior management approval requirements are more risk tolerant.

RANKING OF FUNDS PROVIDERS' CREDIT RISK TOLERANCE

- o Creditors tend to exhibit widely varying tolerances for credit risk, with money market funds usually the first to withdraw funds. Individuals are usually the least sensitive to credit risk. Creditors are ranked below from the least tolerant of credit risk to the most tolerant.
 - Money Market Funds
 - Trust Funds
 - Pension Funds
 - Money Market Brokers/Dealers
 - Regional Banks
 - Multinational Corporations
 - Government Agencies and Corporations
 - Community Banks
 - Life Insurance Companies
 - Foreign banks (non-Global)
 - Foreign Global banks
 - Medium to Small Corporations
 - U.S. Multinational Banks
 - Individuals

COMPONENTS OF AN EFFECTIVE ALCO PROCESS

Since the advent of increased interest rate volatility and bank liability product deregulation, the need for an effective Asset and Liability Management function has become vital for bank financial performance. Most regional and all money center banks now operate with some form of Asset and Liability Management Committee (ALCO). The usual responsibilities for an ALCO committee include the following:

1. Monitor and manage the level of liquidity risk.
2. Manage the balance sheet mix and trading risks (FX, bonds, futures, swaps, etc.).
3. Control and manage the level of interest rate risk.
4. Ensure that capital adequacy is maintained.
5. Monitor the economic outlook and interest rate trends.

LIQUIDITY RISK**INTRODUCTION**

Too often, ALCO committees concentrate on interest rate risk, and largely ignore liquidity risk. Increased funding risks require that bank ALCO committees become more diligent in the liquidity risk aspects of their responsibilities. The components of effective ALCO liquidity risk management are discussed below.

INFORMATION PERTINENT TO AN EFFECTIVE ALCO PROCESS**1. Loan Portfolio Management**

- o Loan marketing staff input
- o Credit policy/portfolio composition
- o Loan portfolio quality assessment reports
- o Update on portfolio credit concentrations

2. Investment Portfolio Management

- o Portfolio composition, maturity, market valuations
- o Portfolio changes through maturities, purchases, and sales
- o Portfolio profitability

3. Trading Activities (FX, Securities, Futures, etc.)

- o Trading positions versus limits
- o Profitability of each major trading function

4. Funding Activities

- o Net interest margin analysis
- o Interest rate mismatches versus limits
- o Liability customer concentrations
- o Outstandings in key funding markets
- o Performance versus various liquidity risk guidelines
- o Acceptance of bank's name in wholesale markets
- o Details on any retail funding programs
- o Opinions on near-term funding market prices and liquidity

5. Overall Financial Performance

- o Earnings performance
- o Debt and equity market performance
- o Explanations for asset and liability trends (Sources and uses of funds)

LIQUIDITY RISK
INTRODUCTION

6. Economic Trends and Peer Performance

- o Key economic statistics used to anticipate future interest and exchange rate trends
- o Information on local, national, and international economic trends
- o Periodic comparison of earnings, credit quality, and balance sheet composition with appropriate peer banks

KEYS TO AN EFFECTIVE ALCO PROCESS

- o Regular attendance by a manageable size staff only large enough to provide input of the type noted above
- o Timely, accurate, and clear MIS not overly detailed
- o Concise input on the six topics discussed above, which include asset mix, credit concentrations, and asset quality
- o Regular presentations of ALCO committee actions to the board of directors.

LIQUIDITY MIS

A major obstacle to effective control of liquidity risk is often the lack of quality management information systems (MIS). Multinational banks have a large task in capturing all the funding and asset volume trends that occur around the globe. Information on liability customer concentrations is presently the most inadequate. Some banks ignored liquidity MIS until crises developed. Then, when the information was critically needed, it was too late. This information is vital for contingency planning, "damage control" in a crisis, and for managing liquidity risk in normal times.

Three basic types of liquidity related MIS are described on the following pages. No wholesale bank can operate prudently in money markets without this type of MIS system.

1. LIABILITY CUSTOMER RELATED INFORMATION

- o Liability customer concentration reports that reflect total funds provided by a particular entity regardless of market (Fed funds, CD's, Euro CD's, Euro-time, commercial paper, etc.)
 - actual month-end balances
 - average daily balances
 - outstandings over 12 months

LIQUIDITY RISK**INTRODUCTION**

- o Liability customer concentration reports by:
 - Wholesale Market Segment
 - . Domestic banks
 - . Foreign banks
 - . Money market funds
 - . Broker/dealer community
 - . U.S. and state & local governments
 - . Foreign central banks
 - . Corporations
 - . Thrift institutions
 - . Other
 - Major providers by name over a predetermined amount as a percentage of total liabilities over time.
 - Geographic distribution
 - Wholesale liability instrument
 - . Federal funds
 - . Securities sold under repo
 - . Domestic CD's
 - . Euro CD's
 - . Euro-time
 - . Domestic time
 - . Commercial paper (holding company)
 - . Bankers' acceptances
 - . Due bills
 - o Reports tracking amounts and names of wholesale funding customers that have rescinded, trimmed, suspended, or shortened (limited maturities) credit lines, listing the known or suspected reason.
 - o Reports monitoring the volume of broker/dealer funding conducted in all the wholesale funding markets.
2. **ASSET & LIABILITY CONTRACTUAL MATURITY (NOT REPRICING) REPORTS**
- o Few banks have the asset side of the balance sheet available on a contractual maturity basis.
 - o This report will show true cash funding needs, instead of interest rate exposures.

LIQUIDITY RISK**INTRODUCTION**

- o These reports are not required as often as interest rate sensitivity reports, but should be available upon request or at least monthly.
- o The reports should reflect actual and cumulative contractual asset and liability maturity mismatches (gaps) for each of the following time periods:
 - Overnight (1 day)
 - 2 days to 1 week
 - 1 week to 1 month
 - Between 1 and 3 months
 - Between 3 and 6 months
 - Between 6 and 12 months
 - Between 1 and 3 years
 - Over 3 years
- o Liability contractual maturity reports for all significant funding sources (Fed funds, CD's, Euro-time, etc.) should be available at least weekly. These reports should show maturities by day for at least the first 30 days from the reporting date.

3. LIQUIDITY MANAGEMENT REPORTS

- o Reports designed to measure compliance with established liquidity related policies and limits should be prepared regularly. Most banks include such reports in the information packages provided for ALCO type meetings.
- o The type of information required depends on the Board-approved and management-imposed liquidity policies and limits.

CONTINGENCY FUNDING PLANNING

No wholesale funded bank can afford to operate in the current domestic or international money markets without a formal contingency funding plan. An effective plan can be prepared by several key officers and staff familiar with funding markets, SEC disclosure requirements, outside contacts (regulators, rating agencies, analysts, etc.), press relations, the consolidated bank's financial performance, and the present and expected asset quality. Participation by large numbers of staff may be counterproductive, if not well coordinated.

LIQUIDITY RISK**INTRODUCTION**

The written format and length of the plan can vary. An effective plan is designed to provide an overall infrastructure for use in managing a particular liquidity problem. Actual daily funding decisions will have to be made as a crisis develops through a Liquidity Crisis Action Plan. Essential components of an Action Plan are discussed in the following section.

The primary components of an effective Contingency Funding Plan are listed below.

A. ADMINISTRATIVE MATTERS

- o List responsibilities for each member of senior management during a funding crisis.
- o Provide geographic location assignments for each member of management.
- o Assign responsibilities and establish the appropriate order for contacting regulators, analysts, rating agencies, depositors, foreign bank supervisors, external auditors, etc.
- o Provide a predetermined sequence for management action.
- o Establish responsibility for the text of all press releases and outside contacts.

B. PREDICTION OF BALANCE SHEET CHANGES

- o Maintain a current list of customers most likely to cancel or reduce support.
- o Identify possible alternative funding sources.
- o Quantify anticipated liability runoff within various time periods.
- o Quantify probable alternative sources of funds or asset liquidations.
- o Estimate possible FRB Discount Window utilization.
- o Provide a planned sequence for controlling balance sheet changes. For example, lost funds will be replaced by: 1) increased term Euro-time deposits,

LIQUIDITY RISK**INTRODUCTION**

2) increased brokered Federal funds, and 3) overnight Euro-time deposits, etc.

C. ESTABLISH DEALING STRATEGIES

- o Coordinate bank and non-bank affiliate funding with lead bank strategies.
- o Identify particular markets to be avoided or used sparingly.
- o Establish a policy concerning paying premiums.
- o Identify particular dealers to assist in maintaining orderly markets in various negotiable instruments (commercial paper, domestic CD's, Euro CD's).
- o Establish a policy for responding to customer requests for paying deposits before maturity.
- o Establish a strategy for use of direct calls rather than using the conventional money broker network for accessing Eurotime deposits.
- o Coordinate the orderly reduction of liquid assets or the sale of non-liquid assets (loans, investments, etc.) to avoid raising market concerns over the bank's funding capacity.

LIQUIDITY CRISIS ACTION PLAN

Once a funding problem begins, or becomes a possibility, the policies and procedures established in the Contingency Funding Plan must be activated in the form of an Action Plan. The administrative procedures should commence after any changes as required by the particular circumstances. The latest estimates of balance sheet changes must be reviewed to determine if the type of problem and current funding market conditions are properly reflected in the expected asset and liability changes. Specific decisions regarding the market trading strategies and policies must be made and communicated clearly to all funding units.

The major components of an effective Liquidity Crisis Action Plan are as follows:

LIQUIDITY RISK**INTRODUCTION**

1. ADMINISTRATIVE MATTERS

- a) Assign an officer knowledgeable of funding markets to coordinate funding market strategies.
- All wholesale market funding activities must be coordinated by this officer.
 - Any equity, debt, and wholesale funding customer resistance to the name must be communicated immediately to this officer for follow-up by senior management.
 - Retail funding strategies must be altered to increase market penetration and the retention of existing customers.
- b) Senior management must ensure that all press, customer, and analyst inquiries are answered promptly and accurately by their regular contacts within the bank. It is very important that all bank personnel facing such inquiries are briefed and well-informed on the total financial condition of the company.
- c) Outside contacts - The parties listed below should be kept informed by the appropriate level of officer/personnel.
- Bank analysts
 - Rating agencies
 - Bank regulators
 - Outside accountants
 - Major funds providers

2. MANAGEMENT OF LIKELY BALANCE SHEET CHANGES**a) Quantify the Possible Runoff by Customer**

Wholesale domestic and foreign liability customer concentrations must be identified on a consolidated company basis regardless of market or instrument:

- Funding and marketing staff must review this list and estimate the effect of the adverse press or market rumor.

LIQUIDITY RISK
INTRODUCTION

- Funds providers likely to eliminate or reduce support for other reasons must also be identified.

b) Estimate Balance Sheet Impact

Estimate the amount of funding support likely to be lost over a 90-day period by balance sheet line. Then, show what alternative funding sources will be used to replace the lost funding, or the assets that will be liquidated. Overall market conditions and liquidity problems being experienced by other banks must also be considered.

c) Determine an Orderly Plan for Meeting Outflows

Set up an initial schedule for replacing outflows experienced in particular markets. This plan will have to be altered as particular market reactions are monitored and analyzed.

EXAMPLE OF A POSSIBLE PLAN
- Probable Outflows in 90 days (millions)

\$500	Negotiable CD's
\$100	Public Funds
\$100	Commercial Paper
<u>\$200</u>	Brokered Federal Funds
	purchased
<u>\$900</u>	Total outflow

- Initial Planned Alternative Sources (millions)

\$100	Raise term eurodollar deposits
\$150	Boost retail CD rates to expand retail
\$150	Increase correspondent federal funds
	purchased
\$200	Reduce federal funds sold and time
	placements
\$100	Raise overnight eurodeposits
\$100	Arrange large bank back-up lines
<u>\$100</u>	FRB discount window
<u>\$900</u>	Total alternative funding sources

d) Determine Adequacy of FRB Discount Window Collateral

LIQUIDITY RISK**INTRODUCTION**

3. ESTABLISH TRADING STRATEGIES AND POLICIES

- o Pricing - Beforehand, determine acceptable premium to be paid in each wholesale market.
- o Management of Secondary Market - Orderly secondary markets in domestic CD's, euro CD's, commercial paper and debt securities must be maintained to protect the bank's name. Guidelines must be set when negotiable instruments will be retired and/or purchased from anxious market participants.
- o Breakage - Establish a policy for dealing with requests to break time deposits before maturity.
- o Euromarket dealing direct - Counterparty resistance in the eurotime deposit market may force the circumvention of the conventional money broker network. Decisions on what banks to call directly for quotes are important for protection of the bank's name.
- o Asset Liquidation - This must be conducted in reasonable volumes and if possible in the more anonymous markets (maturing time placements, infrequent federal funds sold to banks, etc.). Unusual sales of loans or bonds may be interpreted as a distress measure.
- o Coordination of Affiliates - Affiliate funding strategies must also be coordinated with the strategies being pursued by the lead bank, or the banks with wholesale market funding exposures.

It is vital that all funding management and staff are kept fully informed of all applicable market trading strategies and policies.

LIQUIDITY RISK**EXAMINATION GUIDELINES**

WHOLESALE BANK LIQUIDITY EXAMINATION PROCEDURES

1. Obtain and review any liquidity risk related policies and procedures. Determine that formal guidelines have been established addressing:
 - o The level of liability customer concentrations;
 - o The maximum reliance on particular wholesale funding markets (i.e. brokered retail CD's, negotiable CD's, Euro CD's, brokered Federal funds, etc.);
 - o Prudent ranges of overnight and short maturity wholesale funding;
 - o Minimum levels of liquid assets; and
 - o Balance sheet composition ratios (i.e. loans/deposits, loans/capital etc.).
2. Obtain and review the existing Contingency Funding Plan for adequacy. An effective plan should include:
 - o An administrative section assigning specific duties to the various levels of management;
 - o Some quantification of vulnerable source funds and realistic additional funding sources or saleable liquid assets; and
 - o A list of probable funding strategies regarding vulnerable markets, pricing, secondary market control for negotiable liabilities, and policies for early payment of term liabilities.
3. Review the Uniform Bank Performance Report and internal management reports for significant changes in asset mix and liability funding sources. Particular attention should be directed toward:
 - o The volume of liquid assets (Federal funds sold, time deposits with banks, reverse repurchase agreements not funded by repurchase agreements, and high quality money market type loans) compared to total assets and volatile liabilities;

LIQUIDITY RISK**EXAMINATION GUIDELINES**

- The volume of net Eurocurrency interbank market funding;
- The volume of eurodollar CD's outstanding;
- The volume of negotiable domestic CD's issued;
- Trends in other wholesale funding categories; and
- The changes in the volume and mix of retail funding sources.

4. Review the most recent liability customer related internal management reports to determine the liability customer mix. This information is particularly important for euro time, euro CD's, large domestic CD's, DDA's and holding company issued liabilities. Using the Factors Affecting Funds Provider Behavior attachment assess the stability of the funding base by market (i.e. euro CD, domestic CD, euro-time, larger DDA's, etc.)
5. Review the minutes of the Asset and Liabilit, Management Committee (ALCO) for discussions regarding liquidity risk management. Note any changes and discuss pertinent matters with appropriate management.
6. Discuss with management the retail and wholesale market acceptance of the bank's name. Refer to the Possible Early Signs of Liquidity Problems attachment for use as a background for the discussion. Any changes in the types of funds providers, pricing versus the market, broker/dealer treatment, and available maturities should be noted.
7. A sample of wholesale market funding transactions should be reviewed. In banks with asset quality, earnings, and capital problems; evidencing changing asset and liability trends in procedure 3; relying on credit risk averse funds providers based on procedure 4; or experiencing some degree of retail or wholesale market resistance as noted in procedure 6.

The transactions should be sampled from the significant wholesale markets used by the bank with particular attention paid to:

- o Changes in the names of the funds providers or broker/dealers used;

LIQUIDITY RISK**EXAMINATION GUIDELINES**

- o Decreasing size of individual transactions;
- o Increased difficulties encountered in accessing longer term maturities;
- o Increased pricing costs relative to top tier bank or competitor rates; and
- o Any evidence of positioning negotiable liabilities or paying out term liabilities before maturity.

All of the adverse trends noted above will be noted first in foreign currency interbank deposit gathering.

8. Through discussions with examiners reviewing the credit function, determine the trends for:
- o Anticipated loan charge-offs;
 - o Non-performing asset levels;
 - o The adequacy of the allowance for loan and lease losses; and
 - o Any changes in loan portfolio credit concentrations.
9. Determine the adequacy of management and director supervision of liquidity risk. Review the information provided to the management committee responsible for liquidity risk management. The formal information packets should include data pertaining to:
- o Loan portfolio quality trends;
 - o Changes in credit concentrations;
 - o Investment portfolio composition, maturity distribution, and market valuation;
 - o Treasury product trading positions and resulting profit and loss;
 - o Compliance with approved liquidity risk guidelines;
 - o Report on funding covering interest rate sensitivity, funding markets being used, pricing, and estimated available wholesale market capacity;

 LIQUIDITY RISK

 EXAMINATION GUIDELINES

- o Overall bank earnings performance versus budgeted amounts; and
- o Key economic statistics for use in projecting future interest and exchange rate movements.
- o The volume of purchased funds supporting non-liquid assets;

Review the board of directors meeting minutes and supporting information provided to the directors to determine the adequacy and frequency of liquidity risk related discussions. The directors should receive periodic reports (quarterly in normal cases) concerning:

- o Any significant funding strategy changes effecting the particular markets being accessed for funds;
 - o Any changes in the market acceptance of the bank's name as evidenced by changing funds providers, pricing relative to competitors, available maturities, broker/dealer treatment, and funds availability in particular markets;
 - o Compliance with approved liquidity risk guidelines; and
 - o Any changes in the existing Contingency Funding Plan.
10. Based on the information developed in the previous procedures, use the wholesale bank liquidity rating factors to assign the liquidity CAMEL rating. This rating must reflect the technical liquidity of the bank, that is the ability to obtain sufficient funds in a variety of markets, and maturities, and at reasonable prices. The adequacy of asset and liability management techniques should be reflected in the management CAMEL rating.
11. Discuss the significant findings of the examination with appropriate management.
12. Draft a report comment addressing the conclusion regarding present liquidity adequacy. Provide a brief description of the factors used in this determination. The comment should also include:
- o Any recent changes in liquidity risk guidelines;

LIQUIDITY RISK**EXAMINATION GUIDELINES**

- o A brief description of the wholesale funding market acceptance of the bank's name;
- o The adequacy of the Contingency Funding Plan;
- o A comment on any bank funding required for the parent or other affiliates; and
- o The examiner's opinion concerning future liquidity based on known trends pertaining to operating, interest rate, and credit risk management in the bank.

APPENDIX 3

Funds management represents the core of sound financial planning. Although it is not a new concept, practices, techniques, and norms have been revised substantially in recent years. Funds management is the process of managing balance sheet and off-balance sheet instruments to maximize and maintain the spread between interest earned and paid while ensuring the bank's ability to pay off liabilities and fund asset growth. Therefore, a bank's funds management practices will affect earnings and liquidity.

A sound basis for evaluating funds management is by understanding the bank, the customer mix, the asset liability composition, and the economic and competitive environment. The adequacy of policies, procedures and management information systems must be determined and the effect of funds management practices on liquidity and interest rate risk analyzed.

Liquidity risk is related to, but substantially different from, interest rate risk. Liquidity risk arises from mismatching the maturities of assets and liabilities. Interest rate risk arises from mismatching the repricing of assets and liabilities. Both risks may be increased by rumored or existing asset quality deterioration. Poor asset quality will introduce maturity mismatches through assets failing to pay off as agreed, or repricing mismatches through the borrower's inability to pay higher rates on variable rate loans. Rumored asset problems may cause a run on deposits, which, in turn, will result in both maturity and price mismatches.

Liquidity

Liquidity represents the ability to accommodate decreases in deposits and other purchased liabilities, and fund increases in assets. Funds must be available at reasonable prices relative to competitors, and in maturities required to support prudently medium to longer term assets. Liquidity is essential in all banks to compensate for expected and unexpected balance sheet fluctuations and to provide funds for growth.

The cost of liquidity is a function of market conditions and the degree of risk, both interest and credit, reflected in the bank's balance sheet. If liquidity needs are met through holdings of high quality liquid assets, the cost becomes the income sacrificed by not holding higher yielding long term and/or lower quality assets. If liquidity needs are not met through liquid asset holdings, a bank may be forced to acquire additional funds under adverse market conditions at excessively high rates. In large banks, however, maturing assets or their

liquidation do not provide assured liquidity continuously. In those banks, asset liquidity is supplemented by the ability to roll over maturing liabilities and acquire new ones daily.

Brokered deposits are one example of acquired liquidity. Such deposits are placed by money brokers with banks offering the highest rates. Often these are problem banks that are in need of liquidity, but can least afford the higher interest expense. A bank's reliance on those funds should be investigated.

The adequacy of a bank's liquidity will vary from bank to bank. In the same bank, at different times, similar liquidity positions may be adequate or inadequate depending on anticipated need for funds. In addition, a liquidity position which is adequate for one bank may be insufficient for another bank. Determining the adequacy of a bank's liquidity position depends upon an analysis of the bank's:

- Present and anticipated asset quality.
- Present and future earnings capacity.
- Historical funding requirements.
- Current liquidity position.
- Anticipated future funding needs.
- Options for reducing funding needs or attracting additional funds.
- Sources of funds.

To provide funds to satisfy liquidity needs, a bank must perform one or a combination of the following:

- Dispose of liquid assets.
- Increase short-term borrowing (and/or issue additional short-term deposit liabilities).
- Decrease holdings of nonliquid assets.
- Increase liabilities of a term nature.
- Increase capital funds.

Forecasting future events is essential to liquidity planning. Management must consider the effect those events are likely to have on funding requirements. If management does not consider future events and plan the bank's funding strategy accordingly, the bank will be run by the dictates of the economy rather than by management. All banks are affected by changes in the economic climate. However, sound financial management can buffer negative changes and accentuate positive ones.

Information that management should consider in liquidity planning includes:

Funds Management Introduction

Section 405.1

- Economic forecasts.
- Internal costs of funds.
- Mismatches in the balance sheet
- Interest rate forecasts.
- Anticipated funding needs.

Management also must have contingency plans in case its projections are wrong. Effective contingency planning involves identifying minimum and maximum liquidity needs and weighing alternative courses of action designed to meet them.

Contingencies that may affect a bank's liquidity include:

- New business opportunities.
- Acquisitions
- New management.
- Earnings decline.
- Nonperforming asset increase.
- Downgrading by a rating agency.

Once liquidity needs have been determined, management must decide how to meet them through such methods as asset management, liability management, or a combination of both.

Asset Management

Liquidity needs may be met by manipulating the bank's asset structure through the sale or planned runoff of a reserve of readily marketable (liquid) assets. Many banks, particularly the smaller ones, tend to have little influence over the size of their total liabilities. Such banks rely on liquid assets to fund increases in trade area loan demand. Banks which rely solely on asset management concentrate on adjusting the price and availability of credit, and the level of liquid assets held in response to changes in customer asset and liability preferences.

The amount of liquid assets a bank should hold depends on the stability of its deposit structure and the potential for rapid loan portfolio expansion. Generally, if deposit accounts are composed primarily of small stable accounts, a relatively low allowance for liquidity is necessary. A higher allowance for liquidity is required when:

- Recent trends show substantial reduction in large accounts
- Substantial deposits are short-term municipal special assessment-type accounts.

- A substantial portion of the loan portfolio consists of large static loans with little likelihood of reduction.
- Large unused lines of credit or commitments to lend are expected to be used immediately
- Concentration of credits have been extended to an industry with present or anticipated financial problems.
- A strong relationship exists between individual demand accounts and principal employers in the trade area who have financial problems.

Asset liquidity, or how "salable" the bank's assets are in terms of both time and cost, is of primary importance in asset management. Liquid assets provide insurance as well as yield. To maximize profitability, management must carefully weigh the full return on liquid assets (yield plus insurance value) against the higher return associated with less liquid assets. Income derived from higher yielding assets may be offset if a forced sale is necessary because of adverse balance sheet fluctuations.

Assets normally assumed to be liquid, sometimes are not easily liquidated. For example, investment securities may be pledged against public funds and repurchase agreements, or may be depreciated heavily because of interest rate changes. Trading accounts cannot be reduced materially because banks must maintain adequate inventories.

Seasonal, cyclical, or other factors may often cause aggregate outstanding loans and deposits to move in opposite directions and result in loan demand which exceeds available deposit funds. A bank relying strictly on asset management would restrict loan growth to that which could be supported by available deposit funds. As an alternative, liquidity needs may be met through liability sources, such as federal funds purchased, borrowings from the Federal Reserve bank, purchased deposits (i.e., brokered deposits) and sale of securities under agreements to repurchase, which would allow the bank to meet the loan demand of its trade area. The decision whether or not to use liability sources should be based on a complete analysis of seasonal, cyclical, and other factors, and the costs involved. In addition to supplementing asset liquidity, liability sources of liquidity may serve as an alternative even when asset sources are available.

The number of banks relying solely on manipulation of the asset structure to meet liquidity needs is declining rapidly.

Funds Management

Introduction

Section 405.1

Liability Management

Liquidity needs can be met through the discretionary acquisition of funds on the basis of interest rate competition. This does not preclude the option of selling assets to meet needs, and conceptually, the availability of asset and liability options should result in a lower liquidity maintenance cost. The alternative costs of available discretionary liabilities can be compared to the opportunity cost of selling various assets. The major difference between liquidity in larger banks, as contrasted with smaller banks, is that in addition to deliberately designing the composition of the asset side of the balance sheet, larger banks are better able to control the level and composition of their liabilities. When funds are required, larger banks have a wider variety of options from which to select the least costly method of generating funds. In addition, discretionary access to the money market should reduce the size of the liquid asset "buffer" that would be needed if the bank were solely dependent upon asset management to obtain funds.

The ability to obtain additional liabilities represents liquidity potential. The marginal cost of liquidity, the cost of incremental funds acquired, is of paramount importance in evaluating liability sources of liquidity. Consideration must be given to such factors as the frequency with which the bank must regularly refinance maturing purchased liabilities, as well as an estimate of the bank's ability to obtain funds in the money market. The obvious difficulty in estimating the latter is that, until the bank goes to the market to borrow, it cannot be determined with complete certainty that funds will be available at a price which will maintain positive yield spread. Changes in money market conditions may cause a rapid deterioration in a bank's capacity to borrow at a profitable rate. In this context, liquidity represents the ability to attract funds in the market when needed, at a reasonable cost.

As previously noted, large bank's access to discretionary funding sources is a function of their position and reputation in the money markets. Although smaller institutions do not have a "name" in those markets, they are not precluded from liability management. The scope and volume of their operations is, however, somewhat limited.

Although the acquisition of funds at a competitive cost has enabled many banks to meet expanding customer loan demand, misuse or improper implementation of liability management can have severe consequences.

Examiners should be aware of the following risks associated with the practice of liability management.

- Purchased funds may not always be available when needed. If the market loses confidence in a bank, that bank's liquidity may be threatened.
- Concentrations in funding sources increase liquidity risk. A bank relying heavily on foreign inter-bank deposits will experience funding problems if overseas markets perceive instability in U.S. banks or its economy. Replacing foreign sources will be difficult and costly because the domestic market may view the bank's sudden need for funds as a danger signal.
- Over-reliance on liability management may cause a tendency to minimize holdings of short-term securities, relax asset liquidity standards, and result in a large concentration of short-term liabilities supporting assets of longer maturity. During times of tight money, this could cause an earnings squeeze and an illiquid condition. Funds employed from liability management should be hedged or placed principally in assets with matching maturities or which have flexible interest rates.
- Due to rate competition funding costs may increase. In an attempt to offset the increase, a bank may lower credit standards to invest in higher yielding loans and securities. If a bank is purchasing liabilities to support assets which are already on its books, an increase in the cost of purchased funds may result in a negative yield spread.
- When national monetary tightness occurs, interest rate discrimination may develop, making the cost of purchased funds prohibitive to all but a small number of money center banks. Therefore, banks with limited funding sources should avoid using funds purchased in the national market and should rely upon their local market.
- Preoccupation with obtaining funds at the lowest possible cost, without considering maturity distribution, greatly intensifies a bank's exposure to the risk of interest rate fluctuations.

In all banks, and particularly in wholesale-funded ones, management must be aware constantly of the composition and characteristics of its funding sources.

Real or rumored deterioration in the financial condition of a bank because of asset quality, fraud, or external

Funds Management Introduction

Section 405.1

economic developments will affect wholesale funding adversely. The extent of that reaction depends on the bank's funding sources and their risk tolerance.

Factors affecting risk tolerance of funds providers include their:

- Obligations to fiduciary investors, such as money market funds, trust funds and pensions.
- Reliance on rating firms. Bylaws or internal guidelines may prohibit placing funds in banks that have low ratings.
- Obligations to disclose information on investment holdings.
- Self-interest in maintaining an orderly market-place. For this reason major banks are slow in eliminating funding to other banks.
- Lack of a personal contact at the bank to provide timely and accurate information about its financial condition.

The following common funds providers are ranked from the least to the most risk tolerant:

- Money market funds.
- Trust funds.
- Pension funds.
- Money market brokers/dealers.
- Regional banks.
- Government agencies.
- Community banks.
- Multinational banks.
- Individuals.

Interest Rate Risk

Interest rate risk arises from the impact that future interest rates will have on a bank's reported earnings and the market value of its portfolio equity.

The risk to a bank's reported earnings arises from a bank's historic cost business and any positions carried on a market valuation basis. Changes in interest rates will effect reported earnings through changes in net interest income and the market value of trading accounts or assets held for resale carried on a market valuation basis.

The risk to the market value of portfolio equity arises primarily from a bank's long-term fixed rate positions. The value of a fixed rate instrument varies with interest rates. For example, a five-year fixed rate bond will de-

cline in value if interest rates rise and a bond with a longer maturity will decline even more with the same rate change. In the same way, the underlying value of a bank can change when interest rates change, and a bank with unmatched, long-term, fixed rate positions is exposed to a sustained adverse interest rate movement. Although these positions may not pose a risk to near-term reported earnings due to historic cost accounting conventions, they can expose the bank to substantial interest rate risk and, over time, result in lower reported earnings or general underperformance of the market.

Risk to reported earnings is often referred to as accounting exposure and the risk to market value of portfolio equity as economic exposure. Both exposures are important and should be considered in assessing interest rate risk. The impact on earnings is significant because of the liquidity and capital adequacy consequences that reduced earnings or losses might imply. The impact on market value is significant because it is a measure of an institution's true capital solvency and a reflection of the net value of a bank upon liquidation or forced sale. This perspective is particularly relevant for regulators because negative changes in the market value of portfolio equity can be a leading indicator of future earnings problems. In addition, the market value also reflects the true liquidity of bank assets since the cost of selling depreciated assets to meet liquidity needs may be prohibitive.

The deregulation of deposit rates, the introduction of more complex financial products, and increased competitive pressures have accentuated the need for prudent management of interest rate exposures. The margin for error in funds management and pricing decisions has been reduced and the need for the board and senior management to adopt policies addressing interest rate risk and to implement adequate risk measurement and reporting systems has increased. Components of prudent interest rate risk management include policy statements, risk limits, risk measurement systems and reports to management and the bank's board of directors.

Specific strategies adopted by banks to compensate for the changing environment include:

- The expansion of variable rate lending.
- The shortening of maturities in the investment portfolio.
- The generation of fees from the packaging and sale of fixed-rate longer-term loans.

- The use of interest rate futures, swaps and other products to hedge against fluctuations in interest rates when an imbalance exists in a bank's rate sensitivity position. (A discussion of financial futures is contained in the Introduction to the Investment Securities section of the handbook, 203.1)
- The development of sources of fee/noninterest income.
- Asset securitization.

When evaluating a bank's interest rate risk exposure, examiners should consider both the level of risk and the quality of risk management. Examiners should base their assessments on a review of policies and operating limits, management structure and practices, risk measurement systems, and the reported and perceived level of risk exposure.

Risk Limits

Repricing imbalances pose various risks to net interest income. A liability sensitive bank is at a disadvantage when interest rates are rising, since it will be more costly to fund liabilities which are supporting fixed rate assets. It is difficult to adjust a liability sensitive position to achieve a balanced one without suffering a loss of business. A bank has limited control over the volume of its fixed rate liabilities. Therefore, to achieve balance would likely require a runoff of rate-sensitive liabilities and a reduction in fixed rate long-term loans or securities supported by those liabilities. This may be difficult, since rising rates would indicate the likelihood of a capital loss from the sale of fixed rate assets.

A proper balance between rate sensitive assets and rate sensitive liabilities should help minimize the effect on earnings caused by adverse movement in interest rates. The larger the imbalance, the greater the risk the bank is assuming, and the greater the impact of an adverse rate movement. To control risk, limits should be established for the risk to earnings arising from mismatches between the repricing of assets, liabilities, and off-balance sheet contracts carried on an historic cost basis. Since these "gap" mismatches create exposure to net interest income, limits on gaps are best expressed in terms of net interest income at risk.

Risk limits should also address risk to earnings arising from positions that are carried on a market valuation basis (mark-to-market or lower-of-cost-or-market). This includes trading positions and assets held for resale

Limits on these positions may be expressed in term of the risk to market values.

Limits on earnings exposure should consider potential adverse changes in interest rates rather than anticipated rate movements. Anticipated rate movements may indicate management's expectation of what is *likely to happen*. Risk limits are designed to control what *may* happen if outcomes deviate from expectations.

Banks with unmatched, long-term, fixed rate positions are exposed to a sustained adverse interest rate movement. It is premature to expect banks to quantify and limit the risk to the market value of portfolio equity arising from these positions. Banks that have such positions, however, should evaluate and limit the severity of these exposures. Typically, these positions arise from mortgage and investment portfolios that are funded short-term.

Rate Risk Measurement Systems

There is wide variation in the techniques used by banks to measure and manage their interest rate exposure and no one technique is appropriate for all banks. The adequacy of risk measurement systems and the extent of reviews performed to determine management's ability to monitor exposure will depend on the bank's size, complexity and level of interest rate risk assumption. For example, a community bank without significant interest rate exposure might rely on a simple gap report to measure its exposure. A bank that engages heavily in mortgage lending may need a more sophisticated system that captures prepayment risk on fixed rate mortgages. A market valuation assessment may be more valuable in large banks, banks experiencing liquidity problems or banks with a relatively large volume of long-term fixed rate assets or liabilities. In general, the risk measurement technique(s) used should capture a bank's significant sources of interest rate exposure.

Gap Reports

The most common tool used to measure rate sensitivity is a point-in-time maturity ladder (gap) report. Gap reports typically are used to measure risk to net interest income arising from instruments carried at historic cost. Differences in the repricing dates of assets, liabilities and off-balance sheet contracts are a primary component of risk to net interest income. A typical gap report stratifies all current and contracted positions by their respective repricing date. By netting the gross balances, a net repricing imbalance in each time frame is

Funds Management Introduction

Section 405.1

determined. These imbalances indicate the sensitivity of net interest income to a change in interest rates. The amount of risk depends on the size of the repricing imbalances, how long the imbalances remain open, and potential movements in interest rates.

Net positions in each time frame may be expressed as assets less liabilities, as liabilities less assets or as the ratio between rate sensitive assets (RSA) and rate sensitive liabilities (RSL). For example, a short funded position (liabilities repricing before assets) would be expressed as a net negative position when period gaps are computed by subtracting repricing liabilities from repricing assets. When using the ratio method, a RSA/RSL ratio of 1 indicates a balanced position and a ratio greater than 1 an asset sensitive bank. A ratio less than 1 indicates a liability sensitive bank.

Many banks, rather than relating repricing imbalances to net interest income at risk, simply limit the size of their gaps. For example, a bank may limit the ratio of rate sensitive assets to rate sensitive liabilities to given range, such .90 to 1.10. Such limits, by themselves, do not directly identify earnings exposure. A bank that uses such limits, probably made some assumptions about the relationship between gaps and earnings when it established those limits. Expressing limits in terms of net interest income at risk makes those assumptions explicit. Examiners should encourage banks using gap reports to express limits in terms of the account at risk, net interest income.

Gap reports provide a measurement of net interest income at risk and indicate the timing of that risk. They are particularly useful in identifying sources of risk arising from the existing assets, liabilities and off-balance sheet contracts of a bank.

Gap reports are subject to limitations, however. Indeed, maintaining a balanced position for all time periods in a gap report does not ensure that the bank is immune to interest rate risk. The following cause this apparent contradiction and are the limitations inherent in most gap reports:

- Interest rates do not always move in tandem. For example, when interest rates are moving upward, the prime rate will often lag the federal funds and cd rates. The divergence in interest rate movements is referred to as basis risk. A bank that funds a prime-based loan with a short-term cd might not show any exposure for this position in its gap report since both instruments have short

maturities. The bank could suffer a decline in earnings, however, if the cd rate has increased at the repricing date but the prime rate has not changed.

- Significant risk may be hidden in the repricing time frames of the gap report. A bank's gap report may show a balanced position for a 90-day period. However, interest rate risk may be significant if most assets reprice at the beginning of the period, most liabilities reprice at the end of the period, and interest rates decrease at the beginning of the period.
- Many retail banking products incorporate options features, which are often referred to as embedded options. Examples of these include prepayments on fixed rate loans, caps on floating rate loans, and early withdrawal rights on deposits. The repricing dates for products with options will vary with interest rates. For example, fixed rate mortgages typically will prepay faster in lower interest rate environments. Embedded options generally work in favor of the customer and against the bank. When prevalent, options can pose significant risk to net interest income but their effects are not easily incorporated into a gap report. To capture these exposures, some banks will prepare a series of gap reports for different levels of interest rates. A gap report for a low rate environment may show shorter maturities for mortgage loans, reflecting higher prepayments, while under a high rate environment, mortgage maturities would lengthen and floating rate loans subject to caps would be shown as fixed rate assets.
- Gap reports depict the existing structure of the bank at one point in time. Exposures arising from new business generally are not captured.
- Repriceable investments/funds may roll off at rates significantly different from current rates. This can cause a change in earnings even if the bank has a balanced gap position. To aid in the assessment of this reinvestment risk, some banks will show the rates associated with the repricing volumes in their gap reports.

Many assets and liabilities have repricing dates that are unspecified (are not clearly established in the contract or are not otherwise readily determinable). Examples of such instruments include demand deposits, savings accounts and credit cards. As noted earlier, the repric-

ing dates for products with embedded options will vary depending on future interest rates. To stratify these balances, management must make informed estimates regarding their effective repricing dates. An analysis of a gap report must include a review of management's assumptions on how these balances are stratified.

To address the limitations of gap reports, banks often complement gap reports with simulation models.

Simulation Models

Simulation models analyze interest rate risk in a forward-looking or dynamic context. They are used to evaluate the risk arising from both the bank's current positions and its forecasted future business. Typically, simulation runs are performed only over a fairly short time horizon (up to two years) because the confidence in interest rate and business forecasts is less beyond the short-term horizon.

The focus of most simulation models is risk to net interest income, although many models may also be able to assess changes in the book value of capital and the market values of portfolio equity or other specific instruments. Risk to net interest income is measured by projecting the future composition of the bank and applying different interest rates scenarios. Conceptually, the greater the variation of future net interest income under various rate scenarios, the higher the indicated level of interest rate risk at the bank. Simulation models can also test the effect of different business strategies on a bank's risk profile and provide a useful link between business planning and risk management. Simulation can be used to evaluate alternative balance sheet and off-balance sheet strategies.

Simulation models allow greater versatility in dealing with some of the assumptions underlying gap-based risk measurements. For example, gap measurements assume a one-time shift in interest rates, while simulation models handle varied interest rate paths and variations in yield curve shapes. Basis risk can be evaluated by varying spreads between the various indices the bank uses to price its products. The impact of caps, prepayment rights and other options can be evaluated by more sophisticated models.

While offering greater versatility, simulations may provide a less objective indicator of a bank's existing risk position by introducing more assumptions on future business. Changes in the target account (net interest income) arise from predicted balance sheet changes as well as predicted interest rate changes. In addition,

because simulation projections are usually limited to a one- or two-year time horizon, significant longer term exposures often are not captured. It is these longer term exposures, however, that can pose the greatest threat to a bank's capital and its market value of portfolio equity. For these reasons, simulation is best supplemented by measurement systems that isolate the risk inherent in the bank's existing balance sheet position and which capture the risk from longer term repricing imbalances.

Simulation models are data and assumption intensive. Examiners should assess the integrity of data input, the reasonableness of forecasts and assumptions regarding future interest rates and volumes, and the quality and reliability of output. Examiners also must ascertain whether management has a detailed understanding of the design to the model, particularly when it has been purchased from an outside vendor.

Market Valuation Models

Most gap and simulation models were designed to assess the rate sensitivity of future net interest income rather than to measure the sensitivity of market values to rate movements. Techniques that measure market value sensitivity are useful because they capture exposures across the full maturity spectrum of the bank. Market value sensitivity systems are often based on duration analysis. Most commonly they are used by larger banks to establish earnings at risk limits for trading positions.

The duration concept was proposed by Frederick Macaulay in 1938 to measure the timing of a bond's cash flow. This measure was later modified to express the price sensitivity of a bond to a given change in interest rates; this is known as "modified duration." When interest rates increase, the market value of a fixed income instrument will decline. Modified duration indicates by how much. For example, if a bond has a modified duration of five, its value will decline roughly 5 percent if interest rates increase one percentage point.

Under the accounting perspective, duration can be used to measure risk arising from instruments carried on a market valuation basis. The duration of a portfolio of fixed income contracts is calculated by adding together the weighted durations of the individual contracts. The duration of the portfolio indicates the risk to earnings arising from that position if interest rates move adversely.

Some banks are exploring the use of duration to measure the sensitivity of the market value of portfolio equity

to changes in interest rates. While often complex to calculate, conceptually the duration of equity is derived by calculating the durations of assets, liabilities, and off-balance sheet contracts. The duration of equity indicates whether the market value of portfolio equity will increase or decrease with a change in rates. A bank with long-term assets funded by shorter term liabilities will generally have a positive duration of equity. The market value of its portfolio equity will decline if interest rates increase. Conversely, a bank with short-term assets funded with long-term liabilities will generally have a negative duration of equity. The market value of its portfolio equity will decline if interest rates decline. In general, the higher the duration of equity, the more sensitive the market value of portfolio equity to changes in rates.

Duration can be useful for setting risk limits on trading accounts at larger banks. In the past, many banks limited the earnings risk arising from trading portfolios with simple position limits, usually based on maturity. This provided only an indirect limit on exposure and limits based on duration can be an improvement.

Duration is one way to measure the sensitivity of the market value of portfolio equity to changes in interest rates. The calculations and assumptions required for this measurement, however, are substantial. In addition, there are some technical limitations to duration. Duration accurately measures changes in market value only for small changes in rates, and the duration of contracts with different cash flows evolve at different rates with the passage of time. Due to these limitations, duration as a tool to measure economic exposure is generally found only at the larger regional and multinational banks.

A more detailed discussion of the nature and measurement of interest rate risk can be found in the "Interest Rate Risk" section of the *Multinational Source Book*, distributed by the Multinational Banking Department.

Interest Rate Swaps

An interest rate swap is a contract between two parties that provides for the exchange of a series of cash flows. It may be used to reduce interest rate risk created by unwanted repricing mismatches between assets and liabilities. The two parties exchange a series of cash flows usually representing fixed and floating rate interest payments. Swaps are also done with both parties exchanging floating rates based on different indexes.

Hedging

In a fixed for variable interest rate swap, the party with fixed rate assets funded by variable rate liabilities literally "swaps" its liability payment stream with that of a counterparty who may be borrowing at fixed rates to fund floating rate assets. The floating rate received from the counterparty can be used to pay for the first party's variable rate liabilities. In return, the first party pays the counterparty a fixed rate cash flow, which is used by the counterparty to pay its fixed rate liabilities. As a result, both parties are able to lock in a spread between their asset and liability cash flows, limiting or eliminating each party's interest rate risk.

In addition to hedging the spread between asset and liability cash flows, interest rate swaps can also be used to obtain lower funding costs than would otherwise be available to one of the parties through normal funding sources. Due to global geographic location and differences in perceived credit strength, each swap party may have access to funding at different costs. The incentive to enter into a swap may occur when one party, who because of its size or credit standing, has access to relatively low cost, fixed rate funds but seeks a floating rate obligation, while the other, with access to floating rate funds, seeks fixed rate funds. The parties divide the difference of the funding cost advantage of the first party through their contractual agreement.

The analysis upon which the adequacy of a swap hedge is determined is often based on the bank's current asset/liability structure. However, subsequent changes in the market environment can cause changes in the bank's balance sheet. If interest rates fall, fixed rate loans are often refinanced, and the funds received from these prepayments must be reinvested at the current, lower yields. If the bank has entered into a swap hedge in which it pays fixed rate liabilities, the prepayments will cause the spread between asset yields and funding costs to narrow. With the cash side of the hedge declining, the swap position leaves the hedging bank once again exposed to interest rate risks. Loan prepayment penalties can help reduce the prepayment's impact on the spread. However, in practice, prepayment penalties rarely are enforced. Before entering into a swap contract used as a hedge, management must conduct a thorough analysis of its asset/liability structure and base the amount and terms of the swap on the particular prepayment and repricing characteristics of its assets and liabilities. This kind of hedge analysis should continue over the life of a swap.

Speculation versus Hedging

Although most interest rate swaps are employed to offset an undesirable rate or maturity mismatch, they can also be used to speculate. Swaps can be initiated, or assumed in the secondary market, with no requirement for offsetting bank assets or liabilities. If interest rates move favorably for the speculator, the swap will increase in value and can be sold at a premium in the secondary market. In addition, a bank may enter a swap originally to reduce interest rate risk, but later sell the swap at a premium when interest rates change. If the offsetting asset or liability is not simultaneously disposed of, a bank selling its swap position at a gain may be increasing interest rate risk in order to increase current income. Speculative use of swap contracts by banks that do not act as dealers in swaps should be criticized.

Credit Risks and Controls

An interest rate swap does not involve any transfer of principal. However, the parties establish a principal amount upon which they will base the exchange of cash flows. This amount is referred to as the "Notional Principal" amount since it is the notional or theoretical principal amount of the interest rate swap. The terms of a swap agreement usually call for the exchange of interest payment streams on an annual, semiannual, or quarterly basis. Because the transaction is based entirely on an exchange of interest payments, the credit exposure is therefore limited to the parties' respective swap payments. Losses may result to a bank swap participant when a counterparty owing a swap payment defaults. In a hedging situation, if either party becomes insolvent, declares bankruptcy, or merely refuses to honor the swap agreement, the counterparty may have to enter the market to acquire another swap or other funding sources at increased costs. Bankruptcy of one party may not absolve the counterparty of its required performance, i.e., one party may be unable to perform while the other party may still be compelled to do so. This type of risk is usually reduced by a contractual agreement between each party to offset its obligation against the payment stream to be received from the counterparty. The International Swap Dealers Association, Inc. has developed a universal interest rate swap contract that incorporates the offsetting payment stream provision, as well as other standardized terms and conditions. Although the universal contract can be altered to fit terms unique to a particular swap deal, the standardization has helped promote a secondary market for swaps.

To minimize swap credit exposure, each bank should ensure that the counterparty possesses the financial strength and liquidity to meet its obligations. Bank swap participants should conduct initial and periodic credit analyses on swap counterparties. This analysis and related approvals should be done by persons who normally make credit judgments and not by individuals involved in arranging swap deals. Swap exposures and all other types of credit exposure to the same counterparty should be consolidated and reviewed to control bank wide exposure to single a counterparty.

Credit Limits

Limits under 12 USC 84 do not apply to swaps. However, this limitation may be used as a prudential guideline. Credit limits for one counterparty should be determined by reviewing the potential magnitude of adverse payment increases that could be expected over the life of the swap. One method to analyze risk is to base risk exposure calculations on a possible 2 percent to 5 percent change in interest rates per year over the life of the swap. Thus, a bank with a 10-year swap using 3 percent per year as potential exposure would consider its maximum potential exposure to be 30 percent of the notional principal amount. In this example, if 30 percent of the swap to one counterparty combined with other credit exposures to the same counterparty exceeds 15 percent of capital and surplus (e.g., the lending limit), exposure to that entity should be considered excessive.

Credit Concentrations

As with all types of credit exposure, bank management should also monitor risk diversification in swaps. Concentrations of credit risk in swaps with one counterparty, or concentration risk with counterparties in one or related industries are potentially unavoidable because of the large size of most swaps and the limited number of swap market participants. For example, if swaps are concentrated with counterparties in the same industry and 30 percent of the aggregate of such swap exposures combined with other credit exposures to the same counterparties exceeds 25 percent of capital and surplus, exposure to these groups should be pointed out as a concentration of risk.

Bank's Status: Intermediary vs Principal

If either party to a swap is unwilling to accept the credit of a potential swap counterparty or cannot locate a counterparty, a third party may stand between the two swap participants. This intermediary assumes the risks

of both participants by signing similar swap agreements with each party. Under this structure, each counterparty deals solely with the intermediary and does not know the identity of the other party. The intermediary is compensated by taking a small fraction of the swap payments.

Infrequently, swap intermediaries may act in an agent capacity, merely introducing swap counterparties. An intermediary that acts as an agent must ensure that it limits its liabilities by providing each counterparty with disclosures that clarify its obligations to the counterparties. To be considered an agent, a bank intermediary must disclose its fee, state that it has no liability for swap payments, and provide the name of the counterparty. Failure to make such disclosures will cause the bank to be viewed as a principal.

Collateralizing a Swap

In certain instances the bank may be asked to pledge collateral to provide remedy to the swap counterparty in the event of default. Collateral is most often sought by swap participants when they doubt strongly the ability of the counterparty to meet the terms of the swap. Banks are usually asked to pledge collateral when they experience significant problems and when they can least afford to do so.

The collateral requirements are normally a function of term, the negotiated fixed rate, and the forecast of future rates. U.S. government or federal agency securities are usually the requested form of collateral. Generally, a national bank should not pledge its most liquid assets to collateralize any off-balance sheet contractual arrangements, such as interest rate swaps, because this type of long term encumbrance of a bank's most liquid assets impairs asset liquidity and limits bank management's flexibility. Collateral agreements of this type should be avoided.

Acceptable collateralization systems require both parties to establish maintenance margin accounts. Maintenance margin payment amounts are ascertained by using a model or formula to determine net exposure of the swap market values. The formulas should be reviewed periodically to ensure that they do not require more collateral than normally would be justified by market exposure. Initial margin should not be required unless it is based on market risk.

Swaps with Nonbank Bank Holding Company Affiliates

Nonbank affiliates, such as mortgage banking or leasing subsidiaries, may benefit from the use of swaps as

a hedging tool, and holding company management may try to take advantage of the lead bank's credit standing by arranging a swap between the nonbank subsidiary, and the lead bank acting as a principal intermediary with another counterparty. Since the bank is acting as principal intermediary, the nonbank affiliate is able to use the bank's credit standing to obtain a swap with better payment terms than it would have received had it had to obtain a swap in the open market. In this situation if the nonbank affiliate cannot honor its obligations to the bank, the bank acting as intermediary must continue to pay its swap obligations. Thus, the affiliate's swap obligations become the bank's liability. Although it has not been determined that swaps are covered transactions under 12 USC 371(c), as a prudential matter, the limitations of 12 USC 371(c) for covered transactions should be applied to the estimated exposure on swaps between banks and nonbank affiliates.

Managerial Systems of Control

The board of directors should consider any plan to engage in swap activities and should endorse specific written policies and procedures in authorizing these activities. Policy objectives should be specific enough to outline permissible swap strategies and their relationships to other banking activities. The policy should also establish gross dollar limits and exposure limits for swaps and limits per counterparty. The board of directors, a duly authorized committee thereof, or the bank's internal auditors should review all outstanding swap positions periodically and ensure that these limits are not exceeded. Appropriate committee minutes should document in detail how the swap positions taken contribute to attaining the bank's stated objectives. Recordkeeping systems must be sufficiently detailed to permit internal auditors and examiners to determine whether operating personnel have acted in accordance with authorized objectives.

Recordkeeping

Intermediaries and/or market makers should maintain records of their matched books or open swap positions. Such reports should display the gains and losses in the offsetting and open positions, the net and gross positions and exposure estimates for each swap use, position, or counterparty, overall product profitability, and a trial balance of the swap positions.

End users should have reports which list the swap notional principal amounts, accrued income and expense,

Funds Management

Introduction

Section 405.1

identify the cash positions being hedged, and detail the correlation and effectiveness of the hedge

All banks involved in swaps should retain records of the initial and periodic credit approval of counterparties, documentation deficiencies including the types of errors and the timeliness of their correction, payment delinquencies, and swap positions incorporated into bank-wide funds management reports. Swaps should be reported in the general ledger contingent accounts, as well as in Call Report Schedule RC-L. Reports showing net interest income and expense accruals to the next swap payment date should also be maintained.

→ Securitization of Assets

Securitization is the pooling of assets with similar characteristics into a standard format for sale to investors.

Securitization can provide benefits to banks and the banking system by liquifying bank assets, providing more flexibility for managing various types of risk, and generating fee and spread income. By using publicly traded securities to access different sectors of the capital markets, securitization can be used to improve a bank's liquidity. Securitizing bank assets may be a very attractive form of alternative funding for traditional banking activities.

Financial institutions have been securitizing residential mortgage loans for almost two decades. Since the mid 1980's, this activity has expanded to include virtually every type of consumer receivable on a bank's balance sheet. To a limited extent, commercial loans have also been securitized.

Most banking activities now considered part of the process of securitizing bank loans are refinements of, or logical extensions to traditional banking functions. Banks may play one or more of several distinct roles in the process:

- **Lender.** Banks extend credit to customers.
- **Packager.** An independent party or a division of the selling bank segregates loans into a separate trust or special-purpose subsidiary in order to sell and remove the loans from the books of the originating bank. The packager, in conjunction with a financial advisor or underwriter, also structures the security's maturity, coupon/rate, payment terms, etc. to meet market place demands.
- **Trustee.** The trust is managed by a trustee who is required to work for the best interests of bondholders in accordance with the terms of the indenture governing the trust.

- **Servicer.** Often the originating bank, the servicer collects scheduled principal and interest payments, principal prepayments, payments under escrow arrangements, and is responsible for collecting on delinquent accounts. The servicer usually remits payments to the trustee for ultimate payment to investors.
- **Credit Enhancer.** The majority of asset securitization programs for consumer and commercial loans involve some type of a limited guaranty by the selling bank or by an independent third party. As credit enhancers, banks usually provide letters of credit to third party originators or they provide recourse to investors in support of their own asset-backed securities.
- **Underwriter.** Banks may distribute bonds to investors and advise the packager on the terms of the securitization and the trust indenture. At this time, the legal ability of a bank to perform this function is still being decided in the courts.
- **Investor.** Banks purchasing securitized assets receive pro rata ownership rights to loans in the pool and are entitled to payments from the cash flow generated by the underlying assets.

In this process banks can play individual or multiple roles. However, it is OCC policy that banks may not act as trustee in conjunction with other described capacities because this presents an unmanageable conflict of interest. The conflict arises because the bank will not be able to demonstrate that it has exercised unbiased due diligence.

With regard to the sale of assets with recourse, Regulatory Accounting Principles contrast sharply with Generally Accepted Accounting Principles. With the exception of certain agricultural loans and residential mortgages, a transaction will be regarded as a borrowing and not a sale for Call Report purposes if the purchaser has any recourse to the selling bank's current earnings, capital, or assets. Regardless of accounting classification, risk based capital rules will require capital to be retained for those assets sold with recourse.

Less flexibility in collection practices will surely flow from the securitization process. Investors will expect asset-backed securities to perform according to terms. If a bank routinely buys back distressed credits to protect its name in the capital markets or to provide workout credit restructuring to borrowers this may result in financing treatment for all of the "sold" loans and the need for additional capital, revised financial statements,

Funds Management Introduction

Section 405.1

and significant increases in loan loss reserves. As a result, lenders may become less flexible with problem credit workouts, and troubled borrower situations may more often end in bankruptcy proceedings. This poses serious problems for community banks participating in the securitization process.

Because this is a rapidly evolving area, and because of the need to have a coordinated regulatory response to emerging issues, interested parties should contact the OCC's Investment Securities Division for further information.

Interest Rate Ceiling Agreements

An interest rate ceiling agreement sets a cap on the customer's borrowing rate for a specified time period. The agreement protects the customer when interest rates rise above the cap. The cap is compared periodically, usually quarterly or semi-annually, to the actual average rate of an interest rate index, such as London Interbank Offered Rate (LIBOR), prime rate, secondary market certificate of deposit rate or Euro-dollar rates. If the interest rate index rises above the cap rate, the customer is compensated for the difference by a reduced borrowing rate or a cash settlement. If the index rate falls below the cap rate, a payment is not required from either party. The customer has ensured that the effective future interest expense will not be higher than the cap rate, but has retained the flexibility to benefit from interest rate declines.

Agreements are written generally for 6 to 36 months and may extend as long as 10 years. The contract rates may be quoted on a forward basis, effective less than 30 months from the date of the quote. The customer pays an up-front, non-refundable fee of approximately 1 percent per annum. The fee is computed on the notional (principal equivalent) amount of the contract.

Agreements carry high potential risks if not properly controlled. To minimize risks, the bank's policies and procedures should address:

- **Transactional costs.** In pricing an agreement, the bank should consider those costs, which may be significant as a result of hedging requirements.
- **Interest rate risk.** The bank should determine how it will reduce/manage the interest rate risk exposure that results from outstanding agreements.
- **Asset-liability management.** The bank should relate agreement activity to its overall asset-liability management objectives.

- **Monitoring.** The bank should establish limits on outstanding agreements and implement procedures for frequent comparisons of those limits to outstandings.

Pricing of Assets

Conclusions drawn from the analysis of the bank's interest rate sensitivity position rest upon the assumption that the bank has an adequate asset pricing mechanism. A pricing mechanism that is not attuned to the bank's cost of funds, overhead costs, credit risk, and a reasonable return to shareholders will not allow the bank to maintain an adequate net interest margin on an ongoing basis. Pricing methods and interest rate sensitivity are interdependent factors when an examiner is assessing the bank's ability to *maximize* and *maintain* the spread between interest earned and interest paid.

The major component of pricing is the cost of funds. Bankers generally price from either the average cost of funds or their marginal cost. The average cost of funds is a weighted average of all of the rates paid on interest bearing liabilities, which is easily understood, computed and applied. However, in periods of rising interest rates and/or shifts in the bank's liability structure toward higher cost funding sources, it results in a cost estimate that is too low. The marginal cost of funds is defined as the cost of the additional funds needed to support asset growth. That cost is considered the more appropriate method economically since funds on the balance sheet already support assets held, and their cost should not enter into the pricing decision for new assets.

Funds Management Policy Guidelines

As more banks are attracting funds on a cost competitive basis, the need for properly supervised funds management policies increases. The board of directors has ultimate responsibility for the institutional exposure to interest rate risk and should establish overall strategic policy and adopt constraints on the level of risk assumed. A good policy should generally provide for forward planning which considers the unique characteristics of the bank, management goals regarding asset and liability mix, desired earnings, and margins necessary to achieve desired earnings. Forward planning should also anticipate funding needs and the means available to meet those needs. The policy should establish responsibility for funds management decisions and provide a mechanism for the necessary coordination between the different departments of the bank. This

Funds Management

Introduction

Section 405.1

responsibility may be assigned to an asset liability management committee (ALCO)

In addition to establishing responsibility for planning and day-to-day funds management decisions, the policy should set forth certain guidelines. Examples of some typical guidelines are:

Liquidity:

- Balance sheet ratio limits. For example, a limit on total loans/total deposits and purchased funds/total assets.
- Limits on the sources of funds, such as:
 - Concentrations in funding sources
 - Use of broker/dealers
 - Maximum use of a particular wholesale funding market
- Limits on uses of funds
- A percentage limit on the relationship between anticipated funding needs and available sources. For example, the ratio of primary sources/anticipated needs shall not fall below a certain percent. (Primary sources for meeting funding needs should be defined.)
- Limits on the minimum/maximum average contract (not repricing dates) maturity for different categories of liabilities. For example, the average maturity of negotiable certificates of deposit shall not be less than a stated number of months

Rate Sensitivity:

- Limits on the acceptable level of earnings at risk arising from mismatches between the repricing of assets, liabilities and off-balance sheet contracts carried on a historic cost basis. These limits are best expressed in terms of net interest income at risk. Limits should also address the risk to earnings arising from positions that are carried on a market valuation basis. This includes trading positions and assets held for resale. Limits on these positions are best expressed in terms of the risk to market values
- Limits on earnings exposure should consider potential adverse changes in interest rates rather than anticipated rate movements. The magnitude of an appropriate rate movement will depend on the length of time within which a bank could realistically act to close a position. This reaction time

may vary from overnight for liquid trading instruments, to a year or longer for illiquid long-term positions

- Banks with significant unmatched, long-term fixed rate positions should evaluate and limit the severity of this exposure

Management Information Systems

A workable management information system is central to sound funds management decisions. Reports that contain certain basic information should be prepared and reviewed regularly. Report content and format will vary from bank to bank depending on its characteristics, the funds management practices used, and the risks being measured. For example, a good management information system for assessing liquidity would contain reports that detail liquidity needs and the sources of available funds. The contracted (not repricing) maturity distribution of assets and liabilities and expected funding of commitments would prove useful in preparing this report. In contrast, reports used for interest rate risk management would focus on repricing maturity distributions rather than contractual maturities.

Report content should reflect the complexity of the bank's funds management activities. Examples of items that may be addressed in a report include:

Liquidity:

- Liability customer concentration reports that reflect total funds provided by a particular entity.
- Liability concentrations by:
 - Market segment (foreign banks, brokers, thrifts)
 - Market instrument (federal funds, Eurodollars)
 - Geographic distribution
- Reports that track the amounts and names of wholesale funding customers and changes in the amounts of funds provided by each and the reasons why


Rate Sensitivity:

- Asset yields, liability costs, net interest margins, and variations both from the prior month and budget. (Reports should be detailed enough to permit an analysis of the cause of interest margin variations.)
- Historical interest margin trends

Funds Management

Introduction

Section 405.1

- 
- Repricing maturity reports and, if applicable, information on interest rate caps and floors.
 - Past consumer behavior patterns on products with unspecified maturities or embedded options

General:

- Any exceptions to policy guidelines.
- Economic conditions in the bank's trade area, interest rate projections, and any anticipated deviations from original plan/budget

Additional reports may be needed. Funds management decisions should be made on an informed basis through a good management information system

**Funds Management
Examination Objectives**

Section 405.2

- 1 To evaluate the management of the bank's assets and liabilities
- 2 To determine if management is planning adequately for liquidity needs, and if the bank can meet anticipated and potential liquidity needs
- 3 To determine if reasonable parameters have been established for the bank's rate-sensitivity position and if the bank is operating within established or reasonable parameters.
- 4 To determine if internal management reports provide the necessary information for informed funds management decisions and for monitoring the results of those decisions
- 5 To initiate corrective action when funds management policies, practices, or procedures are deficient

Funds Management Examination Procedures

Section 405.3

1. Complete or update the Internal Control Questionnaire and prepare a brief description of the bank's funds management policies and practices
2. Review the UBPR, interim financial statements, and internal management reports paying particular attention to:
 - a. Asset mix and trends.
 - b. Liability mix and trends.
 - c. The relationship between rate sensitive assets and rate sensitive liabilities and trends
 - d. Stability of interest margins under varying economic conditions. (Causes of significant fluctuations should be identified.)
 - e. The volume of liquid assets compared to total assets and volatile liabilities.
 - f. Source and use of funds.
3. Review the bank's written funds management policy for reasonableness. At a minimum, it should discuss:
 - a. Liquidity parameters.
 - b. Source and use of funds.
 - c. Acceptable levels of concentrations in funding sources.
 - d. Maturities.
 - e. Acceptable maturity mismatches
 - f. Whether brokered funds will be employed and, if so, to what extent
 - g. Minimum levels of liquid assets
 - h. Specific limits on acceptable levels of interest rate risk.
 - i. Contingency funding plans
 - j. Whether to employ off-balance sheet interest rate contracts (financial futures, interest rate swaps).
 - k. Net interest margin goals
 - l. Mechanisms for monitoring interest rate risk
 - m. Responsibilities within the bank for funds management functions.
 - n. Reporting mechanisms.
4. Determine if management has properly planned for liquidity needs and if the bank has adequate sources of funds to meet anticipated or potential needs over the short term by:
 - a. Reviewing the internal management report detailing liquidity requirements and sources of liquidity.
 - b. Reviewing the minutes of the asset liability management committee or the board of directors for discussions regarding liquidity risk management
 - c. If adequate internal management reports are not available, obtaining the information needed to determine the bank's ability to meet funding needs. This analysis may be prepared for any period considered appropriate, e.g., for a 30-day period or for the next seasonal period if the bank experiences seasonal fluctuations
 - d. Preparing the analysis schedule and evaluating the bank's ability to meet anticipated or potential needs
 - e. Considering the effect of financial futures transactions on the liquidity of the investment portfolio
 - f. Considering the bank's current and projected asset quality and earnings.
 - g. Reviewing the most recent liability-related internal management reports to determine the liability customer mix and stability
 - h. Determining the retail and wholesale market acceptance of the bank's name by reviewing any changes in the types of funds providers, pricing versus the market, broker/dealer treatment, and available maturities
5. Obtain and review for adequacy any existing contingency funding plan. An effective plan should include:
 - a. An administrative section outlining the roles of key managers in a liquidity crisis
 - b. Quantification of vulnerable source funds and realistic additional funding sources or salable liquid assets
 - c. A list of probable funding strategies in vulnerable markets, and pricing and policies for early payment of term liabilities
6. Evaluate the bank's management of its rate sensitivity position by

In connection with performing steps 4 through 11, keep in mind the need to evaluate the effectiveness of internal management reporting systems in providing for adequate supervision of funds management

Funds Management Examination Procedures

Section 405.3

- a Obtaining and reviewing rate sensitivity reports and information used by management to monitor interest rate risk and determining:
- If management monitors rate sensitivity through gap analysis:
 - The timeliness of the report data.
 - Whether all assets and liabilities and relevant off-balance sheet items are included. If not, ascertain management's reasons for the exclusions.
 - Whether appropriate analysis has been performed to estimate the rate maturities of instruments with noncontractual repricing dates, such as DDA, regular savings and credit cards. Determine that management has considered seasonal fluctuations, historic volume trends, and current and expected interest rates.
 - Whether reasonable prepayment assumptions were made in stratifying fixed rate mortgages.
 - If management monitors rate sensitivity through simulation analysis:
 - The timeliness of the report data
 - Whether manual manipulation of source data results in delays or potential inaccuracies.
 - The adequacy of yield curve and spread assumptions forecast by management under the separate scenarios tested, and underlying analysis of historic relationships.
 - Whether future volume scenarios are consistent with desired asset/liability growth and mix and the specific interest rate scenarios under consideration. Simulating income under several future rate scenarios requires distinct future volume assumptions for each scenario
 - Whether the components of interest rate risk can be broken out by those arising from existing business, new business, reinvestments, and changes in spread relationships
 - If management monitors market valuation exposure.
 - How management assesses the sensitivity of the value of longer term fixed rate instruments to future rates. If no adequate systems exist, determine the need to develop such systems, particularly if sizeable over one-year positions exist or if liquidation of assets is likely to meet funding requirements.
- b For any monitoring system used, determine if critical assumptions are identified, periodically reviewed for validity, and documented.
- c If a significant imbalance exists in the bank's rate sensitivity position, determining the effect on future earnings if management's projected interest rate scenario does not materialize.
- d Determining the bank's ability to adjust its rate sensitivity position.
- e Considering the effect of financial futures transactions and other off-balance-sheet activities on the bank's rate sensitivity position.
- 7 If the bank is engaged in interest rate swaps, test for compliance with policies, procedures, and internal controls by performing the following examination procedures:
- a. When initiating the examination, determine the nature and extent of interest rate swap activity and assess the examination scope by:
 - Reviewing policies, studies or profiles which describe the bank's swap services and objectives.
 - Determining if the bank is an end user of swaps, an intermediary or an active market maker.
 - Noting where these swap activities are originated, controlled, and recorded so that the location of the examination can be set.
 - Requesting and reviewing swap reports used by the board of directors, senior management, product or strategy managers, and traders.
 - Meeting with management to discuss objectives, volume, profitability, and future plans.
 - b. Through report review and discussion with management, determine (1) the source of reports; (2) the number and type of automated systems; and (3) the extent to which independent systems are integrated and compatible with each other so that information used in management information systems can be con-

Funds Management Examination Procedures

Section 405.3

solidated into a meaningful format; (4) if only parties independent of the trading units have the authority and ability to alter software used in pricing, revaluing, and report production. Ensure that independent parties conduct month end revaluation of swap positions. For end users of swaps, reports should include notional principal amounts, accrued income and expenses, data on the correlation and effectiveness of the hedge. Swap reports for banks acting as intermediary should also show gains and losses in matched swaps. Obtain and review the bank's reports, including at a minimum:

- Trial balance for swaps.
 - Limit and position reports for each swap use, position or counterparty.
 - Product profitability and/or hedge effectiveness reports.
 - Delinquency reports.
- c. Review written policies and procedures manuals to determine whether:
- Policies approve the types of swap contracts to be used, as well as the uses and specific strategies of the swaps.
 - Policies adequately describe and quantify how counterparty credit and open swap position risk will be monitored. Review counterparty and strategy swap limits to determine if the board has established them in terms of exposure to capital and/or income.
 - Policies specifically permit or prohibit open or unmatched positions and, if permitted, limits on these open positions.
 - Bank's credit approval process calls for exposure to be reviewed by those not involved in making the swap deal and exposure to be consolidated with all bank credit exposure to the same counterparty.
 - Operational manuals, flowcharts and other written procedures are detailed sufficiently.
 - Swap revaluation is realistic, independent, and consistent.
- d. Review internal and external audit reports and determine audit deficiencies, the status of uncorrected deficiencies, and the adequacy of completed corrective action.
- e. Determine the adequacy of audit coverage by
- Reviewing and assessing the adequacy of written internal audit procedures for swaps.
 - Evaluating whether auditors test for compliance with the procedures manual, revaluation procedures, credit analysis and limits, report content and accuracy, and documentation deficiencies, such as lack of swap contract or confirmation ticket.
 - Discussing audit procedures and findings with internal audit staff responsible for swaps audit and determining whether it possesses sufficient expertise to analyze this activity.
- f. Analyze risk and profitability by reviewing budgets and strategic plans to increase swap volume, changes in strategies and/or types of transactions, and associated increases or decreases in exposure.
- g. Analyze product profitability reports by reviewing swap gains and losses and determine the source and reasons for large or unusual gains or losses. If the bank is an end user, determine the effectiveness of the hedge. If the bank conducts swaps as an intermediary, determine the profitability of its operations.
- h. Determine and evaluate management procedures for monitoring limits and positions, and hedges. Management procedures for end user banks should include monitoring balance sheet composition to determine if unwanted mismatches in the asset/liability structure have changes, making the swap hedge ineffective.
- i. Evaluate risk positions by
- Reviewing position reports and determining the size of unhedged swap positions. Determine if these positions are within approved limits and other policy provisions.
 - Reviewing management models which estimate exposure under different market condition scenarios. Determine that changes in these model's formulas are properly monitored and approved by persons other than those who use or originate the model.
 - Estimating profit or loss impact of possible changes in interest rate risk.

Funds Management Examination Procedures

Section 405.3

- Determining whether unhedged and hedged swap positions are incorporated into bank-wide funds management reports
- j. Determine if procedures have been established to review accruals, revaluation, invoicing, and settlement. Ensure that if the bank does not have a completed contract, that swap confirmation tickets have been obtained
- k. Verify adherence to credit approval procedures by using an appropriate sampling technique to review individual transactions and
 - Determine if prior credit approval was given to the swap origination division by the appropriate credit analysis unit
 - Verify that swap credit exposure is consolidated and analyzed with all other types of credit exposure to the same counterparty and is properly reflected in the liability ledger or customer credit approval records
 - Ensure that the credit analysis unit has obtained a record of the swap exposure and that periodic credit approval is conducted at least annually
- l. Determine if management monitors the credit quality of the swaps portfolio by:
 - Reviewing reports that identify credit risk or internal credit ratings for swap transactions
 - Determining overall credit quality of swaps portfolios
- m. Discuss and evaluate swap credit risk formulas and determine whether formulas realistically estimate market loss resulting from potential default
- n. Ensure that only maintenance margin accounts are used for collateral by determining that the amount of collateral does not exceed the net amount of the swap market value payable by one participant owed between payment dates. If collateral is required, ensure that maintenance margin outlays are required by both parties
- o. Determine whether the notional principal amount of interest rate swaps are reported accurately in Call Report Schedule RC-L
- p. Determine that all swaps are posted in general ledger contingent accounts
- q. If an intermediary bank claims an agent status, ensure that it has disclosed its fee, the name of the counterparty and stated that it has no liability for swap payments. Such disclosures must be in writing, preferably in the swap contract
- r. Evaluate accounting procedures and determine whether income and expense recognition is appropriate.
- s. Discuss with appropriate management and prepare report comments on:
 - The soundness of objectives, strategies, policies and procedures.
 - The level of risks assumed
 - The effectiveness of controls, reporting and analytical systems.
 - The adequacy of documentation, operations and internal controls.
- 8. If the bank is engaged in interest rate ceiling agreements, determine if
 - a. Adequate policies and procedures exist.
 - b. Recordkeeping systems are detailed sufficiently to determine whether operating personnel have acted according to authorized objectives.
 - c. The board of directors or its designee has established limits on outstanding agreements and reviews existing contracts at least monthly to ascertain conformance to those limits
 - d. Current outstanding agreements are within authorized limits
 - e. The bank maintains general ledger memorandum accounts or commitment registers that detail outstanding agreements.
 - f. Fee income received by the bank is accounted for properly
 - g. The bank's internal controls, management procedures, and internal audit procedures are adequate to assure adherence to policy
- 9. Determine the adequacy of interest margins. If margins are inadequate or if a declining trend is evident, determine
 - If goals have been established for net interest earnings
 - Management's success in meeting established goals

Funds Management Examination Procedures

Section 405.3

- The effect of the bank's rate sensitivity position on meeting established goals.
 - The effect of the bank's pricing policies on meeting established goals
10. Determine if management is adequately planning for longer-term liquidity/funding needs by:
 - Discussing with management and/or reviewing budget projections for the appropriate planning period. Prepare the Projected Source and Use of Funds Statement
 - Reviewing the Projected Source and Use of Funds Statement to determine the future direction of the bank and noting the growth projected, source of funding for growth, and any projected changes in asset or liability mix.
 - Evaluating the reasonableness of future plans regarding funds management.
 - Ascertaining whether the bank can achieve the amounts and types of funding projected and can achieve the amounts and types of asset growth projected.
 - Ascertaining whether the degree of risk associated with the bank's projected rate sensitivity position will be within reasonable limits.
 11. Evaluate the effectiveness of internal management reporting system in providing for adequate supervision of funds management
 12. Determine if the bank has brokered funds. If such funds comprise a significant portion of total deposits, ascertain:
 - The extent of reliance on brokered funds for liquidity
 - The effect on interest margins, rate sensitivity, and possible adverse impact on asset quality
 - The cost compared to other available funding alternatives
 - The ability to repay or replace those deposits with other sources of funds, should they not be renewed.
 13. Write in appropriate report format and discuss with management general remarks on:
 - a. The current adequacy of liquidity and reasons for the adequacy
 - b. The quality of the bank's planning to meet liquidity needs and the current ability of the bank to meet anticipated and potential liquidity needs.
 - c. The bank's rate sensitivity position and an assessment of the degree of risk associated with the bank's position.
 - d. The quality of administrative controls and internal management reporting systems
 - e. The effect of funds management decisions on earnings.

Funds Management Internal Control Questionnaire

Section 405.4

Discuss with senior management the bank's funds management policies and practices.

1. Has the board of directors, consistent with its duties and responsibilities, adopted a funds management policy which includes:
 - Lines of authority and responsibility for funds management decisions?
 - A formal mechanism to coordinate asset and liability decisions?
 - A method to identify liquidity needs and the means to meet those needs?
 - Requirements for the level of liquid assets and other sources of funds in relationship to anticipated and potential needs?
 - Guidelines for the level of rate sensitive assets and rate sensitive liabilities and the relationship between them?
 - Limits on the risk to earnings arising from historic cost accounts and instruments carried on a market valuation basis?
2. Does the planning and budgeting function consider liquidity and rate sensitivity?
3. Has provision been made for the preparation of internal management reports which are an adequate basis for funds management decisions and for monitoring the results of those decisions? And:
 - Are internal management reports concerning liquidity needs and source of funds to meet those needs regularly prepared and reviewed by the board of directors and senior management?
 - Are reports prepared on the bank's rate sensitivity?
 - Is historical information regarding asset yields, cost of funds, and net interest margins readily available?
 - Are variations in the interest margin, both from the prior reporting period and from the budget, regularly monitored?
 - Is sufficient information available to permit an analysis of the cause of interest margin variations?
 - Is corrective action taken when unfavorable interest margin trends are detected?
4. Is the foregoing information an adequate basis for evaluating internal control in that there are no significant additional internal auditing procedures, accounting controls, administrative controls, or other circumstances that impair any controls or mitigate any weaknesses indicated above (explain negative answers briefly, and indicate conclusions as to their effect on specific examination procedures)?
5. Based on a composite evaluation, as evidenced by answers to the foregoing questions, internal control is considered _____ (good, medium, or bad).

Funds Management
Laws, Regulations and Rulings

Section 405.5

	<i>Laws *</i>	<i>Regulations †</i>	<i>Rulings †</i>	<i>OCC Issuances **</i>	
Brokered Deposits				BC-141	← ←
National Bank Participation in the Financial Futures and Forward Placement Markets				BC-79 Revised	

* 12 USC, unless specifically stated otherwise

† 12 CFR, unless specifically stated otherwise.

** BC — Banking Circular, EC — Examining Circular.

Foreign Exchange Introduction

Section 813.1

This section is intended to provide minimum background and procedural guidelines to examiners responsible for evaluating a bank's foreign currency activities. Within individual banks, foreign currency money market and exchange trading operations may be combined or completely separate with regard to policies, procedures, reporting and even dealing. However, they ultimately must be viewed together to evaluate liquidity and to insure compliance with overall bank objectives and risk management strategy. For the sake of brevity, this section discusses both functions as if they were performed by the same traders, processed by the same bookkeepers and managed by the same officers. Close coordination is required among examiners performing the foreign exchange, due from banks—time, nostro account and funds management functions.

Most importers, exporters, manufacturers and retailers tend to let banks handle their foreign exchange needs. They rely on banks to make and receive their foreign currency payments, to provide them with foreign currency loans, to fund their foreign currency bank accounts and to purchase their excess foreign currency balances. They may ask banks to provide such services for immediate delivery, *i.e.*, at spot (short-term contracts, perhaps up to 10 days), or they might contract to buy or sell a specified amount of foreign currency for delivery at a future date. In either instance, the rates for such services may be established prior to the finalization of the commercial transactions and the related costs may be calculated and often passed on to the buyers.

Risks

In contracting to meet a customer's foreign currency needs, by granting loans, accepting deposits or providing spot or forward exchange, a bank undertakes a risk that exchange rates might change subsequent to the time the contract is made. The bank, therefore, must turn to wholesale markets, principally other banks, to acquire the cover necessary to protect itself against loss on such contracts. The astute banker manages that risk by maintaining constant surveillance over the following:

Net Open Positions A bank has a net position in a foreign currency when its assets, including spot and future contracts to purchase, and its liabilities, including spot and future contracts to sell, in that currency are not equal. An excess of assets over liabilities is called a net "long" position and liabilities in excess of assets, a net "short" position. A long position in a currency which is depreciating will result in an exchange loss relative to book value because, with each day, that position (asset) is convertible into fewer units of local currency. Similarly, a short position in a currency which is appreciating represents an exchange loss relative to book value because, with each day, satisfaction of that position (liability) will cost more units of local currency. (Examples of net open position schedules appropriate for use in preparing the report of examination appear on page 2.)

[Consolidated Foreign Exchange Position Table appears on next page.]

Foreign Exchange Introduction

Section 813.1

Consolidated Foreign Exchange Position May 4, 19XX (amounts in thousands)

Monetary Unit, Overnight Limit and Description	Assets/Purchases		Liabilities/Sales	
	Foreign Amount	U S \$ Equivalent of Local Currency Book Value	Foreign Amount	U S \$ Equivalent of Local Currency Book Value
Deutschmark (\$3,000M)				
Ledger Accounts	563,437	239,461	645,013	274,310
Spot Contracts	23,502	9,802	15,973	6,709
Forward Contracts	790,250	331,905	712,533	296,342
Financial Swaps (a)	239,912	100,097	246,131	104,977
	<u>1,617,101</u>	<u>681,265</u>	<u>1,619,650</u>	<u>682,338</u>
Net Position (short)			2,549	1,073
Canadian Dollars (\$6,000M)				
Ledger Accounts	1,016,076	1,017,525	1,029,835	1,030,057
Spot Contracts	330,021	328,972	216,225	217,246
Forward Contracts	1,202,013	1,203,226	1,301,279	1,302,522
	<u>2,548,110</u>	<u>2,549,723</u>	<u>2,547,339</u>	<u>2,549,825</u>
Net Position (long) (b)	771			102
Swiss Franc (\$250M)				
Ledger Accounts (c)	31,768	11,932	36,052	13,571
Spot Contracts	1,526	593	2,566	969
Forward Contracts	11,174	4,274	6,545	2,521
	<u>44,468</u>	<u>16,799</u>	<u>45,163</u>	<u>17,061</u>
Net Position (short) (d)			695	262

- (a) Includes both forward purchases and sales and corresponding assets and liabilities. Excess liabilities over assets represents hedging of interest receivable.
- (b) Split position caused by failure of bank to properly revalue its nostro accounts on a regular basis. Corrected during the examination.
- (c) Does not include Swiss Franc 1,000M (US\$ 386M) unhedged investment in a Swiss subsidiary and Swiss Franc 573M (US\$ 217M) unhedged investment in branch fixed assets. Unhedged term "long" not approved by senior bank management.
- (d) Net overnight position in excess of established limit. Formally approved as a special situation by management prior to the transaction.

Foreign Exchange Introduction

Section 813.1

Maturity Gaps Exchange risk may exist, by virtue of maturity gaps, even though the bank has no net open position (assets equaling liabilities). Gaps are the result of unmatched forward maturities creating days or longer periods of uneven cash inflows and outflows. For example, a maturity spread of a bank's assets, liabilities and future contracts may reflect a prolonged period over which substantial amounts of a particular currency will be received well in advance of any scheduled offsetting payments (positive gap). The bank must decide whether

- To hold the currency in its nostro accounts
- To invest or place it short-term
- To sell it (spot or forward) for delivery at the time the gap begins and to repurchase it (spot or forward) for delivery at the time the gap ends
- To use any combination of those alternatives

The converse situation, wherein the maturity spread reflects maturing shorter-term liabilities or substantial cash outflows prior to maturities of offsetting assets

(negative gap), obviously involves liquidity implications which do not exist in the positive gap. The bank must meet its obligations at maturity. Therefore, it must have the ability to borrow the currency short-term or be in a position to purchase (spot or forward) for delivery at the time the gap begins and, perhaps sell (spot or forward) for delivery at the time the gap ends. The decision to close either gap when it is created, or leave it open until a later date, is determined by analyzing the money market interest rates as well as the difference (the swap rate) between any applicable spot and forward, or two forward, exchange rates. The loss "exposure," or profit potential, for the bank is measured by the anticipated or actual movement in the swap rate between the time the gap is created and the time it is closed. The interrelationship between interest rates and the swap rate as well as the conversion of the swap rate to an annual percentage rate and vice versa, are discussed in subsequent paragraphs. (Examples of maturity distribution schedules appropriate for use in preparing the report of examination appear below. Note that they balance to the open position schedules on the previous page.)

Maturity Positions
May 4, 19XX
(amounts in thousands)

Maturity	Deutschemark		Swiss Franc		Canadian Dollar	
	Net	Cumulative	Net	Cumulative	Net	Cumulative
May 5	235	235	108	108	588	588
6	- 200	35	- 25	83	-36,591	-36,003
7	-11,639	-11,604	- 722	- 639	-35,295	-71,298
8		-11,604		- 639	25,377	-45,921
9	5,384	- 6,220	20,246	19,607	65,477	19,556
10		- 6,220		19,607		19,556
11		- 6,220		19,607		19,556
12	-41,111	-47,331(a)	2,489	22,096	-65,959	-46,403
13	40,460	- 6,871	- 8,131	13,965	3,332	-43,071
14	15,108	8,237	-28,383(b)	-14,418	13,350	-29,721
15	14,240	22,477		-14,157	- 1,001	-30,722
16	2,260	20,217		-14,157	- 272	-30,994

Foreign Exchange
Introduction

Section 813.1

Maturity Positions (Continued)

Maturity	Deutschemark		Swiss Franc		Canadian Dollar	
	Net	Cumulative	Net	Cumulative	Net	Cumulative
May 17		20,217		- 14,157		- 30,994
18		20,217		- 14,157		- 30,994
19	- 1,824	18,393		- 14,157	2,218	- 28,776
20	- 14,988	3,405	6,003	- 8,154	35,589	6,813
21	37,770	41,175(a)	15,920	7,766	4,190	11,003
22	- 20,361	20,814	7,043	14,809	- 4,930	6,813
23	3,015	23,829		14,809	- 4,767	1,406
24		23,829		14,809		1,406
25		23,829		14,809		1,406
26		23,829		14,809		1,406
27	20,382	44,221	- 24,477	- 9,668	- 34,562	- 33,156
28	- 11,600	32,621	- 222	- 9,890	10,041	- 23,115
29		32,621		- 9,890	3,075	- 20,040
30	- 82,367	- 49,746(a)	- 3,783	- 13,683	- 39,935	- 59,975
31		- 49,746(a)		- 13,683		- 59,975
June	17,653	- 32,093	2,636	- 11,047	37,578	- 22,397
July	9,345	- 22,748	6,141	- 4,906(b)	- 27,599	- 49,996
Aug	- 3,209	- 25,957	8,133	3,227	9,216	- 40,780
Sept	22,504	- 3,453	4,779	8,006	- 32,125	- 72,905
Oct	966	- 2,487	- 6,799	1,207	70,205	- 2,700
Nov	- 3,042	- 5,529	5,640	6,847	- 6,543	- 9,243
Dec	13,266	7,737		6,847	- 8,531	- 17,774
19X1	- 11,944	- 4,207	- 7,542	- 695	21,582	3,808
19X2	800	- 3,407			- 941	2,894
19X3	858	- 2,549			750	3,644
19X4					- 2,617	1,027
After					- 256	771
Summary	Continuous cumulative negative gap from 5/30/XX to 9/30/XX, ascending to a high negative figure of DM 72.71MM on 6/9/XX (a)		Continuous cumulative negative gap from 5/27/XX to 8/13/XX, ascending to a high negative figure of SF27.7MM on 7/14/XX. (b)		Continuous cumulative negative gap from 5/27/XX to 11/17/XX, ascending to a high negative figure of C\$77.6MM on 10/1/XX.	

(a) Cumulative maturity gap in excess of the DM 40,000M established limit. Corrected May 7, 19XX.

(b) Net daily maturity gap in excess of the SF 25,000M established limit. Special situation approved by senior division management.

Although controlled and monitored by senior management, day-to-day supervision of net positions and maturity gaps is usually the responsibility of the foreign exchange and money market traders and, per-

haps, a line supervisor. However, regardless of the care with which those functions are managed, factors beyond the direct control of bank officers affect liquidity and exposure to interest and exchange rate

Foreign Exchange

Introduction

Section 813.1

movement. Proper evaluation of such factors requires close coordination and effective communication among the trading, lending, correspondent relations and economic research functions within the bank. Some such exposure factors may be identified as follows:

Customer Creditworthiness and Delivery Capabilities. In entering into any money market or foreign exchange transaction, the bank must be confident that the counterparty possesses the financial soundness and liquidity required to meet his or her obligations at maturity.

Money market assets expose the bank to credit risk on the entire amount of their face value. The liquidity considerations arising from the unanticipated non-repayment of those assets, particularly when proceeds are intended to meet maturing liabilities presumably in the same currency, should be obvious. The bank must satisfy its liability and again fund the asset, perhaps for an undetermined period and at a relatively unfavorable rate.

Foreign exchange transactions may involve the same liquidity and rate risks as money market transactions. However, the inherent credit risks are measured differently. Foreign exchange transactions are normally considered to be void of, or contain less than face value, credit risk except on the day(s) on which they are settled. For example, every foreign exchange transaction involves the exchange of one currency for another. If a counterparty is unable to deliver at maturity, the currency which it has contracted to sell, the bank must either dispose of the currency it acquired for delivery under the contract, or purchase the currency which it had expected to receive and had, in turn, contracted to deliver to a third party. If the bank had known in advance that the counterparty would default, its exchange risk exposure would have been determined by the difference between the contracted rates and the rates (spot or forward) at which funds could be obtained between the time it received prior warning and the maturity of the contract. Some bankers would attribute the rate difference to credit risk, although others would maintain that no credit risk existed prior to settlement date because there would be no need for funds to be paid or exchanged. However, of importance is the fact that the bank in that instance would not lose the full amount of the con-

tract. If the bank had not received prior warning, the liquidity considerations could obviously be more severe. Also, the bank's exposure, depending on whether it had or had not transferred its payment prior to knowledge of default, would range from an exchange profit, less nostro overdraft charges relating to the sale contract to the third party, to a credit loss equal to the face amount of the defaulted contract. In that regard, credit (delivery) risk is considered to be more severe when the home country of one, or both, of the currencies being traded lies to the east of the bank. For example, (assume the bank is selling a European currency for U.S. dollars) most European clearing mechanisms would not accept items for processing on the same day if they were received after 12 noon. Thus, to meet European clearing requirements on settlement (maturity) date, a United States bank must advise its European correspondent by cable on the previous business day to charge its account and credit the account of the counterparty. This is done without the United States bank's knowledge of whether the counterparty will advise (or be open for business to advise) its U.S. correspondent to make a similar transfer, e.g., to charge its account and credit that of the United States bank. If, in fact, the foreign bank does not advise its U.S. correspondent to make the transfer, the United States bank could lose the entire face amount of the contract. In summary, the credit risk is generally limited to the difference between the contracted rate and the prevailing spot rate except on maturity date when the possibility of delivery against non-receipt of counterpart funds could result in a loss of the full face value of the contract.

Economic and Political Considerations. Political changes and/or adverse economic trends within a country are likely to be accompanied by shifts in policies which often affect such factors as interest rates, investment levels, capital flows, overall payments balances and foreign exchange reserves. Such policies, whether based on economic necessity or changing attitudes, might affect the availability of exchange to counterparties or the bank's branches within the country or even the convertibility of that country's currency in other markets. In either case, the exchange rates for that currency will be subject to significant fluctuations.

Foreign Exchange Introduction

Section 813.1

and supply considerations while sources of cover or liquidity in that currency may vanish

Policy

The relative importance of each of those risk determinants varies with each currency traded and with the country of each counterparty. Senior bank management must fully understand the risks involved in foreign exchange and money market operations and must establish, in writing, its goals and policies regarding those risks. Management must be able to defend logically the basis upon which such policies are formed. It is imperative that responsible officers, traders, clerks and auditors understand, without exception, the intent as well as the detail set forth in those directives.

At a minimum, policies should define dealing limits and reporting requirements as well as accounting, adequate audit and control systems to provide proper surveillance over those limits and exceptions thereto.

Limits must be established for overnight net positions in each currency. Depending on the size of the limits and the manner in which they are calculated, a smaller aggregate position limit for all currencies may be desirable. An aggregate limit should not permit the netting of short against long positions but should require that they be added to determine conformance to that limit. Many U.S. banks presently are considering daylight (intraday) position limits which are practical only if efficient computerization and input systems are in effect to incorporate each trade into the appropriate currency position at nearly the precise moment it is transacted. A common argument against intraday limits is that traders will only take those daylight positions they can cover by the end of the day. The solution to that argument might well lie in the frequency with which overnight position limits are exceeded and the reason for each excess.

Gap (net inflow and outflow) limits must be instituted to control the risk of adverse rate movement and liquidity pressures for each currency per each daily, weekly or bi-weekly future time frame designated in the bank's maturity reports. Such limits might range from stated absolute amounts per time frame to weighted limits which emphasize increasing rate movement exposure applica-

ble to the relative distance into the future in which the gap appears.

Aggregate trading and placement limits must be established for each customer, based primarily on the amount of business considered to be appropriate to its creditworthiness and secondly on the volume of its foreign currency needs. In addition, absolute sub-limits should be placed upon the amount of that customer's business which may be settled on one day. Should the customer be unable to meet obligations on one day, the trader will

- Be forewarned against delivery prior to receipt of customer funds on the remaining contracts outstanding, and

Have an opportunity to determine whether alternate cover must be obtained to meet third party transactions which may initially have provided cover for remaining transactions with that customer.

Some argue that it is difficult to monitor aggregate volume limits effectively and nearly impossible to insure compliance with settlement limits for a large number of customers. Nevertheless, there is no excuse for the absence of an effective settlement limit program for at least those relationships which possess a greater potential for late delivery or default. In such instances, the bank should require counterparty transfer advices by cable rather than by mail.

Reports Properly designed reports are the most important supervisory tool available to management. They must be prepared in a concise, uniform and accurate manner and submitted punctually.

Management should receive daily net position reports for each applicable currency. Normally position reports should include all foreign currency balance sheet items and future contracts as well as after-hour and holdover transactions, with the exception of fixed assets and equity investments. The hedging of those investments is usually a management decision outside the responsibility of the traders. The reports prepared by the foreign exchange and money market bookkeeping section and reported to the

trader's blotter. In the event that formal position reports cannot be submitted at the end of the applicable business day, management must at least be apprised of the trader's estimated position at the end of each day, particularly, before weekends and holidays.

Gap or maturity reports are essential to the proper management of a bank's liquidity in each foreign currency and significant gaps may affect overall liquidity. Those reports should reflect daily gaps for at least the first 2 weeks to 1 month. Beyond that time, gap periods of a maximum of 2 weeks each are preferred. Gap reports, inherently, are accurate only for the day on which they are prepared. Therefore, it is essential that banks have the capability to produce detailed computerized reports daily. A variety of computerized management summaries can then be generated with ease. Loans, deposits and future contracts as well as commitments to take or place deposits should be reflected in the periods in which they are scheduled for rollover or interest adjustment. In most instances, an additional report reflecting those items at final maturity is desirable in analyzing the bank's medium- and longer-term dependence on money market funding sources.

Exception reports must be generated immediately upon the creation of excesses, to position limits, gap limits and customer trading and settlement limits. Excesses over any established limits should conform to overall policy guidelines and should receive prior approval by the responsible supervisory officers. If prior approval is not possible, evidence of subsequent supervisor concurrence or disagreement as well as any corrective action should be available for audit review and management records.

Revaluation and Accounting Systems. Such systems should accurately determine actual as well as estimated future profits and losses and present them in such a manner as to facilitate proper income analysis by management, bank supervisory personnel and the public. One system widely used by banks is illustrated in the next column. This system is capable of presenting separately, each of the following:

- Actual realized profit or loss as determined by applying current spot rates to balance sheet accounts as well as contracts of very near maturities. Adjustments to the local currency book values would either be allocated and posted to each of the applicable local currency ledger accounts or, for short interim periods, be charged to a separate "foreign exchange adjustment" account with an offset to P&L.
- Unrealized (estimated future) profit or loss on future transactions as determined by applying the appropriate forward rates to the net positions reflected for each future period appearing in the bank's gap or maturity reports. An "estimated profit (loss) on foreign exchange—futures" account would be charged for the amount of the adjustment with an offset to P&L. Provided that the amount of that adjustment is the difference between the existing forward rates and the actual contract rates, each month's entries merely involve reversing the adjustment from the prior revaluation and submitting the new figures.

The previous discussion may be more clearly understood when read in conjunction with the typical bank revaluation worksheet on the following page. The illustration reflects a revaluation of the Deutschmark position on page 2.

- As discussed in subsequent paragraphs entitled *Financial Swaps* and *Arbitrage*, simultaneously contracted spot purchase and future sale transactions performed to acquire foreign currency funds for temporary loan or investment purposes should be segregated from regular trading activities when determining revaluation profits or losses. Those "swap" profits (discounts) or costs (premiums), as determined by the difference in local currency value between the two contracted rates, are fixed. They are locked-in at the time the forward side of the swap is completed. They should be amortized or accreted over the life of the swap and must be properly allocated to reflect the true yield on the particular investment for which the swap was entered and the real income from loans and securities.

Foreign Exchange
Introduction

Section 813.1

Revaluation Worksheet
May 4, 19XX
(amounts in thousands)

Deutschemark	Assets	Liabilities	Net Position	Rate	Market Value	Book Value	Profit or Loss
Ledger Accounts	563,437	645,013	-81,576	.39155	-31,941	-34,849	+2,908
Spot Contracts	23,502	15,973	+7,529	.39155	+2,948	+3,093	-145
Forward Contracts							
Dec. 21 to Jan. 20	0	56,926	-56,926	.39230	-22,332	-21,986	-346
Jan. 21 to Feb. 20	100,415	111,420	-11,005	.39335	-4,328	-4,328	0
Feb. 21 to Mar. 20	56,246	49,457	+6,789	.38795	+2,635	+2,578	+57
Mar. 21 to Apr. 20	0	0	0		0	0	0
Apr. 21 to May 20	203,717	200,315	+3,402	.38810	+1,320	-177	+1,497
May 21 to Jun. 20	0	0	0		0	0	0
Jun. 21 to Jul. 20	98,426	0	+98,426	.38825	+37,648	+37,117	+531
Jul. 21 to Aug. 20	301,226	295,556	+5,670	.38830	+2,202	+2,475	-273
Aug. 21 to Sep. 20	37,427	39,256	-1,829	.39350	-718	+2,547	-3,265
Sep. 21 to Oct. 20	0	0	0		0	0	0
Oct. 21 to Nov. 20	222,705	185,716	+36,989	.38875	+14,379	+16,413	-2,034
Nov. 21 to Dec. 20	0	0	0		0	0	0
Dec. 21 and over	10,000	20,018	-10,018	.39420	-3,949	-3,956	+7
Total	1,617,101	1,619,650	-2,549		-2,136	-1,073	-1,063

(a) Allocated to appropriate balance sheet accounts with offset to P&L.

(b) Allocated as credit to unrealized loss account and debit to P&L.

The Financial Accounting Standards Board's (FASB) Statement of Financial Accounting Standards No. 8 prescribes a different approach to portfolio valuation than that previously described. The principles and procedures set forth in that statement are outlined as follows:

- Balance sheet accounts denominated in foreign currencies should be translated and revalued using the following rates:

Foreign currency on hand	Spot
Due from banks (nostro accounts)	Spot
Investments in debt instruments	Spot
Equity Investments:	
Carried at cost	

Foreign Exchange Introduction

Section 813.1

- | | |
|---|------------|
| Carried at current market price | Spot |
| Loans and accrued interest receivable | Spot |
| Bank premises and equipment | Historical |
| Deposits, borrowings and accrued interest payable | Spot |
- Forward exchange contracts could be revalued using the following rates:
 - Contracts that are part of a financial swap transaction or otherwise used to hedge balance sheet accounts, such as loans or deposits Spot
 - Contracts that are not categorized above Appropriate forward rate
 - Gains and losses, whether realized or unrealized, resulting from revaluations of foreign currency transactions should be recorded as income or expense. However, discounts and premiums on forward exchange contracts that are part of financial swap transactions should be amortized (accreted) to income over the life of the swap and should be considered as an adjustment of the interest factor.

In analyzing both methods, at least one significant difference is apparent. The FASB method requires that financial swap related assets, liabilities and future contracts be revalued at spot rates so that those assets and liabilities may be reflected in the balance sheet at their current market values. As a result, the local currency carrying values of those assets and liabilities would be adjusted, at each revaluation, to values which would normally differ from their already contracted liquidation values.

Analysis of the revaluation workpapers generated by either method should permit the same convenient approaches to evaluation of earnings and identification of accruing losses in the forward book as are described in step 17 of the examination procedures in this section. It is conceivable, however, that this convenience could be lost in a fully computerized revaluation system using the FASB method.

Departmental Organization and Control. It is imperative that there be a distinct separation of duties and responsibilities between the trading and the accounting and confirmation functions within the department. The many opportunities for greater bank profit or personal financial gain, whether by speculating beyond loosely controlled limits, concealing contracts because of poor confirmation procedures or by simple fraud, may be too tempting even to the most trusted employees. Periodic audits and examinations are no substitute for sound continuing safeguards and the numerous guidelines in the Internal Control Questionnaire in this section cannot be overemphasized.

Supervision of Branches and Subsidiaries. Whether a bank maintains central control over all foreign exchange and money market activities at the head office or elects to decentralize that control, the policies, systems, internal controls and reporting procedures should not differ among separate offices within the bank.

In either case, the bank should be apprised of its world-wide positions by daily summary reports. Detailed net position and maturity gap reports should be received periodically in order to prepare consolidations, as required, and to monitor individual unit trading volume and funding methods. Information provided in the Treasury Department monthly foreign currency reports is adequate for the preparation of reports of examination and can be adapted easily to reporting for currencies other than those specified in the reporting instructions.

Federal Financial Institutions Examination Council Uniform Guideline. The OCC adopted the "Uniform Guideline on Internal Control for Foreign Exchange in Commercial Banks" on June 11, 1980. This guideline establishes minimum standards for documentation, accounting and auditing for foreign exchange operations of banks supervised by the OCC, the Federal Deposit Insurance Corporation and the Federal Reserve System. The minimum standards adopted either have been incorporated into the Foreign Exchange Internal Control Questionnaire (Section 813.4) or are already included in the Handbook sections on Internal Control, Internal and External Audits and Working Papers.

Foreign Exchange Introduction

Section 813.1

The Market

Banks may fund their foreign currency activities through either money market transactions or foreign exchange transactions, or both. Money market instruments exist in a variety of forms and under a number of different names. However, each of them can be categorized as a type of deposit, loan, or borrowing and are all specifically covered in other sections of this handbook. Therefore, only market considerations most applicable to foreign exchange are discussed here.

Spot Exchange. Although the spot market typically refers to the purchase or sale of foreign exchange for delivery in 2 business days, many U.S. banks consider transactions maturing in as many as 10 business days as spot exchange. The latter definition is used generally to facilitate revaluation accounting policies and to initiate final confirmation and settlement verification procedures on future contracts nearing maturity.

The spot rate for any particular currency might be determined strictly by the bid and offered rates at which the central bank of that country will officially trade. It might be pegged to another currency or group of currencies or allowed to float freely in accordance with supply and demand. However, the rate may change at any time based on many overriding economic, political or market factors.

Forward Exchange. Future exchange contracts are typically made for delivery in 1, 2, 3 and 6 months, *i.e.*, actual deliveries are made in exactly the stated number of months from the normal spot date. In most major currencies, however, contracts can be made for "odd dates" or in the exact number of days desired by the counterparty. "Odd date" rates can generally be determined by interpolation between spot and forward rates or between two forward rates.

Forward exchange rates usually are quoted in terms of their premium or discount over spot. Though they move with fluctuations in the spot rate, the amount of the premium or discount (the swap rate) is determined by the net accessible interest rate differential existing between the two countries, *e.g.*, the difference in interest rate levels further adjusted for reserve requirements and other cost factors. The currency of the country in which interest rates are higher will sell at a for-

ward discount relative to the currency of the lower interest rate and vice versa. For example, if the net accessible interest rate in a country were higher by 3 percent per annum than that in the United States and the spot rate for that currency was U.S. \$2.4000, then the forward discount normally would be \$.0720 per year ($2.4000 \times .03$), or \$0060 per month. Should the forward discount move from that 60 points per month, there will immediately be an opportunity for arbitrage through a financial swap.

Financial Swaps. A financial swap is the combination of a spot purchase or sale against a forward sale or purchase of one currency in exchange for another. It is merely trading one currency (lending) for another currency (borrowing) for that period of time between which the spot exchange is made and the forward contract matures. The swap is the simple identification of one transaction contracted at the spot rate with another contracted at the forward rate to establish the exchange cost or profit related to the temporary movement of funds into another currency and back again. That exchange (swap) profit or cost must then be applied to the rate of interest earned on the loan or investment for which the exchange was used. For example, the true yield of an investment for 90 days in United Kingdom Treasury bills cannot be determined without having considered the cost or profit resulting from the swap needed to make pounds sterling available for that investment. By the same token, the true trading profits or losses generated by the trader cannot be determined if financial swap profits and expenses are charged to the exchange function rather than being allocated to the department whose loans or investments the swap actually funded.

Arbitrage. As it pertains to money markets and foreign exchange, arbitrage may take several forms. The creation of an open position in a currency in anticipation of a favorable future movement in the exchange rate, in addition to being speculative, is sometimes referred to as arbitrage in time. Buying a currency in one market and simultaneously selling it for a profit in another market is called arbitrage in space. Slightly more complicated is the practice of interest arbitrage which involves the movement of funds from one

currency to another so they may be invested at a higher yield. The real yield advantage in such a situation is not determined merely by the difference in interest rates between the two investment choices, but rather, by subtracting the cost of transferring funds into the desired currency and back again (the swap cost) from the interest differential. For example, in the situation described under *Forward Exchange*, there is no arbitrage incentive involved in "swapping" from dollars into the other currency at a 60 point per month discount (swap cost) which exactly offsets the 3 percent gain in interest. However, should the swap rate move to 40 points per month (or 480 points per year), the investment might become attractive. This can easily be tested by converting the swap rate to an annual percentage rate

$$\frac{\text{Discount or Premium} \times 360 \times 100}{\text{Spot rate} \times \text{No. of days of future contract}} = \% \text{ P.A.}$$

$$\frac{.0040 \times 360 \times 100}{24000 \times 30} = 2\% \text{ P.A.}$$

which results in a true yield incentive of 1 percent, 3 percent less the swap cost of 2 percent.

As discussed earlier, unless the bank's accounting system can identify swap costs or profits and allocate them to the investments for which they were entered, both the earnings on those investments and the earnings upon which the trader's performance are measured will be misstated.

Options. Option contracts permit a bank to contract to buy from or sell to a customer when that customer can only generally predict the dates between which he or she must trade. The option

contract specifies both dates, and the rate cited is that which in the judgment of the trader at the time of making the contract contains the least exposure for the bank. That type of contract is commonly requested by commercial customers wishing to cover drafts drawn under letters of credit denominated in foreign currency. Such contracts are always risky since there is no way for the bank to acquire a precisely matching cover.

Compensated Contracts There are occasions when both parties are agreeable to altering the terms of an existing contract. Such alterations should be approved by an impartial bank officer and the operations personnel must be advised of each compromise to avoid settlement in accordance with the original instructions and terms.

Foreign exchange and money markets do not merely exist, but must be created by parties who are willing to engage in commercial and financial transactions proposed to them by others. If a bank wishes to solicit such business, it must be prepared to quote bid and offered rates of exchange or interest for a given time period. The party requesting the rates has the option to buy or sell, deposit or borrow, at the stated rates or decline to deal. If the quoting bank prefers only to service its commercial customer's needs and otherwise remain relatively inactive, it will have to acquire cover for those transactions at another party's bid and offered rates compared to an active bank that has the advantage of dealing more frequently at its own rates. In addition, active market participation may enhance a bank's ability to borrow. It is important that those factors be considered in evaluating a bank's trading volume and liquidity.

**Foreign Exchange
Examination Objectives**

Section 813.2

- 1 To determine if the policies, practices, procedures and internal controls regarding foreign exchange activities are adequate
- 2 To determine if bank officers, traders and clerks are operating within the established guidelines
- 3 To determine the extent of risk attributable to net open positions, maturity gaps and counterparty credit weaknesses
- 4 To determine the scope and adequacy of the audit function
- 5 To determine compliance with laws, regulations and rulings
- 6 To initiate corrective action when policies, practices, procedures or internal controls are deficient or when violations of laws, regulations or rulings have been noted

Foreign Exchange Examination Procedures

Section 813.3

1. Complete or update the Foreign Exchange section of the Internal Control Questionnaire.
2. Based upon the evaluation of internal controls and the work performed by internal and external auditors (see separate program), ascertain the scope of examination.
3. Test for compliance with policies, practices, procedures and internal controls in conjunction with the remaining examination procedures. Also obtain a listing of any deficiencies noted in the latest review done by internal/external auditors from the examiner assigned "Internal and External Audits," and determine if appropriate corrections have been made.
4. Perform appropriate verification procedures.
5. Obtain a trial balance, including local currency book values, of customer spot and future contract liabilities by customer and by maturity, and:
 - a. Agree or reconcile balances to appropriate subsidiary controls and to the general ledger.
 - b. Review reconciling items for reasonableness.
6. Using the appropriate sampling technique, select customers for examination. If verification procedures have been performed, use the same sample. (Refer to step 20 before performing steps 7 through 19).
7. Prepare credit line sheets to include details below:
 - a. Customer's aggregate foreign exchange liability in local currency equivalents.
 - b. Customer's assigned trading volume limit.
 - c. Transcribe book value equivalents of individual contracts (from the trial balance obtained at step 5) in maturity order, indicating the foreign currency amount of each. If contracts are voluminous, summarize transcription to include:
 - The average book value per contract.
 - The combined book value amount, purchases plus sales, and date of the largest single day's settlement.
 - The longest outstanding maturity
 - The total of all future contracts in each foreign currency
 - d. Customer's assigned daily settlement limit.
 - e. Frequency of recent overdrafts in current account and, if possible, whatever reasonable identification can be made to late delivery of prior foreign exchange contract maturities.
 - f. Past compliance with trading volume and settlement limits as determined from review of liability ledger record.
8. Identify those contracts with counterparties who are affiliates of or otherwise related to the bank, its directors, officers, employees or major shareholders and:
 - a. Compare the contracted rates with available rates for the same transaction date or with other contracts entered as of the same transaction date for the same tenor.
 - b. Investigate any instances involving off-market rates.
9. Obtain from the examiner assigned "International Loan Portfolio Management," the schedules on the following if they are applicable to the foreign exchange area:
 - a. Delinquencies.
 - b. Shared national credits.
 - c. Interagency Country Exposure Review Committee credits.
 - d. Previously criticized loans (internally or by examiners).
 - e. Information on directors, executive officers, principal shareholders and their interests.
 - f. Any useful information resulting from the review of the minutes of the foreign exchange and money market committee or any similar committee.
 - g. Reports furnished to the foreign exchange and money management committee or any similar committee.
 - h. Reports furnished to the board of directors.
 - i. A list of affiliated companies.
10. Transcribe or compare information from the above schedules to credit line sheets, where appropriate.

Foreign Exchange Examination Procedures

Section 813.3

- 11 Prepare credit line sheets for any foreign exchange customer not in the sample which, based on information derived from the above, requires in-depth review.
- 12 Obtain liability and other information on common borrowers from examiners assigned to cash items, overdrafts and loan areas and together decide who will review the customer relationships. Pass or retain completed credit line sheets
- 13 Analyze each customer relationship considering the guidelines set forth in the international sections, as they pertain to:
 - a. Commercial loans for private and commercial counterparties.
 - b. Due from foreign banks—time for banking and financial counterparties.
(Generally, a customer's obligation to the bank under foreign exchange contracts would not be classified. However, if a customer's financial condition is so severe, *i.e.*, doubtful or loss, that its ability to meet its foreign exchange commitments is questionable, the combined book value of contracts, purchases plus sales, representing the largest single day's settlement should be appropriately criticized or classified.)
- 14 Review the most readily available record and/or source of spot exchange rate movement *vis-a-vis* the local currency to determine which currencies, if any, have experienced a substantial degree of appreciation or depreciation over the recent past. (Give particular attention, in step 13, to the creditworthiness of those counterparties who have contracted either to deliver appreciating currencies to, or purchase depreciating currencies from, the bank. In the event of non-performance by a counterparty which has agreed to (a) deliver an appreciating currency, the bank's cost to cover any offsetting sales contracts might be substantial, or (b) purchase a depreciating currency, the bank might be forced to sell the currency it had acquired, for delivery, at a substantial loss. As one source for identifying such currencies, each monthly Federal Reserve Bulletin provides a history of annual and monthly averages of certified noon buying rates in New York for cable transfers.)
- 15 Obtain or prepare the following data (separately for each foreign currency involved, and to include book value equivalents), as of the examination date, to be used in performing subsequent examination steps.
 - a. A list of subsidiary control ledger totals for all balance sheet and memoranda general ledger accounts by account number and/or title.
 - b. A trial balance of all balance sheet asset and liability items by maturity
 - c. A trial balance of all spot and future exchange contracts by maturity
 - d. Copies of the trader's daily position sheets and/or reports.
 - e. Copies of the accounting department's daily position sheets and/or reports and reconciliations to the traders positions.
 - f. If not included in copies obtained under d and e, a detailed listing of all holdover and after-hours transactions
 - g. If not available as of examination date, copies of the accounting department's last maturity gap reports. (After analysis has been performed, pass maturity gap reports, to include appropriate local currency equivalents, to the "Funds Management" examiner.)
 - h. If not prepared as of examination date, copies of the last revaluation worksheets
 - i. All limit exception reports
16. Prepare examination report net position and maturity schedules and
(Commitments to take or place foreign currency deposits must be included in the maturity schedules in order that all anticipated cash inflows and outflows are properly reflected. However, those items should not be included in the net position schedules other than in footnote form.)
 - a. Compare results to bank prepared net position and maturity gap reports, if available for the same date.
 - Footnote any material differences

Foreign Exchange Examination Procedures

Section 813.3

- Explain any deficiencies.
 - b. Compare results to established limits and review exception approvals thereto.
17. Check the most recent revaluation workpapers and resultant accounting entries to determine that:
- a. Foreign currency amounts and book values were properly reconciled to subsidiary ledger controls.
 - b. Rates used are representative of market rates as of revaluation date and,
 - If obtained from the traders, that they have been verified with independent sources. (Daily, 10:00 AM, mid-point, spot and future, New York interbank market rates for commonly traded currencies are available as needed at each regional office or the International Banking Activity Examinations, Washington, D.C.)
 - c. Arithmetic is correct.
 - d. Profit and loss results are separately recorded and reported to management for:
 - Realized profit or loss, *i.e.*, that which is determined through the application of spot rates.
 - Unrealized (estimated future) profit and loss, *i.e.*, that which is determined through the application of forward rates.
 - e. Financial swap related assets, liabilities and future contracts are excluded from the normal revaluation process so that the results identified in d, reflect more accurately the trader's outright dealing performance.
 - f. Financial swap related costs and profits are:
 - Amortized over the life of the applicable swap.
 - Appropriately accounted for as interest income and expense on loans, securities, etc.
18. Review working papers for selected revaluations performed since last examination and test check as in step 17 above and, if satisfied that they are accurate:
- a. Analyze combined realized earnings to determine that profits are commensurate with risks taken.
 - b. Analyze monthly unrealized revaluation results (forecasts) to determine that
 - The resulting amount for the last revaluation, if a loss, is not large.
 - An increasing loss trend over previous revaluations does not exist. (Although month-to-month variations are not uncommon, an increasing unrealized loss trend could indicate that a trader is caught in a loss position and is pursuing a notion that a negative trend in the exchange rate for that currency will reverse and, if combined with an ever multiplying increase in his or her volume, might eventually repay his or her accumulated losses.)
19. Review the confirmation discrepancy log and observe the confirmation process to determine:
- a. That incoming confirmations are delivered directly to the confirmation clerk and that:
 - Discrepancies are recorded.
 - Discrepancies are reported to an appropriate officer and are resolved promptly.
 - b. That outgoing confirmations are processed in compliance with policies governing:
 - Initial procedures.
 - Follow-up procedures.
 - The level of involvement by internal auditors in follow-up procedures.
 - c. If the confirmation discrepancy log discloses counterparties which:
 - Are often or consistently slow in confirming.
 - Often or consistently make errors in confirmation preparation.
20. Determine compliance with laws, regulations and rulings pertaining to foreign exchange activities by performing the following for:
- a. *12 CFR 20.5 — Monthly Consolidated Foreign Currency Report of Banks and Federal Branches — Form FFIEC 035:*
 - Review for accuracy the most recently prepared monthly report.
 - Select random bank prepared net position reports and determine whether they are being filed as required and are accurate.

**Foreign Exchange
Examination Procedures**

Section 813.3

(Be alert to instances in which net positions are generally large but reduced as of the month-end reporting dates.)

21. Discuss with appropriate officer(s) and prepare appropriate report summaries of:

- a. Net position schedules.
- b. Maturity gap schedules.
- c. Frequent or sizeable excesses over any established limits.
- d. Any limits deemed excessive relative to:
 - Management's policy goals regarding the nature and volume of business intended.
 - The bank's capital structure.
 - The creditworthiness of trading counterparties.
 - Individual currencies which are subject to or are experiencing relatively sporadic rate changes.
 - Individual currencies for which limited spot and future markets exist.
 - Experience of traders.

• The bank's foreign exchange earnings record.

- e. The absence of any limits deemed appropriate in present and foreseeable circumstances.
 - f. Customers whose obligations are otherwise previously classified or intended to be criticized.
 - g. Foreign exchange contracts which, for any other reason are questionable in quality or ultimate settlement.
 - h. Violations of laws, regulations or rulings.
 - i. Deficiencies in internal controls.
 - j. Other matters regarding efficiency and general condition of the foreign exchange department.
22. Prepare a memorandum and update the work program with any information which will facilitate future examinations.

Foreign Exchange Internal Control Questionnaire

Section 813.4

Review the bank's internal controls, policies, practices and procedures regarding foreign exchange trading. The bank's systems should be documented in a complete and concise manner and include, where appropriate, narrative descriptions, flowcharts, copies of forms used and other pertinent information. Items marked with asterisks require substantiation by observation or testing.

Policies

1. Has the board of directors, consistent with its responsibilities, adopted written policies governing:
 - a. Trading limits, including:
 - Overall trading volume?
 - Overnight net position limits per currency?
 - Intra-day net position limits per currency?
 - Aggregate net position limit for all currencies combined?
 - Maturity gap limits per currency?
 - Individual customer aggregate trading limits, including spot transactions?
 - Written approval of excesses to above limits?
 - b. Segregation of duties among traders, bookkeepers and confirmation personnel?
 - c. Accounting and revaluation procedures?
 - d. Management reporting requirements?
2. Do policies attempt to minimize:
 - a. Undue pressure on traders to meet specific budgeted earnings goals?
 - b. Undue pressure on traders, by account officers, to provide preferred rates to certain customers?
- *3. Are traders prohibited from dealing with customers for whom trading lines have not been established?
4. Are all personnel, except perhaps the head trader, prohibited from effecting transactions via off-premises communication facilities?
5. Is approval by a non-trading officer required for all compensated transactions?
6. Do credit approval procedures exist for settlement (delivery) risk either in the form of settlement limits or other specific management controls?
 7. Does a policy procedure exist to insure that, in the event of an uncertain or emergency situation, the bank's delivery will not be made prior to receipt of counterpart funds?
 8. Do the above policies apply to all branch offices as well as majority-owned or controlled subsidiaries of the bank?
 9. Does the bank have written policies covering:
 - a. Foreign exchange transactions with its own employees?
 - b. Foreign exchange transactions with members of its board of directors?
 - c. Its traders' personal foreign exchange activities?
 - d. Its employees' personal business relationships with foreign exchange and money brokers with whom the bank trades?
 - *10. Are the above policies understood and uniformly interpreted by all traders as well as accounting and auditing personnel?

Trading Function

11. Is a trader's position sheet maintained for each currency traded?
- *12. Is a trader's position report received by management at the end of each trading day?
- *13. Does the trader's position report reflect the same day's holdover and after-hours transactions?
14. Are trader's dealing tickets prenumbered?
 - a. If so, are records and controls adequate to ascertain their proper sequential and authorized use?
 - *b. Regardless of whether or not prenumbered,
 - Are dealing tickets time date stamped, as completed, or
 - Are dealing tickets otherwise identified with the number of the resultant contract to provide a proper audit trail?

Accounting and Reporting

- *15. Is there a definite segregation of duties, responsibility and authority between the trading

Foreign Exchange Internal Control Questionnaire

Section 813.4

- room and the accounting and reporting functions within the division and/or branch.
16. Are contract forms prenumbered (if so, are records and controls adequate to insure their proper sequential and authorized use)?
17. Are contracts signed by personnel other than the traders?
- *18. Are after-hours or holdover contracts posted as of the dates contracted?
- *19. Do accounting personnel prepare a daily position report, for each applicable currency, from the bank's general ledger and:
- Do reports include all accounts denominated in foreign currency?
 - Are those reports reconciled daily to the trader's position reports?
 - Are identified or unreconciled differences reported immediately to management and to the head trader?
 - Are all counterparty non-deliveries on expected settlements reported immediately to management and to the head trader?
- *20. Are maturity gap reports prepared for liquidity and foreign exchange managers at least bi-weekly to include:
- Loans and deposits reflected in the appropriate forward maturity periods along with foreign exchange contracts?
 - Loans, deposits and foreign exchange contracts (specify whether reflected in the maturity periods in which they fall due or in which they are scheduled for rollover _____)?
 - Commitments to accept or place deposits reflected in the appropriate maturity periods by both value and maturity dates?
 - All those items (specify whether as of the day on which they mature or bi-weekly or monthly maturity periods _____)?
 - All those items as of the day on which they mature, if necessary, *i.e.*, in the event of a severe liquidity situation?
- *21. Does the accounting system render excesses of all limits identified at step 1 immediately to appropriate management and is officer approval required?
- *22. Are local currency equivalent subsidiary records for foreign exchange contracts balanced daily to the appropriate general ledger account(s)?
- *23. Are foreign exchange record copy and customer liability ledger trial balances prepared and reconciled monthly to subsidiary control accounts by employees who do not process or record foreign exchange transactions?
24. Do the accounting and filing systems provide for easy identification of "financial swap" related assets, liabilities and future contracts by stamping contracts or maintaining a control register?

Confirmations

25. Is there a designated "confirmation clerk" within the accounting section of the division or branch?

*a. Incoming Confirmations:

- Are incoming confirmations delivered directly to the confirmation clerk and not to trading personnel?
- Are signatures on incoming confirmations verified with signature cards for:
 - Authenticity?
 - Compliance with advised signatory authorizations of the counterparty?
- Are all data on each incoming confirmation verified with file copies of contracts to include:
 - Name?
 - Currency denomination and amount?
 - Rate?
 - Transaction date?
 - Preparation date if different from transaction date? ↗
 - Maturity date?
 - Delivery instructions, if applicable?
- Are discrepancies directed to an officer apart from the trading function for resolution?
- Is a confirmation discrepancy log or a record maintained to reflect the identity and disposition of each discrepancy? ↗

Foreign Exchange Internal Control Questionnaire

Section 813.4

-
- Are telex tapes retained for at least 90 days as ready reference to rates and delivery instructions?
- *b. **Outgoing Confirmations:**
- Are outgoing confirmations mailed/telexed on the day during which each trade is effected?
 - Are outgoing confirmations addressed to the attention of persons other than trading personnel at counterparty locations?
 - Does the accounting and/or filing system adequately segregate and/or identify booked contracts for which no incoming confirmations have been received?
 - Are follow-up confirmations sent by the confirmation clerk if no corresponding, incoming confirmation is received within a limited number of days after the contract is effected (if so, specify _____)?
 - Is involvement by the auditing department required if no confirmation is received within a limited number of days after the transmittal of the second request referred to above (if so, specify _____)?
 - Are confirmation forms sent in duplicate to customers who do not normally confirm?
 - Are return copies required to be signed?
- Revaluations**
- *26. Are revaluations of foreign currency accounts performed at least monthly?
- a. Does the revaluation system provide for segregation of and separate accounting for:
 - Realized profits and losses, *i.e.*, those which are determined through the application of spot rates?
 - Unrealized profits and losses, *i.e.*, those which are determined through the application of forward rates?
 - b. Are financial swap related assets, liabilities and future contracts excluded from the revaluation process so that the results identified in a. above more accurately reflect the trader's outright dealing performance?
- c. Are financial swap costs and profits:
 - Amortized over the life of the applicable swap?
 - Appropriately accounted for as interest income and expense on loans, securities, etc?
- d. Are rates provided by, or at least verified with, sources other than the traders?
- Other**
- *27. Is the bank's system capable of adequately disclosing sudden increases in trading volume by any one trader?
28. Do such increases require officer review to insure that the trader is not doubling volume in an attempt to regain losses in his or her positions?
29. Does the bank retain information on, and authorizations for, all overdraft charges and brokerage bills within the last 12 months? ←
30. Does an appropriate officer review a comparison of brokerage charges, monthly, to determine if an inordinate share of the bank's business is directed to or handled by one broker?
- Conclusion**
31. Is the foregoing information an adequate basis for evaluating internal control in that there are no significant additional internal auditing procedures, accounting controls, administrative controls, or other circumstances that impair any controls or mitigate any weaknesses indicated above (explain negative answers briefly, and indicate conclusions as to their effect on specific examination or verification procedures)?
32. Based on a composite evaluation, as evidenced by answers to the foregoing questions, internal control is considered _____ (good, medium, or bad).

**Foreign Exchange
Verification Procedures****Section 813.5**

1. Obtain control of all outstanding contracts and number them sequentially so that they may be returned to the bank in the order in which they were received and:
 - a. Arrange them by currency for preparation of position worksheets for proof to or comparison with:
 - Foreign currency subsidiary ledgers.
 - The general ledger.
 - The bank's position report as of the same date.
 - Net position limits.
 - Aggregate trading limits.
 - b. Arrange them by maturity and by maturity for preparation of maturity worksheets and for comparison with the bank's maturity gap reports, if available, as of the same date and check for compliance with gap limits.
 - c. Arrange them by customer and by maturity and:
 - Prove to customer liability ledgers.
 - Check for compliance with customer trading limits.
 - Check for compliance with customer settlement limits.
 - d. Test for compliance with other limits, as appropriate.
2. Identify those contracts for which incoming confirmations have not yet been received as well as those for which incoming confirmations bear unresolved discrepancies.
 - a. Unless bank personnel have taken follow-up action too recently to expect response, prepare and mail confirmation forms to include:
 - Counterparty name.
 - Currency denominations and amounts.
 - Rate.
 - Transaction date.
 - Maturity date.
 - Settlement instructions, if applicable.
3. Using appropriate sampling techniques, select accounts from the trial balance and perform the following:
 - a. Prepare and mail confirmation forms to include the same information cited in 2a.
 - b. After a reasonable time, mail second requests.
 - c. Follow up on any no-replies or exceptions and resolve differences. Confirmation forms and return envelopes should be prepared:
 - By bank staff under examiner supervision.
 - On bank letterhead and signed by the auditor.
 - Using the bank's return address with conspicuous markings to insure their direct routing to the responsible examiner.
4. In conjunction with the audit staff, intercept at the bank's mailroom all incoming confirmations for a period of several days to determine:
 - a. If any contracts have been made but not booked.
 - b. Extent to which the confirmation clerk, or other personnel, relies upon traders to resolve discrepancies.

**Foreign Exchange
Laws, Regulations and Rulings**

Section 813.6

	<i>Laws *</i>	<i>Regulations †</i>	<i>Rulings †</i>
Reporting of Foreign Exchange Activities			
→ Foreign Currency Form FFIEC 035		20.5	

*12 USC, unless specifically stated otherwise
†12 CFR, unless specifically stated otherwise.

APPENDIX 4



OCC ADVISORY

Comptroller of the Currency
Administrator of National Banks

To: The Chief Executive Officers of all National Banks, Deputy
Comptrollers and all Examining Personnel

This letter is to alert bankers to the OCC's concerns regarding interest rate risk and to explain how the OCC addresses this risk in the supervisory process. Interest rate risk is the exposure to a bank's earnings and capital arising from future interest rates. All banks assume interest rate risk as part of their normal banking operations. Many banks also take interest rate risk as a means to enhance profitability. While the OCC recognizes that the assumption of interest rate risk is integral to banking, the OCC is concerned that banks prudently manage this risk, that exposures be adequately measured and that capital be available to support the exposure.

The OCC evaluates the quality of risk management and the level of interest rate exposure as part of its supervisory process. The OCC is presently revising and updating its supervisory procedures that address interest rate risk. A key component of these procedures is the expectation that banks should use risk measurement techniques that adequately capture interest rate exposure. The OCC recognizes that risk measurement techniques take time to develop and enhance. Appropriate measurement techniques depend on the size and complexity of a bank and its interest rate exposure, and may range from simple, manually prepared reports of repricing imbalances (gaps), to complex computer models. Banks should evaluate the adequacy of their risk measurement techniques to determine whether they provide an objective and comprehensive measurement of interest rate risk for their institution. As part of the ongoing supervision of each bank, OCC examiners will be reviewing the results of management's evaluation.

The OCC's evaluation of the quality of interest rate risk management and the level of exposure is taken into consideration when determining the adequacy of capital. The risk-based capital guidelines, which become effective December 31, 1990, require banks to hold minimum capital equal to a specified percentage of risk-adjusted assets (7.25 percent until December 31, 1992, and thereafter, 8.00 percent). The risk adjustment is primarily based on credit risk. However, based on an evaluation of the level of interest rate exposure and the quality of risk management, the OCC may determine that the bank should hold capital in addition to the minimum level required under the risk-based capital standard.

Date: January 2, 1990

Page 1 of 2



OCC ADVISORY

Comptroller of the Currency
Administrator of National Banks

The addendum to this letter describes the general components of prudent interest rate risk management. These components are policy statements, risk limits, risk measurement systems and reports to management and the bank's board of directors. The addendum addresses both earnings exposure and economic, or capital, exposure to future interest rates. Economic exposure can arise from long-term fixed rate positions that do not represent an immediate earnings exposure.

This letter is accompanied by two enclosures. The first answers questions commonly asked by bank directors and managers on interest rate risk. A booklet containing these questions and answers is being prepared and will be sent to your Board of Directors early in 1990. The second enclosure is an OCC staff study, "An Overview of Interest Rate Risk," which explores issues relating to the management of interest rate risk in greater detail.

Questions regarding this advisory letter should be directed to either the Supervision/Policy Research Division (202-447-1164) or the Multinational Banking Department (202-447-1747).

Dean S. Marriott
Senior Deputy Comptroller
for Bank Supervision Operations

APPENDIX 5


BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type Banking Circular

Subject National Bank Participation in
the Financial Futures and
Forward Placement Markets

TO: Chief Executive Officers of All National Banks, Deputy
Comptrollers (District) and Regional Administrators

This circular is a revision of Banking Circular 79 (2nd Rev.) issued on March 19, 1980, which is withdrawn. Banking Circular 79 was originally issued on November 2, 1976. The circular was amended by the issuance of Banking Circular 79, Supplement 1, on August 1, 1977. Banking Circular 79 and Supplement 1 were withdrawn on March 19, 1980, and replaced by Banking Circular 79 (2nd Rev.).

This circular considers policies and procedures that should be initiated by national banks that engage in financial futures contracts, forward placement contracts or standby contracts in their commercial banking activities. We view these contracts as neither inherently prudent nor imprudent. Evidence has shown that they can be used effectively to reduce interest rate risk. Any use of these contracts by national banks should be in accordance with safe and sound banking practices and with levels of activity reasonably related to the bank's business needs and capacity to fulfill its obligations under the contracts.

DEFINITIONS

Financial Futures Contracts. These contracts are interest rate futures, which under Section 2 of the Commodities Exchange Act, as amended (7 U.S.C. § 2) are commodities contracts traded on and guaranteed by an exchange. These contracts represent a commitment to purchase (to take delivery by the "long") or to sell (to make delivery by the "short") a standardized amount of the deliverable grade security at a specified price during a specified delivery month in accordance with the exchange rules regarding delivery procedures.

Forward Placement Contracts. These contracts are over-the-counter contracts for delayed delivery of securities in which the buyer (long) agrees to purchase and the seller (short) agrees to make a

 **BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: National Bank Participation in
the Financial Futures and
Forward Placement Markets

delivery of a specified security at a specified price for future delivery. Cash market transactions other than "when issued" transactions, specifying delivery (settlement) in excess of thirty (30) days following the trade date shall be deemed to be forward contracts. Forward contracts are not traded on organized exchanges, the terms are not standardized, and the contracts can only be terminated by agreement of both parties to the transaction.

Standby Contracts. These are optional delivery forward placement contracts. The buyer of a standby contract (put option) pays a fee for the right or option to sell (deliver) an agreed upon amount of specified securities to the issuer of the standby contract at a specified price at a specified future date.

GUIDELINES

These contracts are not considered investment securities within the meaning of 12 USC 24(7). However, with the distinctions described below for investment or non-dealer operations, asset-liability management, and dealer-bank trading activities, the use of these contracts is considered to be an activity incidental to banking. The following are minimal guidelines to be followed by national banks that engage in these markets.

1. Distinctions

- a. For investment portfolio or non-dealer operations in fixed-rate assets, banks should evaluate the interest rate risk exposure resulting from their overall investment activities to ensure that the positions they take in futures, forward and standby contract markets will reduce their risk exposure. Short positions in futures and forward contracts should reasonably relate to existing or anticipated cash positions, and should be used to enhance liquidity of the portfolio. Rather than using short hedges against portfolio holdings for purposes of income generation, we would expect, where practicable, that contract gains would



BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: National Bank Participation in
the Financial Futures and
Forward Placement Markets

be used to offset losses resulting from the sale of portfolio securities as asset yields are upgraded. Long positions in futures and forwards should reasonably reflect the bank's investment strategy and ability to fulfill its commitments.

- b. Asset-liability management involves the matching of fixed-rate and interest-sensitive assets and liabilities in order to maintain liquidity and profitability. Futures and forward contracts may be used as a general hedge against the interest rate exposure associated with undesired mismatches in interest-sensitive assets and liabilities. Long positions in contracts could be used as a hedge against funding interest-sensitive assets with fixed-rate sources of funds; short positions in contracts could be used as a hedge against funding fixed-rate assets with interest-sensitive liabilities.
 - c. Dealer-bank trading activities that employ futures, forward and standby contracts should be in accordance with safe and sound banking practices reasonably related to the bank's legally permitted trading activities.
2. The Board of Directors should consider any plan to engage in these activities and should endorse specific written policies and procedures in authorizing these activities. Policy objectives should be specific enough to outline permissible contract strategies and their relationships to other banking activities. Recordkeeping systems must be sufficiently detailed to permit internal auditors and examiners to determine whether operating personnel have acted in accordance with authorized objectives. Bank personnel are expected to be able to describe and document in detail how the positions they have taken in futures, forward and standby contracts contribute to attaining the bank's stated objectives.

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: National Bank Participation in
the Financial Futures and
Forward Placement Markets

3. The Board of Directors should also establish limitations applicable to futures, forward and standby contract positions for each distinct category described in item 1 above. The Board of Directors, a duly authorized committee thereof, or the bank's internal auditors should review all outstanding contract positions at least monthly and ensure that these limits are not exceeded.
4. Underlying security commitments relating to open futures and forwards should not be reported on the balance sheet. The bank should maintain general ledger memorandum accounts and commitment registers to adequately identify and control all commitments to make or take delivery of securities. Such registers and supporting journals ordinarily would include:
 - a. The type and amount of each contract;
 - b. The maturity date of each contract;
 - c. The current market price and cost of each contract; and
 - d. The amount of money held in margin accounts.
5. Accounting Requirements
 - a. The market value of all open contract positions should be determined at least monthly regardless of whether the bank is required to deposit "margin" or a performance bond in connection with a given contract. Market values for forward and standby contracts should be based on the market value of the underlying security, except where published and widely distributed forward contract price quotations are available. All standby contracts should be marked to the lower of cost or market. However, losses on standby contracts only have to be computed by the issuer (the party committed to purchase under the contract) and only where the market value of the underlying security is below the contract price, reduced by the amount of the deferred fee described in item 7 below. All futures and forward contracts with the exception of contracts described in item

*last copy***BANKING ISSUANCE**Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: National Bank Participation in
the Financial Futures and
Forward Placement Markets

5b, should be valued by a consistent method of either mark to market or mark to the lower of cost or market. The bank's Board of Directors may choose which method of valuation (either market or lower of cost or market) it prefers and document it in the written policies and procedures described in item 2 above. All losses resulting from monthly contract value determination should be recognized as a current expense item; those banks that choose to value contracts on a mark to market basis would recognize gains as a current income item. For the specific line entries to be made, refer to the call report instructions. Because these contracts are not investment securities, net losses or gains cannot be taken "below the line" as an investment security gain or loss.

- b. Futures and forward contracts associated with the hedging of mortgage banking operations, i.e. the origination and purchase of mortgage loans for resale to investors or the issuance of mortgage-backed securities, may be accounted for in accordance with the generally accepted accounting principles applicable to such activity.
- 6. In the event the above described futures and forward contracts result in the acquisition of securities, such securities should be recorded on an accounting basis consistent with that applied to the contracts (either market or lower of cost or market). Acquisition of securities arising from standby contracts should be recorded on the basis of lower of adjusted cost (see item 7(c)) or market.
- 7. Fee income received by a bank in connection with the issuance of a standby contract should be deferred at initiation of the contract and accounted for as follows:
 - a. Upon expiration of an unexercised contract, the deferred amount should be reported as income;



BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: National Bank Participation in
the Financial Futures and
Forward Placement Markets

- b. Upon a negotiated settlement of the contract prior to maturity, the deferred amount should be accounted for as an adjustment to the expense of such settlement, and the net should be transferred to the income account; or
 - c. Upon exercise of the contract, the deferred amount should be accounted for as an adjustment to the basis of the acquired securities. Such adjusted cost basis should be compared to market value of securities acquired. See item 6.
8. Bank financial reports should disclose in an explanatory note any futures, forward and standby contract activity that materially affects the bank's financial condition.
 9. To ensure that banks minimize credit risk associated with forwards and standby contract activity, banks should implement a system for monitoring credit risk exposure associated with various customers and dealers with whom operating personnel are authorized to transact business.
 10. To ensure adherence to bank policy and prevent unauthorized trading and other abuses, banks should establish appropriate internal controls including periodic reports to management, segregation of duties, and internal audit programs.

The issuance of long-term standby contracts, i.e., those for 150 days or more, which give the other party to the contract the option to deliver securities to the bank, will ordinarily be viewed as inappropriate. In almost all instances where standby contracts specified settlement in excess of 150 days, regulatory authorities have found that such contracts were related not to the investment or business needs of the institution, but primarily to the earning of fee income or to speculating on future interest rate movements. Accordingly, national banks should not issue standby contracts specifying delivery in excess of 150 days, unless special circumstances warrant.

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: National Participation in the
Financial Futures and Forward
Placement Markets

National banks engaging in the futures, forward and standby contract markets must submit a short letter notice stating their intention to the Regional Administrator of National Banks for their region or Deputy Comptroller for their district. We intend to monitor national bank transactions in futures, forward and standby contracts to ensure that any such activity is conducted in accordance with safe and sound banking practices.

The reporting and recordkeeping requirements of this circular carry OMB number 15570094 with an expiration date of March, 1987.



H. Jee Selby
Senior Deputy Comptroller for
Bank Supervision

APPENDIX 6

**BANKING ISSUANCE**

**Comptroller of the Currency
Administrator of National Banks**

Type: Banking Circular

Subject: Supervisory Policy Statement
on Securities Activities

To: Chief Executive Officers of all National Banks, Deputy
Comptrollers and all Examining Personnel

Attached is the revised Federal Financial Institutions Examination Council (FFIEC) supervisory policy statement on securities activities that was adopted by the Comptroller of the Currency, the Federal Deposit Insurance Corporation, the Federal Reserve Board and the Office of Thrift Supervision today. The revised policy becomes effective February 10, 1992.

The attached policy statement revises and updates the April 1988 FFIEC supervisory policy statement on the "Selection of Securities Dealers and Unsuitable Investment Practices," which the OCC adopted and issued in Banking Circular 228 on April 14, 1988. Banking Circular 228 included guidelines for selecting a securities dealer and distinctions between investment activity and securities trading. The guidelines also described the risks of newer types of financial instruments that appear attractive for near-term gain, but entail risk that some national banks appear not to be taking fully into account.

This revision of Banking Circular 228 retains that guidance and provides additional information on the development of a portfolio policy and strategies for securities and on securities practices that are inappropriate for an investment account. It also discusses factors that a national bank must consider when evaluating whether the reporting of its portfolio holdings is consistent with its intent and ability to trade, to hold for sale, or to hold for investment. In addition, the new policy statement establishes criteria for determining when a mortgage derivative product is a high-risk mortgage security, which must be held in either the trading or held for sale account.

Date: January 10, 1992

Page 1 of 2

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

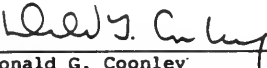
Type: Banking Circular

Subject: Supervisory Policy Statement
on Securities Activities

A quick reference guide to the policy statement for use as a reference aid is enclosed in addition to the FFIEC press release and revised supervisory policy statement.

Should you have any questions or need further information, please call the Capital Markets unit of the Office of the Chief National Bank Examiner at (202) 874-5070.

ORIGINATING OFFICE
Office of the Chief National Bank Examiner



Donald G. Coonley
Chief National Bank Examiner

Attachments:

Quick Reference Guide - 2 pages
FFIEC Press Release - 2 pages
FFIEC Policy Statement - 75 pages

Federal Financial Institutions Examination Council



1776 G Street, NW, Suite 850B • Washington, DC 20006 • (202) 357-0177 • FAX (202) 357-0191

Press Release

For immediate release

December 3, 1991

The Examination Council announced today its approval of a policy statement on securities activities mainly to update and revise its Supervisory Policy Statement on the "Selection of Securities Dealers and Unsuitable Investment Practices" which was approved by the Examination Council in April 1988. The Council is recommending to the Federal Reserve Board, Federal Deposit Insurance Corporation, National Credit Union Administration, Office of the Comptroller of the Currency, and Office of Thrift Supervision that they adopt the attached policy statement.

This new Statement of Policy addresses the selection of securities dealers, requires depository institutions to establish prudent policies and strategies for securities transactions, defines securities trading or sales practices that are viewed by the agencies as being unsuitable when conducted in an investment portfolio, indicates characteristics of loans held for sale or trading, and establishes a framework for identifying

- over -

when certain mortgage derivative products are high-risk mortgage securities which must be held either in a trading or held for sale account.

This statement of policy will be published shortly in the Federal Register.

Attachment

#

SUPERVISORY POLICY STATEMENT ON SECURITIES ACTIVITIES QUICK REFERENCE GUIDE

	<u>Pages</u>
FEDERAL REGISTER MATERIAL:	1-30
PURPOSE	31-32
BACKGROUND	33-34
SECTION I: SELECTION OF SECURITIES DEALERS	35-38
SECTION II: SECURITIES PORTFOLIO POLICY AND STRATEGIES AND UNSUITABLE INVESTMENT PRACTICES	39
Policy and Strategies	39-41
Proper Reporting of Securities Activities	41-46
Reporting of Loans Held for Sale or Trading	46
Unsuitable Investment Practices	47
o "Gains Trading"	47-48
o "When-Issued" Securities Trading	49
o "Pair-Offs"	49-50
o Corporate or Extended Settlements	50
o Repositioning Repurchase Agreements	51
o Short Sales	52
o Delegation of Discretionary Investment Authority	53-54
o Covered Calls	54-56
o "Adjusted Trading"	57
SECTION III: MORTGAGE DERIVATIVE PRODUCTS, OTHER ASSET BACKED PRODUCTS, AND ZERO-COUPON BONDS	58
Summary	58-62
Overview of the Securities	62
o Stripped Mortgage-Backed Securities	62-63
o CMOs and REMICs	63
o Residuals	64

Supervisory Policy Statement
on Securities Activities
Quick Reference Guide - Continued

	<u>Page</u>
Definition of "High-Risk Mortgage Security"	65
o Average Life Test	65
o Average Life Sensitivity Test	66
o Price Sensitivity Test	66-68
Supervisory Policy for Mortgage Derivative Products	68
o Nonhigh-risk Mortgage Securities	68-69
o High-risk Mortgage Securities	70-74
Supervisory Policy for Other Zero-Coupon, Stripped or Original Issue Discount (OID) Products	74-75
Other Considerations	75

**FEDERAL FINANCIAL INSTITUTIONS
EXAMINATION COUNCIL**

Supervisory Policy Statement on Securities Activities

**Agency: Federal Financial Institutions
Examination Council.**

Action: Statement of Policy.

Summary: The Federal Financial Institutions Examination Council (the "FFIEC"), which includes the Board of Governors of the Federal Reserve System ("FRB"), the Federal Deposit Insurance Corporation ("FDIC"), the National Credit Union Administration ("NCUA"), the Comptroller of the Currency ("OCC"), and the Office of Thrift Supervision ("OTS") (collectively, the "Agencies"), is approving this Statement of Policy mainly to update and revise its Supervisory Policy Statement on the "Selection of Securities Dealers and Unsuitable Investment Practices" which was approved by the FFIEC in April 1988 (the "April 1988 Supervisory Policy"), and subsequently adopted by the FRB, FDIC, NCUA, and the OCC.

The FFIEC is recommending to its five member agencies that they adopt this Statement of Policy. If adopted, it would supersede the April 1988 Supervisory Statement of Policy.

This new Statement of Policy addresses the selection of securities dealers, requires depository institutions to establish prudent policies and strategies for securities transactions, defines securities trading or sales practices that are viewed by the agencies as being unsuitable when conducted in an investment portfolio, indicates characteristics of loans held for sale or trading, and establishes a framework for identifying when certain mortgage derivative products are high-risk mortgage securities which must be held either in a trading or held for sale account.

Effective Date: Each FFIEC member agency will announce the effective date for this Statement of Policy for the depository institutions it supervises.

For Further Information Contact: At the FRB: Rhoger H Pugh, Manager, Policy Development, Division of Banking Supervision and Regulation (202) 728-5883; Charles H. Holm, Supervisory Financial Analyst, Division of Banking Supervision and Regulation (202) 452-3502. At the FDIC: Sharon F. Lee,

Capital Markets Specialist, Division of Supervision, (202) 898-6789; Robert F. Storch, Chief, Accounting Section, Division of Supervision (202) 898-8906. At the NCUA: Charles Felke (202) 682-9640. At the OCC: Owen Carney, Senior Advisor for Investment Securities (202) 874-5070; Jamie Newell, Senior Capital Markets Advisor (202) 874-5070. At the OTS: John M. Frech, Senior Accountant, Accounting Policy (202) 906-5649; J. Douglas Gordon, Senior Financial Economist (202) 906-5728.

Supplementary Information: In a number of cases where depository institutions have engaged in speculative or other non-investment activities in their investment portfolios, the portfolio managers appeared to have placed undue reliance on the advice of a securities sales representative. Some depository institutions have failed because of their speculative securities activities. Other institutions have had their earnings or capital impaired and the practical liquidity of their securities eroded by market value depreciation. Many of these problems may have been avoided had sound procedures been followed before using certain securities dealers.

These factors led to the development of a supervisory policy statement on the "Selection of Securities Dealers and

Unsuitable Investment Practices" that was approved by the FFIEC in April 1988 and subsequently adopted by the FRB, FDIC, NCUA, and the OCC. That policy statement emphasized the importance of knowing the securities firms with whom a depository institution does business and also dealt with certain regulatory concerns pertaining to speculative and other activities improperly carried out in an institution's investment portfolio.

In addition, it identified risks associated with stripped mortgage-backed securities, residuals, and zero-coupon bonds and concluded that they may be unsuitable investments for depository institutions.

The FFIEC is now recommending adoption of this new Statement of Policy by each of its member agencies. If adopted, this Statement of Policy would supersede the April 1988 Policy Statement. This new Statement of Policy provides additional information on the development of a portfolio policy and strategies for securities and on securities practices that are inappropriate for an investment account. It also discusses factors that must be considered when evaluating whether the reporting of an institution's investment portfolio holdings is consistent with its intent and ability. In addition, this policy statement establishes a framework for determining when

a mortgage derivative product is a high-risk mortgage security; and, once a mortgage derivative product is determined to be high-risk, it must be held in a trading or held for sale account.

SUMMARY OF COMMENTS

On January 3, 1991, the FFIEC issued for comment a proposed Supervisory Policy Statement "Concerning Selection of Securities Dealers, Securities Portfolio Policies and Strategies and Unsuitable Investment Practices, and Stripped Mortgage-Backed Securities, Certain CMO Tranches, Residuals, and Zero-Coupon Bonds" (56 FR 263).

The proposed Statement of Policy informed insured depository institutions about:

- * The selection of securities dealers;
- * The documentation of policies and strategies for securities to be held for investment, held for sale or for trading purposes;

- * Securities practices that are viewed by the federal financial institution regulators as being unsuitable when conducted in an investment portfolio; and

- * Types of securities with volatile price or other high risk characteristics that are generally not suitable investments for depository institutions. Such securities may be subject to supervisory criticism, and depository institutions may be directed to establish a plan for disposal.

The FFIEC received 110 comment letters on the proposed Statement of Policy. Thirty-eight of the comments were from bank holding companies, fifteen were from state banks, fifteen were from thrift institutions, thirteen were from national banks, nine were from federal/state bank supervisory agencies, eight were from bank and thrift institution trade groups, eight were from consulting firms that perform work for banks and thrift institutions, and four were from other financial service corporations.

Of the 110 comment letters that were received, twenty-three were generally supportive of Section I as proposed, and thirty-three were generally opposed to this Section. The remaining fifty-four did not indicate a view on Section I.

Twenty of the 110 comment letters received were generally supportive of Section II as proposed, and sixty-five were generally opposed to Section II. The remaining twenty-five did not indicate a view on Section II.

Many of the commenters criticized Section III. As a result of these comment letters, the Council proposed a revised Section III on August 3, 1991 (56 FR 37095). The Council received over 90 comment letters on this proposal. Most of the commenters preferred changes in the quantitative criteria.

After giving due consideration to the comments received, the FFIEC has now decided to approve the Statement of Policy. The Statement of Policy as approved and recommended to the agencies contains revisions reflecting certain of the comments as set forth below. In addition, a discussion of the more significant comments, as well as the FFIEC's judgment as to their implication for the Statement of Policy as originally proposed, is presented below.

Section I: Selection of Securities Dealers

Comments received on Section I generally addressed the following areas: (1) clarifying the responsibilities of a board of directors in developing limits to transactions and

business relationships with securities firms; (2) requiring institutions to obtain financial statements on securities firms with whom the institution does business; (3) establishing conflicts of interest policies; and (4) addressing the documentation burden for small insured depository institutions. The comments received on each of these areas are specifically addressed below.

1. Responsibilities of Boards of Directors.

Several commenters expressed their concerns about the proposal's requirement that boards of directors or appropriate committees thereof develop lists of securities firms with whom management is authorized to do business and establish dollar limits on the types of transactions to be executed with each authorized securities firm. These commenters indicated that this requirement was an unnecessary expansion of director responsibilities. In addition, they indicated that they believed that depository institution management has the responsibility to establish operational strategies and to execute those strategies. In their opinion management should inform the board of directors about those strategies and the results of execution. The board would then be responsible for authorizing strategies to be executed and monitoring the performance of the execution.

The FFIEC agreed with the comments received on this issue. The language was changed to recognize the responsibilities of both managements and boards of directors in insured depository institutions.

2. Financial Statements of Securities Firms.

Several commenters indicated that the proposed policy was too restrictive in this area. These commenters indicated that the proposed policy could essentially bar insured depository institutions from conducting business with reputable Wall Street firms that do not release financial statements since they are privately held or because they are subsidiaries or affiliates of securities firms whose financial statements are consolidated with the financial statements of the parent. In addition, a few of the commenters indicated that the designation of the securities dealer as a "primary broker/dealer in U.S. Government Securities" by the Federal Reserve should provide sufficient evidence that the securities firm is creditworthy.

The FFIEC has considered these comments and continues to believe that the management of an insured depository institution should only do business with securities firms that are willing to provide complete and timely disclosure of their financial condition.

3. Conflicts of Interest Policies.

Several commenters acknowledged the need for corporate conflicts of interest policies to govern relationships between depository institution personnel and third parties such as securities brokers. However, these commenters indicated that the proposed policy statement may be too restrictive given the structure of many of the large securities firms. These commenters indicated that the large securities firms separate retail activities from institutional activities. Because of this structure, the commenters recommended that the proposed policy provide enough flexibility to address conflicts of interest in a given instance, rather than propose a broad policy.

The FFIEC agreed with this recommendation by suggesting that an institution's board of directors consider adopting a policy governing those situations when employees of the depository institution are directly involved in securities transactions for the institution and are also engaging in personal securities transactions with the same firm.

4. Documentation Burden for Small Insured Depository Institutions.

A few commenters indicated that the documentation and other requirements that the proposed policy place upon managements and boards of directors of depository institutions in Sections I and II were overly burdensome for small, community-based depository institutions. They indicated that the FFIEC either reconsider adopting the policy or specifically exclude small, community-based depository institutions from the scope of the policy statement.

The FFIEC believes that the policy statement includes guidance for the prudent operation of investment securities functions. This guidance should benefit all depository institutions and should not be limited in application to depository institutions meeting only certain characteristics.

Section II: Securities Portfolio Policies and Strategies and Unsuitable Investment Practices

Comments received on Section II primarily addressed the following concerns: (1) clarifying various issues concerning trading v. investment; and (2) requesting various technical

changes to the list of unsuitable investment practices. The comments received on each of these areas are specifically addressed below.

1. Trading v. Investment Issues.

A number of commentators indicated that the FFIEC was establishing accounting and reporting guidance for loans and investment securities that is at variance with GAAP. The commentators indicated that the FFIEC should let the accounting profession establish accounting and reporting guidance on these issues. These commentators indicated that implementation of the accounting and reporting criteria in the policy statement would result in significant changes in current practice. As a result, these commentators indicated that the FFIEC should work with the Financial Accounting Standards Board ("FASB") and the American Institute of Certified Public Accountants ("AICPA") to promulgate accounting and reporting standards in this area. Other commentators indicated that they believed that mark-to-market accounting was inappropriate for investment securities and loans and should be dropped from the proposed policy statement.

The FFIEC believes that the policy statement reiterates established GAAP standards for accounting and reporting

securities and loans that are held for investment, for sale, or for trading purposes. The policy statement does provide guidance for examiners to use in their consideration when evaluating whether the reporting of a depository institution's securities holdings is consistent with management's intent for such holdings.

Commentators also indicated that loans and investment securities that are held for sale should not be reported at the lower of cost or market. Rather, these commentators recommended that loans and investment securities held for sale should be reported at amortized cost with the market value disclosed in footnotes to financial statements or in supplementary schedules in regulatory reports.

The FFIEC believes that reporting securities and loans held for sale at amortized cost is not in compliance with existing GAAP standards. In addition, the FFIEC has observed that some depository institutions typically sell those securities with market gains and keep the remaining securities in portfolio with significant inherent market losses. This practice consistently overstates earnings and keeps loans and securities with low credit quality, extended maturities and little liquidity in portfolio. The FFIEC believes that dealing with such circumstances by additional disclosure

doesn't deal with the asset quality problems as well as the fair presentation of the level of capital of the depository institution.

Many of the commentators indicated that loans should be excluded from the scope of this policy statement. Some of these commentators indicated that this policy statement provides guidance for investment securities activities and that accounting for loans is such an important topic that it deserves full and complete evaluation. Other commentators indicated that this proposal was designed to deal with questions arising from a depository institution's securities activities, not its lending activities. In their view, consideration of lending activities should only be addressed in a separate policy statement that is the result of detailed study and consideration.

However, GAAP requires loans held for sale or trading to be treated in a manner consistent with securities held for sale or trading.

Many commentators recommended that the proposed policy statement consider permitting the active management of U.S. Treasury or federal agency securities having remaining maturities of six months or less without automatically

resulting in a depository institution classifying an entire investment portfolio as a trading account or held for sale. These commentators indicated that sophisticated investment managers typically liquidate these securities within six months of maturity at insignificant gains or losses (because of the fact that they are so close to maturity) in order to redeploy these funds.

The policy now specifically indicates that the remaining life of the security is one factor for examiners to consider when evaluating whether a security is held for sale or trading. The FFIEC believes that examiners will exercise judgment in this area.

A number of commentators expressed concern that examiners may arbitrarily and inconsistently require the transfer of securities originally in the investment portfolio to the trading account or the held for sale account. In addition, a number of commentators indicated that the factors may result in the continuation of subjective determinations by financial institutions, regulators, and independent auditors. The commentators indicated that the FFIEC should develop consistent implementation guidance to the examiners and should monitor the implementation by examiners to ensure that all depository institutions are treated consistently.

The FFIEC member Agencies intend to work closely together to reduce the risk of inconsistent application.

A number of commentators indicated that the factors that must be considered when evaluating management's intent for holdings of loans and investment securities excludes sales volumes that result from unanticipated or unforeseen conditions. These commentators indicated that there are times that securities are prudently sold in response to factors that were not foreseen or anticipated at the time the securities were purchased. These commentators indicated that these sales should be excluded when evaluating management's intent.

The FFIEC believes that this issue is addressed in the factors that examiners must consider when evaluating whether the reporting of a depository institution's securities holdings is consistent with management's intent for such holdings. The FFIEC believes that examiners will exercise judgment in this area.

A number of commentators objected to the policy criteria that only depository institutions that have strong capital and earnings can engage in securities trading activity in a closely supervised trading account. These commentators indicated that this criteria would seem to prohibit an institution suffering a temporary downturn in earnings from

engaging in trading activities. These commentators suggested that strong liquidity and competent personnel should be substituted for "earnings."

The FFIEC agrees that strong liquidity and competent personnel are factors for determining whether an institution should engage in trading activities. However, the institution's earnings is another important factor that should be considered.

2. Unsuitable Investment Practices Issues.

Many of the commentators expressed various concerns about this area of Section II. A summary of their comments follows.

- a. Extended Settlements. A number of commentators indicated that the classification of all corporate or extended settlements for U.S. Government securities as unsuitable investment practices fails to consider that certain issues have regular way settlements up to 45 days. For example, some new issues of mortgage backed securities typically have a 45 day delay in settlement.

The FFIEC made a change to this section to accommodate the comments received.

- b. "Bond Swapping." A number of commentators indicated that this term should be eliminated since the use of this term is very general and is much more generic than the activity described. The commentators indicated that these other activities should not be confused for the activities described under this term in the proposal.

The FFIEC made a change to this section to accommodate the comments received.

- c. Covered Calls. A number of commentators indicated that the proposed policy was too restrictive. Some commentators indicated that call writers can issue calls on a given date and subsequently purchase calls on a later date, effectively eliminating the call holder's ability to dislodge the securities when an "in the money" condition is present. Other commentators indicated that writers of covered calls do not always deliver securities to the call holder, rather they can settle with the call holder in cash. In these cases, the call holder has no claim to the underlying security and the call writer could still have the intent and ability to hold the security to maturity. In their view, historical cost accounting would still be appropriate in these circumstances.

The FFIEC agreed with commentators with respect to covered call options that must be settled in cash.

- d. Delegation of Discretionary Investment Authority. Some commentators indicated that a policy statement requiring that all investment portfolio assets subject to discretionary management to be reported as held for sale was overly broad. In their view, this proposal did not take into account those situations where depository institutions in a common control group delegate their investment authority to subsidiary or affiliated investment advisers. Also, they indicated that this does not consider those situations where the management of the depository institution requires the third-party investment adviser to obtain approval from the depository institution prior to any securities transaction.

The FFIEC has made a change in this section to accommodate the comments received.

Section III: Mortgage Derivative Products, Other Asset Backed Products, and Zero-Coupon Bonds

Comments received on Section III mainly addressed the following issues: (1) whether the quantitative criteria proposed for determining high-risk mortgage securities in Section III effectively distinguish high-risk mortgage derivative products from all other mortgage derivative products; (2) the analysis requirements for high-risk and nonhigh-risk mortgage derivative products; (3) the reporting treatment of high-risk mortgage derivative products; (4) the discretion given to examiners to determine whether mortgage derivative products are high-risk; (5) whether current holdings of mortgage derivative products were subject to the policy; and (6) whether the method of determining overall interest-rate risk reduction was appropriate. The Federal Register notice of August 2, 1991, specifically asked for comments on the first two issues. The comments received on each of these areas are specifically addressed below.

1. The Quantitative Criteria

A general principle underlying the 3-part test is that mortgage derivative products possessing average life or price volatility

in excess of a standard fixed rate 30 year mortgage backed pass-through security are high-risk mortgage securities and are not suitable investments for depository institutions.

The August, 1991 proposal established three tests to use in determining when a mortgage derivative product becomes a high-risk mortgage security. These tests measured the weighted average life of the security, the average life sensitivity, and the price sensitivity of the security at the date of purchase and at subsequent periodic testing dates. The tests were based on the characteristics of a benchmark standard fixed rate 30 year mortgage backed pass-through security. However, the Council set the limits lower than the benchmark, to conform with a premium security with a coupon 100 basis points above the current coupon instrument.

Specific comments on the quantitative tests were received from 55 commenters. Many commenters noted that a newly issued current coupon mortgage pass-through would fail all three of the quantitative tests in the proposed policy. Current coupon mortgage pass-throughs have a higher weighted average life than the limit in the first test, extend or contract more than the second limit, and change in price by more than the limit in the third test of that version. Several commenters estimated that between 40 and 50 percent of mortgage derivative products would fail the three part test.

Thirty-five commenters wanted the first weighted average life test changed or eliminated. The great majority of these comments suggested increasing the weighted average life limit for nonhigh-risk treatment. Twenty-eight commenters requested changes in or abolishment of the weighted average life sensitivity test. Twenty-six commenters wanted the price sensitivity test changed or eliminated.

In response to these comments the Council has increased the limit on the weighted average life test to 10 years, and increased the price sensitivity test limit to a 17% move in price for a +/- 300 basis point shift in the yield curve. These values are consistent with the newly issued current coupon FNMA security discussed above.

In setting the limits for the 3-part test the Council looked to a current coupon pass-through that was newly issued by the Federal National Mortgage Corporation (FNMA). The current coupon in early September, 1991 was 8.5 percent. The consensus prepayment rate for that security in early September was 150 PSA. At that prepayment speed the pass-through had a weighted average life (WAL) of 9.7 years. The WAL after a 300 basis point parallel upward shift in Treasury rates equaled 12.0 years. A move down 300 basis points yielded a WAL of 3.8

years. Price fell by 16.3 percent when rates rose by 300 basis points and rose by 11.0 percent when rates fell by 300 basis points. This security is the benchmark security for the policy statement.

The Council set the WAL limit in test 1 at 10 years, just above the current coupon newly issued FNMA security. The WAL sensitivity test was set at +4 years for an increase of 300 basis points in rates, and -6 years for a 300 basis point fall in rates. For consistency among the 3 tests the WAL sensitivity test allows greater increases in WAL than that associated with the current coupon FNMA. Higher coupon securities have greater WAL sensitivity, but tend to have shorter WAL and lower price sensitivity than securities bearing a lower coupon. The limits on the price test were set at 17 percent to include the current coupon FNMA in the low-risk category.

2. Constant Spread

A number of commenters expressed concern about the process to be used to calculate price sensitivity. Many recognized that mortgage derivative products have embedded options that are best measured using option pricing methodologies. However, these commenters suggested that an option pricing methodology

would be too complex to incorporate into this proposal. Some of these commenters suggested that a simple constant spread approach be used to estimate price sensitivity.

The Agencies have adopted an approach that is based on a constant spread to Treasury. The model assumes a fixed interest spread over the Treasury yield curve, and that the spread be determined by the bid side of the market at the time of purchase. The initial price to be used in the calculations should be the ask price.

3. Floaters

Fourteen commenters asked that the exemption from the first two tests for floaters be changed. In response to the comments on floaters the Council has changed the exemption for floaters to an exemption from tests 1 and 2 for all floaters below their cap.

Previously floaters would be exempt from tests 1 and 2 if their fully indexed rate was at least 125 basis points below the cap. Institutions may buy back caps for capped floaters to reinstate the exemption from those tests.

4. Reporting and Analysis Requirements

The Council received 22 comments on the requirements to analyze high-risk securities internally each quarter and analyze low-risk securities at least annually. Several commenters were concerned that the requirement to perform internal analysis quarterly on all high-risk products would add a prohibitive burden. Several were concerned that the requirement to obtain independent analysis of low-risk derivatives annually significantly raised the cost of holding those instruments. Many commenters asked for clarification as to which methods qualify as independent analysis for the purposes of testing nonhigh-risk securities.

In response to those comments, management may use industry calculators available in the marketplace for analysis of low-risk products. Management must understand the assumptions used in the model and insure that those assumptions are reasonable.

5. Designation of High-Risk Mortgage Derivative Products

Twenty-four commenters requested that the high-risk designation not be permanent and that high-risk securities be allowed to return to nonhigh-risk status if they later fall within the

limits of all three tests. The Council agrees that high-risk securities may later become nonhigh-risk, and that high-risk securities later falling within the limits of the three tests for two consecutive quarters may be redesignated as nonhigh-risk.

6. Accounting Treatment of High-Risk Mortgage Derivative Products

Twenty-nine commenters asked for changes in the accounting treatment of high-risk securities. Most of these commenters were concerned that the accounting for high-risk mortgage derivative products deviated from GAAP treatment of investment securities. They noted that they might have the intent and ability to hold the instruments to maturity. After considering those comments the Council has decided to retain the proposed treatment for high-risk securities. The securities are to be used to reduce overall interest-rate risk. Because of the high price volatility and average life sensitivity of these high-risk securities, an institution may need to actively manage their portfolio to achieve effective interest rate risk reduction. Accordingly, these securities cannot be held as investments.

7. Examiner Discretion

Many commenters complained that examiners are given too much discretion to declare securities high risk in the policy. The Council has deleted a sentence allowing examiners to declare as high-risk a mortgage derivative product that the 3-part test determines to be low-risk. However, the policy contains language that allows the Agencies to take action to prevent circumvention of the guidelines.

8. Application of Policy to Current Holdings of High-Risk Products

Sixteen commenters asked that the grandfather clause be clarified so that the policy only affects securities purchased after the effective date of the policy. The Council agrees that the policy applies to all high-risk mortgage securities after the effective date of the policy. Purchases made prior to the effective date of this policy statement generally will be reviewed in accordance with previously-existing supervisory policies.

9. Method of Determining Overall Interest-Rate Risk Reduction

Eleven commenters suggested that the policy treat interest-rate risk reduction from a portfolio approach, and not on an individual security basis. For the purposes of the policy high-risk mortgage derivative products must reduce the institution's overall interest rate risk.

10. Other Issues

In response to several comments noting the lack of availability of a prospectus supplement until after purchase of many mortgage securities, the Council agrees that management may obtain the prospectus supplement after purchase if they perform the required analysis before purchase of the securities.

In response to several comments about examiner use of prepayment assumptions, the reference to examiner use of own prepayment assumptions has been deleted. Instead, examiners may use median industry prepayment assumptions when management's prepayment assumptions are unreasonable.

A number of commentators expressed concern that the burden of an annual test and the potential accounting implications of the annual test may cause financial institutions to avoid even the lowest risk CMO tranches. Further, it was suggested that these same institutions may exacerbate their overall interest rate risk by purchasing 30-year fixed rate MBS. To lessen the likelihood of these unintended effects, the agencies are considering designating a class of mortgage derivative products that, after initially being tested at the time of purchase, would be exempted from further testing.

These mortgage derivative products would have less average life and price sensitivity than a current coupon, fixed rate 30-year mortgage-backed pass through security. In addition, they would have a very low likelihood of becoming high-risk. Certain mortgage derivatives that meet the requirements of this designation could be held in the investment account, at cost, with no subsequent testing. Because this designation requires empirical analysis, the agencies have decided to study the issue further.

COUNCIL ACTION

After considering all of the comments received and making changes to the versions of the policy statements that were published for public comment as discussed above, the FFIEC has approved the Supervisory Policy Statement on Securities Activities and has recommended to its five member Agencies that each of them adopt the policy.

The text of the statement of policy follows.

SUPERVISORY POLICY STATEMENT ON SECURITIES ACTIVITIES

PURPOSE

This supervisory policy informs insured depository institutions about:

- recommended procedures to be used in the selection of a securities dealer;
- the need to document and implement prudent policies and strategies for securities, whether they are held for investment, trading, or for sale, and to establish systems and internal controls that are designed to ensure that securities activities are consistent with the policies and strategies;
- certain securities trading and sales practices that are viewed by the federal financial institution regulators as being unsuitable when conducted in an investment portfolio, thereby precluding the use of the amortized cost basis of accounting for securities holdings resulting from such practices.

The substance of an institution's securities activities determines whether securities reported as investments are, in reality, held for trading or for sale.

Securities held for trading must be reported at market value and securities held for sale must be reported at the lower of cost or market value. The guidance regarding securities held for sale or trading is also applicable to loans held for sale or trading;

- high-risk mortgage securities that are not suitable investment portfolio holdings for depository institutions. These securities may only be acquired to reduce an institution's interest rate risk and must be reported in the trading account at market value, or as assets held for sale at the lower of cost or market value. Examiners may seek the orderly divestiture of high-risk mortgage securities that do not reduce interest rate risk. Other products with risk characteristics similar to high-risk mortgage securities may be subject to the same supervisory treatment; and
- disproportionately large holdings of long-term zero-coupon bonds that are considered an imprudent investment practice. Such holdings will be subject to criticism by examiners who may seek their orderly disposal.

BACKGROUND

In a number of cases where depository institutions engaged in speculative or other non-investment activities in their investment portfolios, the portfolio managers placed undue reliance on the advice of a securities sales representative. Some depository institutions have failed because of their speculative securities activities. Other institutions have had their earnings or capital impaired and the practical liquidity of their securities eroded by market value depreciation. Many of these problems could have been avoided had sound procedures been followed.

These factors led to the development of a supervisory policy statement on the "Selection of Securities Dealers and Unsuitable Investment Practices" that was approved by the Federal Financial Institutions Examination Council ("FFIEC") in April 1988. That policy statement emphasized the importance of knowing the securities firms with whom a depository institution does business and also dealt with certain regulatory concerns pertaining to speculative and other activities improperly carried out in an institution's investment portfolio.

In addition, it identified risks associated with stripped mortgage-backed securities, residuals, and zero-coupon bonds and concluded that they may be unsuitable investments for the vast majority of depository institutions.

This supervisory policy statement supersedes the April 1988 Policy Statement by providing additional information on the development of a portfolio policy and strategies for securities and on securities practices that are inappropriate for an investment account. It also discusses factors that must be considered when evaluating whether the reporting of an institution's investment portfolio holdings is consistent with its intent and ability. In addition, this policy statement contains expanded guidance on the suitability of acquiring and holding mortgage derivative products, other similar products, and zero coupon bonds.

Detailed guidance is provided in the following three sections.

SECTION I: SELECTION OF SECURITIES DEALERS

Many depository institutions rely on the expertise and advice of a securities sales representative for recommendations concerning proposed investments and investment strategies and for the timing and pricing of securities transactions. Many of the problems depository institutions have experienced with their securities activities could have been avoided had sound procedures been followed.

It is essential that the management of a depository institution have sufficient knowledge about the securities firms and personnel with whom they are doing business. A depository institution should not engage in securities transactions with any securities firm that is unwilling to provide complete and timely disclosure of its financial condition. Management should review the securities firm's financial statements and evaluate the firm's ability to honor its commitments before entering into transactions with the firm and periodically thereafter. An inquiry into the general reputation of the dealer also is necessary. The board of directors, or an

appropriate committee of the board¹, should periodically review and approve a list of securities firms with whom management is authorized to do business. The board or an appropriate committee thereof should also periodically review and approve limits on the amounts and types of transactions to be executed with each authorized securities firm. Limits to be considered should include dollar amounts of unsettled trades, safekeeping arrangements, repurchase transactions, securities lending and borrowing, other transactions with credit risk, and total credit risk with an individual dealer.

At a minimum, depository institutions should consider the following in selecting and retaining a securities firm:

- (1) The ability of the securities dealer and its subsidiaries or affiliates to fulfill commitments as evidenced by capital strength, liquidity and operating results. This evidence should be gathered from current financial data, annual reports, credit reports, and other sources of financial information.

1.

An appropriate committee of the board is a committee whose membership includes outside directors or whose actions are subject to review and ratification by the board of directors.

- (2) The dealer's general reputation for financial stability and fair and honest dealings with customers. Other depository institutions that have been or are currently customers of the dealer should be contacted.
- (3) Information available from State or Federal securities regulators and securities industry self-regulatory organizations, such as the National Association of Securities Dealers, concerning any formal enforcement actions against the dealer, its affiliates or associated personnel.
- (4) In those instances when the institution relies upon the advice of a dealer's sales representative, the background of the sales representative with whom business will be conducted in order to determine his or her experience and expertise.

In addition, the board of directors (or an appropriate committee of the board) must ensure that the depository institution's management has established appropriate procedures to obtain and maintain possession or control of securities purchased. In this regard, purchased securities and repurchase agreement collateral should only be left in safekeeping with selling dealers when: (1) the board of directors or an appropriate committee thereof is completely satisfied as to the

creditworthiness of the securities dealer and (2) the aggregate market value of securities held in safekeeping in this manner is within credit limitations that have been approved by the board of directors (or an appropriate committee of the board) for unsecured transactions (see the October 1985 FFIEC Policy Statement entitled "Repurchase Agreements of Depository Institutions with Securities Dealers and Others"). Federal credit unions, when entering into a repurchase agreement with a broker/dealer, are not permitted to maintain the collateral with the broker/dealer (see Part 703 of the National Credit Union Administration rules and regulations).

As part of the process of providing oversight over a depository institution's relationships with securities dealers, the board of directors may wish to consider adopting a policy concerning conflicts of interest when employees who are directly involved in purchasing and selling securities for the depository institution are also engaging in personal securities transactions with these same securities firms.

The board may also wish to adopt a policy applicable to directors, officers, and employees concerning the receipt of gifts, gratuities, or travel expenses from approved securities dealer firms and their personnel. (Also see in this connection the Bank Bribery Act, 18 USC 215, and interpretive releases.)

SECTION II: SECURITIES PORTFOLIO POLICY AND STRATEGIES AND
UNSUITABLE INVESTMENT PRACTICES

Policy and Strategies

A portfolio policy is a written description of authorized securities investment, trading and held for sale activities and the goals and objectives the institution expects to achieve through such activities. Strategies are written descriptions of the way management intends to achieve these goals and objectives and should address management's plans for each type of security (e.g., U.S. Treasuries, mortgage-backed securities, etc.) that will be used to carry out the portfolio policy. The portfolio policy and strategies should be consistent with the institution's overall business plan which may involve trading, held for sale, and investment activities. However, securities trading activity should only be conducted in a closely supervised trading account by institutions with strong capital and earnings and adequate liquidity. Each institution's portfolio policy and strategies must describe anticipated investment activities and either identify anticipated trading and held for sale activities or state that the institution will not enter into any trading or held for sale activities.

Securities activities must be conducted in a safe and sound manner. Each depository institution's board of directors should review and approve the overall portfolio policy and management's documented strategies annually, or more frequently if appropriate, and these approvals must be adequately documented. Furthermore, the board of directors or an appropriate committee thereof should review the institution's securities activities and holdings no less than quarterly. The board of directors or an appropriate committee thereof should also oversee the establishment of appropriate systems and internal controls that are designed to ensure that securities activities and holdings are consistent with the strategies of the institution and that the implementation of the strategies remains consistent with the portfolio policy's objectives.

When developing its portfolio policy and strategies, an institution should take into account such factors as asset/liability position, asset concentrations, interest rate risk, liquidity, credit risk, market volatility, and management's capabilities and desired rate of return. If the board of directors of a depository institution fails to adopt policies and strategies related to securities or if an institution fails to adhere to the policies and strategies approved by its board of directors, examiners may determine that some or all securities are held for sale or held for

trading. Held for sale securities must be reported at the lower of cost or market value and trading activities must be reported at marked value.

Proper Reporting of Securities Activities

Securities must be reported in accordance with generally accepted accounting principles (GAAP)² consistent with the institution's intent to trade, to hold for sale or to hold for investment.

Depository institution investment portfolios are maintained to provide earnings consistent with the safety factors of quality, maturity, marketability, and risk diversification. Securities that are purchased to accomplish these objectives may be reported at their amortized cost only when the depository institution has both the intent and ability to hold the assets for long-term investment purposes. Transactions entered into in anticipation of taking gains on short-term price movements are not suitable as investment portfolio practices. Such

2. In those cases where a difference in the interpretation of GAAP arises between an institution and its primary federal supervisory agency, the supervisory agency will require the institution to prepare its supervisory reports in accordance with the agency's interpretation.

transactions should only be conducted in a closely supervised securities trading account by institutions that have strong capital and earnings and adequate liquidity. Securities holdings that do not meet the reporting criteria for either investment or trading portfolios must be designated as held for sale.

Trading in the investment portfolio is characterized by a high volume of purchase and sale activity that, when considered in light of a short holding period for securities, clearly demonstrates management's intent to profit from short-term price movements. In such situations, a failure to follow accounting and reporting standards applicable to trading accounts may result in a misstatement of the depository institution's income and other published financial data and the filing of inaccurate regulatory reports. It is an unsafe and unsound practice to report securities holdings that result from trading transactions using reporting standards that are intended for securities held for investment purposes. Securities held for trading must be reported at market value, with unrealized gains and losses recognized in current income. Prices used in periodic revaluations should be obtained from sources that are independent of the securities dealer doing business with the depository institution. When prices are

internally estimated by the portfolio manager (when reliable external price quotations are not available), they should be reviewed by persons independent of the portfolio management function.

A pattern of intermittent sales transactions in the investment portfolio may suggest that securities ostensibly held as long-term portfolio assets are actually held for sale. Securities held for sale must be reported at the lower of cost or market value with unrealized losses (and recoveries of unrealized losses) being recognized in current income. It is an unsafe and unsound practice to report securities held for sale using reporting standards that are intended for securities held for investment purposes.

It is the substance of an institution's securities activities that determines whether securities reported as being held as investment portfolio assets are, in reality, held for trading or for sale. Examiners will particularly scrutinize institutions that exhibit a pattern or practice of reporting significant amounts of realized gains on sales from their investment portfolio and that have significant amounts of unrecognized losses. If in the examiner's judgment such a practice has occurred, some or all of the securities reported as held for investment will be designated as held for sale or for trading.

On the other hand, infrequent investment portfolio restructuring activities that are carried out in conjunction with a prudent overall business plan and that do not result in a pattern of gains being realized and losses being deferred on investment portfolio securities will generally be viewed as an acceptable investment practice. Such activities usually would not result in the redesignation of securities held for investment as securities held for trading or for sale.

A number of factors must be considered when evaluating whether the reporting of a depository institution's investment portfolio securities holdings is consistent with management's intent for such holdings. Some of the factors relating to investment portfolio securities for each reporting period include:

- (1) the dollar amount of gains realized from sales in relation to the dollar amount of losses realized from sales and in relation to unrealized losses for other investment portfolio securities;
- (2) the dollar amount of gains and losses realized from sales in relation to net income and capital;
- (3) the number of sales transactions resulting in gains and the number resulting in losses;

- (4) the gross dollar volume of securities purchases and sales;
- (5) the rapidity of turnover, including consideration of the length of time securities are owned prior to sale, the length of time securities are held after an unrealized gain is evident, and the remaining life of the security at the time of sale; and
- (6) the reasons for the depository institution's engaging in specific transactions, and whether these reasons are consistent with the portfolio policy and strategies.

Some of the factors that also must be considered to evaluate the depository-institution's ability to continue to hold investment portfolio securities include:

- (1) the sources and availability of funding;
- (2) the ability to meet margin calls and over-collateralization requirements related to leveraged holdings;

- (3) limitations such as capital requirements, the legality of certain securities holdings, liquidity requirements, legal lending limits, and prudential concentration limits; and
- (4) the ability to continue as a going-concern and to liquidate assets in the normal course of business.

Reporting of Loans Held for Sale or Trading

Historically, depository institutions have tended to hold loans until maturity. Consequently, the application of lower of cost or market value accounting to portions of the loan portfolio has not been an issue except in those depository institutions that have regularly originated or purchased loans for purposes of subsequent sale. Nevertheless, as with debt securities, reporting loans at the lower of cost or market value is required when the institution does not have both the intent and ability to hold these loans for long-term investment purposes.

The factors listed above should also be considered when evaluating whether the reporting of loans is consistent with management's intent and ability to hold the loans. A pattern of originating loans at yields below market and subsequently selling them at par once the yield approximates market is another factor that will be considered when evaluating management's intent.

Unsuitable Investment Practices

The following activities raise specific supervisory concerns. The first six practices are considered unsuitable when they occur in a depository institution's investment portfolio. Such practices should only be conducted in an appropriately controlled and segregated trading or held-for-sale portfolio. Practices seven and eight involve an institution's transfer of control over individual assets, segments of the portfolio, or the entire portfolio to persons or companies unaffiliated with the institution. In such situations, the depository institution clearly no longer has the ability to hold the affected securities for investment purposes and such securities should be reported as held for sale. The ninth practice is wholly unacceptable under all circumstances.

In addition, certain of the following practices may violate state law in certain states. State-chartered depository institutions are therefore cautioned to consult with their state supervisors.

1. "Gains Trading"

"Gains trading" is characterized by the purchase of a security as an investment portfolio asset and the subsequent sale of that same security at a profit after a

short-term holding period. Securities that cannot be sold at a profit are retained as investment portfolio assets. These "losers" are retained in the investment portfolio because investment portfolio holdings are accounted for at amortized cost, and losses are normally not recognized unless the security is sold. Gains trading often results in a portfolio of securities with one or more of the following characteristics: extended maturities, lower credit quality, high market depreciation, and limited practical liquidity. Frequent purchase and sale activity, combined with a short-term holding period for securities, clearly demonstrates management's intent to profit from short-term price movements. This indicates that other securities held in the investment portfolio may also be held for trading or for sale.

In many cases, "gains trading" involves the trading of "when-issued" securities, the use of "pair-off" transactions (including transactions involving off-balance sheet contracts), or "corporate" or "extended settlements" because these speculative practices afford an opportunity for substantial price changes to occur before payment for the securities is due.

2. "When-Issued" Securities Trading

"When-issued" securities trading is the buying and selling of securities in the period between the announcement of an offering and the issuance and payment date of the securities. A purchaser of a "when-issued" security acquires all the risks and rewards of owning a security and may sell the "when-issued" security at a profit before having to take delivery and pay for it. Purchases and subsequent sales of securities during the "when-issued" period may not be conducted in a bank's investment portfolio, but are regarded instead as a trading activity.

3. "Pair-Offs"

A "pair-off" is a security purchase transaction that is closed-out or sold at, or prior to, settlement date or expiration date. "Pair-offs" may also involve optional or mandatory off-balance sheet contracts (e.g., swaps, options on swaps, forward commitments and options on forward commitments).

In a "pair-off", an investment portfolio manager will commit to purchase a security. Then, prior to the predetermined settlement date, the portfolio manager will "pair-off" the purchase with a sale of the same security

prior to, or on, the original settlement date. Profits or losses on the transactions are settled by one party to the transaction remitting to the counter-party the difference between the purchase and sale price. Like "when-issued" trading, "pair-offs" permit an institution to speculate on securities price movements without having to pay for the securities. Such transactions are regarded as a trading activity.

4. Corporate or Extended Settlements

Regular-way settlement for transactions in U.S. Government and Federal agency securities (other than mortgage-backed and derivative products) is one business day after the trade date. Regular-way settlement for corporate and municipal securities and stripped U.S. Treasury securities and similar products is five business days after the trade date. In addition, regular-way settlement for transactions in mortgage backed and mortgage derivative products varies and can be up to 45 to 60 days after trade date.

The use of an extended or corporate settlement method for U.S. Government securities purchases and an extended settlement period (more than 5 business days) for stripped U.S. Treasury securities and similar products appears to

be offered by securities dealers in order to facilitate speculation on the part of the purchaser, similar to the profit opportunities available in a "pair-off" transaction. The use of a settlement period in excess of the regular-way settlement period appropriate for an instrument and, in any event beyond 60 days, in order to facilitate speculation is considered a trading activity.

5. Repositioning Repurchase Agreements

A repositioning repurchase agreement is a funding technique often used by dealers who encourage speculation through the use of "gains trading," "pair-off," "when-issued trading," and "corporate or extended settlement" transactions for securities which cannot be sold at a profit. The repositioning repurchase agreement is a service provided by the dealer so the buyer can hold the speculative position until it can be sold at a gain. The buyer purchasing the security pays the dealer a small "margin" that approximates the actual loss in the security. The dealer then agrees to fund the purchase of the security by buying it back from the purchaser under a resale agreement. Any dealer financing technique such as a repositioning repurchase agreement that is used to fund the speculative purchase of securities may be indicative of securities that were acquired with the intent to resell

at a profit at or prior to settlement or after a short-term holding period. This activity is inherently speculative and is a wholly unsuitable investment practice for depository institutions. Securities acquired in this manner should be reported as either trading account assets or as securities held for sale.

6. Short Sales

A short sale is the sale of a security that is not owned. The purpose of a short sale generally is to speculate on the fall in the price of the security. Short sales are transactions that should be conducted as a trading activity and, when conducted in the investment portfolio, they are considered to be unsuitable.

A short sale that involves the delivery of the security sold short by borrowing it from the depository institution's investment portfolio should not be reported as a short sale. Instead, it should be reported as a sale of the underlying security with gain or loss recognized.

Short sales are not permissible activities for Federal credit unions.

7. Delegation of Discretionary Investment Authority

Some depository institutions have delegated the purchase and sale authority for all or a portion of their investment securities portfolio to a non-affiliated firm or to an individual who is not an employee of the institution or one of its affiliates. Such a delegation of authority is intended to obtain a higher total return on the portfolio than the institution would realize if it managed the portfolio itself. When an institution has delegated such authority to a non-affiliated firm or to one or more individuals who are not employees of the depository institution or its affiliates, then the depository institution no longer has the ability to control its own securities and all holdings for which such authority has been delegated must be reported as held for sale.

The centralized management of investment portfolios of affiliated depository institutions by the parent holding company or another affiliate is not ordinarily considered to be the delegation of investment authority.

Investment authority will also not be considered delegated to unaffiliated parties when a depository institution's portfolio manager is required to authorize a recommended purchase or sale transaction prior to its execution and the portfolio manager, in practice, reviews such recommendations and does, in fact, authorize such transactions.

8. Covered Calls

The writing of covered calls is an option strategy that, for a fee, grants the buyer of the call option the right to purchase a security owned by the option writer at a predetermined price before a specified future date. The option fee³ received by the writing (selling) depository institution provides income and has the effect of increasing the effective yield on the portfolio asset "covering" the call.

Covered call programs have been promoted as hedging strategies because the fee received by the writer can be used to offset a limited amount of potential loss in the

3. Recognition of option fee income should be deferred until the option is exercised or expires. The covered call writer shall value the option at the lower of cost or market value at each report date.

price of the underlying security. If interest rates rise, the call option fee can be used to partially offset the decline in the market value of a fixed rate security or the increased cost of market rate liabilities used to carry the security. However, there is no assurance that an option fee will completely offset the price decline on the security or the increased cost of liabilities and the resulting reduced spread between the institution's return on assets and funding costs.

As a practical matter, the gain on a security covered by a written call is limited to the amount of the difference between the carrying value of the security and the strike price at which the security will be called away. The potential for losses on the covered security is not similarly limited. In an effort to obtain higher yields, some portfolio managers have mistakenly relied on the theoretical hedging benefits of covered call writing, and have purchased extended maturity U.S. government or Federal agency securities. This practice can significantly increase risks taken by the depository institution by contributing to a maturity mismatch between its assets and its funding.

Institutions should only initiate a covered call program for securities when the board of directors or an appropriate board committee has specifically approved a policy permitting this activity. This policy must set forth specific procedures for controlling covered call strategies, including recordkeeping, reporting, and review of activity, as well as providing for appropriate management information systems to report the results. Since the purchaser of the call acquires the ability to call the security away from the institution that writes the option, the ability of that institution to continue to hold the security rests with an outside party. Securities held for investment against which call options have been written should therefore be redesignated as held for sale and reported at the lower of cost or market value.

However, if an option contract requires the writer to settle in cash, rather than by delivering an investment portfolio security, the institution writing the option maintains the ability to hold the security and, thus, the security may be reported as an investment. In this case, the option must still be reported at the lower of cost or market value.

Covered call writing is not a permissible activity for Federal credit unions.

9. "Adjusted Trading"

"Adjusted trading" is a practice involving the sale of a security to a broker or dealer at a price above the prevailing market value and the simultaneous purchase and booking of a different security, frequently a lower grade issue or one with a longer maturity, at a price greater than its market value. Thus, the broker or dealer is reimbursed for losses on the purchase from the institution and ensured a profit. Such transactions inappropriately defer the recognition of losses on the security sold and establish an excessive reported value for the newly acquired security. Consequently, such transactions are prohibited and may be in violation of 18 U.S.C. sections 1001-False Statements or Entries and 1005-False Entries.

**SECTION III: MORTGAGE DERIVATIVE PRODUCTS, OTHER ASSET BACKED
PRODUCTS, AND ZERO-COUPON BONDS****Summary**

Mortgage derivative products include Collateralized Mortgage Obligations ("CMOs"), Real Estate Mortgage Investment Conduits ("REMICs"), CMO and REMIC residuals, and Stripped Mortgage-Backed Securities ("SMBs"). The cash flows from the mortgages underlying these securities are redirected to create two or more classes with different maturity or risk characteristics designed to meet a variety of investor needs and preferences.

Some mortgage derivative products exhibit considerably more price volatility than mortgages or ordinary mortgage pass-through securities and can expose investors to significant risk of loss if not managed in a safe and sound manner. This price volatility is caused in part by the uncertain cash flows that result from changes in the prepayment rates of the underlying mortgages.

In addition, because these products are complex, a high degree of technical expertise is required to understand how their prices and cash flows may behave in various interest rate and prepayment environments. Moreover, because the secondary

market for some of these products is relatively thin, they may be difficult to liquidate should the need arise. Finally, there is additional uncertainty because new variants of these instruments continue to be introduced and their price performance under varying market and economic conditions has not been tested.

A general principle underlying this section is that mortgage derivative products possessing average life or price volatility in excess of a benchmark fixed rate 30-year mortgage-backed pass-through security are "high-risk mortgage securities" and are not suitable investments. All high-risk mortgage securities, as defined in detail below, acquired by depository institutions after [insert date of adoption by respective FFIEC member agency] must be carried in the institutions' trading account or as assets held for sale. On the other hand, mortgage derivative products that do not meet the definition of a high-risk mortgage security at the time of purchase should be reported as investments, held-for-sale assets, or trading assets, as appropriate. Institutions must ascertain no less frequently than annually that such products remain outside the high risk category.

Institutions that hold mortgage derivative products that meet the definition of a high-risk mortgage security must do so to reduce interest rate risk in accordance with safe and sound practices.⁴ Furthermore, depository institutions that purchase high-risk mortgage securities must demonstrate that they understand and are effectively managing the risks associated with these instruments. Levels of activity involving high-risk mortgage securities should be reasonably related to an institution's capital, capacity to absorb losses, and level of in-house management sophistication and expertise. Appropriate managerial and financial controls must be in place and the institution must analyze, monitor, and prudently adjust its holdings of high-risk mortgage securities in an environment of changing price and maturity expectations.

4. Notwithstanding the provisions of this supervisory policy requiring the use of high-risk mortgage securities to reduce interest rate risk, this supervisory policy is not meant to preclude an institution with strong capital and earnings and adequate liquidity that has a closely supervised trading department from acquiring high-risk mortgage securities for trading purposes. The trading department must operate in conformance with well-developed policies, procedures, and internal controls, including detailed plans prescribing specific position limits and control arrangements for enforcing these limits.

Prior to taking a position in any high-risk mortgage security, an institution should conduct an analysis to ensure that the position will reduce the institution's overall interest rate risk. An institution should also consider the liquidity and price volatility of these products prior to purchasing them. Circumstances in which the purchase or retention of high-risk mortgage securities is deemed by the appropriate federal regulatory authority to be contrary to safe and sound practices for depository institutions will result in criticism by examiners, who may require the orderly divestiture of high-risk mortgage securities. Purchases of high-risk mortgage securities prior to [insert date of adoption by respective FFIEC member agency] the date of this supervisory policy statement generally will be reviewed in accordance with previously-existing supervisory policies.

Securities and other products, whether carried on or off the balance sheet (such as CMO swaps, but excluding servicing assets), having risk characteristics similar to high-risk mortgage securities will be subject to the same supervisory treatment as high-risk mortgage securities.

Long-term zero coupon bonds also exhibit significant price volatility and may expose an institution to considerable risk. Disproportionately large holdings of these instruments may be

considered an imprudent investment practice, which will be subject to criticism by examiners. In such instances, examiners may seek the orderly disposal of some or all of these securities. Assets slated for disposal are reported as assets held for sale at the lower of cost or market value.

Overview of the Securities

A. SMBSs consist of two classes of securities with each class receiving a different portion of the monthly interest and principal cash flows from the underlying mortgage-backed securities ("MBS"). In its purest form, an MBS is converted into an interest-only ("IO") strip, where the investor receives all of the interest cash flows and none of the principal, and a principal-only ("PO") strip, where the investor receives all of the principal cash flows and none of the interest. IOs and POs have highly volatile price characteristics based, in part, on the prepayment variability of the underlying mortgages. Therefore, IOs and POs will nearly always meet the definition of high risk in this policy.

From a market perspective, IOs and POs have relatively wide bid/ask spreads compared to mortgage-backed securities. This decreases the effectiveness of SMBSs as interest rate risk reduction tools from a price sensitivity perspective because

interest rates and prepayments need to change by a significant amount before the price at which the security can be sold (i.e., the bid price) will exceed the price at which the security was purchased (i.e., the ask price).

B. CMOs and REMICs, hereinafter called CMOs, have been developed in response to investor concerns regarding the uncertainty of cash flows associated with the prepayment option of the underlying mortgagor. A CMO can be collateralized directly by mortgages, but more often is collateralized by MBSs issued or guaranteed by the Government National Mortgage Association (GNMA), Federal National Mortgage Association (FNMA), or Federal Home Loan Mortgage Corporation (FHLMC) and held in trust for CMO investors. In contrast to MBSs in which cash flow is received pro rata by all security holders, the cash flow from the mortgages underlying a CMO is segmented and paid in accordance with a predetermined priority to investors holding various CMO tranches. By allocating the principal and interest cash flows from the underlying collateral among the separate CMO tranches, different classes of bonds are created, each with its own stated maturity, estimated average life, coupon rate, and prepayment characteristics. Notwithstanding the importance of the CMO structure to an evaluation of the timing and amount of cash flows, it is essential to understand the coupon rates on the mortgages underlying the CMO to assess the prepayment sensitivity of the CMO tranches.

C. Residuals, in the traditional sense, are claims on any excess cash flows from a CMO issue or other asset-backed security remaining after the payments due to the holders of the other classes and after trust administrative expenses have been met. The economic value of a residual is a function of the present value of the anticipated excess cash flows. These cash flows are highly sensitive to prepayments and existing levels of market interest rates, and the mortgages underlying the CMO must be understood in order to assess this sensitivity. Accordingly, most of these residuals meet the definition of high-risk in this policy. Other factors affecting the market value of residuals include a lack of liquidity and a wide bid-ask price spread.

In addition, the 1986 legislation creating the REMIC structure requires that one class of each REMIC issue be designated the residual interest for tax purposes. Some of these REMIC residuals are not residuals in the traditional sense.

However, these REMIC residuals also are subject to this policy statement.

Definition of "High-Risk Mortgage Security"

In general, any mortgage derivative product that exhibits greater price volatility than a benchmark fixed rate thirty-year mortgage-backed pass-through security will be deemed to be high risk. For purposes of this policy statement, a "high-risk mortgage security" is defined as any mortgage derivative product that at the time of purchase, or at a subsequent testing date, meets any of the following tests.⁵ In general, a mortgage derivative product that does not meet any of the three tests below will be considered to be a "nonhigh-risk mortgage security."

- (1) Average Life Test. The mortgage derivative product has an expected weighted average life greater than 10.0 years.

5. When the characteristics of a mortgage derivative product are such that the first two tests cannot be applied (such as with IOs), the mortgage derivative product remains subject to the third test.

- (2) Average Life Sensitivity Test. The expected weighted average life of the mortgage derivative product:
- a. extends by more than 4.0 years, assuming an immediate and sustained parallel shift in the yield curve of plus 300 basis points, or
 - b. shortens by more than 6.0 years, assuming an immediate and sustained parallel shift in the yield curve of minus 300 basis points.
- (3) Price Sensitivity Test. The estimated change in the price of the mortgage derivative product is more than 17 percent, due to an immediate and sustained parallel shift in the yield curve of plus or minus 300 basis points.⁶

6. When performing the price sensitivity test, the same prepayment assumptions and same cash flows that were used to estimate average life sensitivity must be used. The only additional assumption is the discount rate assumption.

First, assume that the discount rate for the security equals the yield on a comparable average life U.S. Treasury security plus a constant spread. Then, calculate the spread over Treasury rates from the bid side of the market for the mortgage derivative product. Finally, assume the spread remains constant when the Treasury curve shifts up or down 300 basis points. Discounting the aforementioned cash flows by their respective discount rates estimates a price in the plus and minus 300 basis point environments.

The initial price will be determined by the offer side of the market and used as the base price from which the 17 percent price sensitivity test will be measured.

In applying any of the above tests, all of the underlying assumptions (including prepayment assumptions) for the underlying collateral must be reasonable. All of the assumptions underlying the analysis must be available for examiner review. For example, if an institution's prepayment assumptions differ significantly from the median prepayment assumptions of several major dealers as selected by examiners, the examiners may use these median prepayment assumptions in determining if a particular mortgage derivative product is high risk.

The above tests may be adjusted in the event of a significant movement in market interest rates or to fairly measure the risk characteristics of new mortgage-backed products. Furthermore, each agency reserves the right to take such action as it deems appropriate to prevent circumvention of the definition of a high-risk mortgage security and other standards set forth in this policy statement.

Generally, a CMO floating-rate debt class will not be subject to the average life and average life sensitivity tests described above if it bears a rate that, at the time of purchase or at a subsequent testing date, is below the contractual cap on the instrument. (An institution may purchase interest rate contracts that effectively uncap the instrument.) For purposes of this policy statement, a CMO

floating-rate debt class is a debt class whose rate adjusts at least annually on a one-for-one basis with the debt class's index. The index must be a conventional, widely-used market interest rate index such as the London Interbank Offered Rate (LIBOR). Inverse floating rate debt classes are not included in the definition of a floating rate debt class.

Supervisory Policy for Mortgage Derivative Products

Prior to purchase, a depository institution must determine whether a mortgage derivative product is high-risk, as defined above. A prospectus supplement or other supporting analysis that fully details the cash flows covering each of the securities held by the institution should be obtained and analyzed prior to purchase and retained for examiner review. In any event, a prospectus supplement should be obtained as soon as it becomes available.

Nonhigh-risk Mortgage Securities

Mortgage derivative products that do not meet the definition of high-risk mortgage securities at the time of purchase should be reported as investments, held-for-sale assets, or trading assets, as appropriate.

Institutions must ascertain and document prior to purchase and no less frequently than annually thereafter that nonhigh-risk mortgage securities that are held for investment remain outside the high-risk category. If an institution is unable to make these determinations through internal analysis, it must use information derived from a source that is independent of the party from whom the product is being purchased. Standard industry calculators used in the mortgage-related securities marketplace are acceptable and are considered independent sources. In order to rely on such independent analysis, institutions are responsible for ensuring that the assumptions underlying the analysis and the resulting calculation are reasonable. Such documentation will be subject to examiner review.

A mortgage derivative product that was not a high-risk mortgage security when it was purchased as an investment may later fall into the high-risk category. If this occurs, the mortgage derivative product must be redesignated as held for sale or trading. Once a mortgage derivative product has been designated as high-risk, it may be redesignated as nonhigh-risk only if, at the end of two consecutive quarters, it does not meet the definition of a high-risk mortgage security. Upon redesignation as a nonhigh-risk security, it does not need to be tested for another year.

High-Risk Mortgage Securities

An institution may only acquire a high-risk mortgage derivative product to reduce its overall interest rate risk. (Institutions meeting the guidance established in footnote 4 may also purchase these securities for trading purposes.) An institution that has acquired high-risk mortgage securities to reduce interest rate risk needs to manage its holdings of these securities because of their substantial prepayment and average life variability. Such management implies that the institution does not have both the intent and ability to hold high-risk mortgage securities for long-term investment purposes. Accordingly, high-risk mortgage securities that are being used to reduce interest rate risk should not be reported as investments at amortized cost, but must be reported as trading assets at market value or as held-for-sale assets at the lower of cost or market value.

In appropriate circumstances, examiners may seek the orderly divestiture of high-risk mortgage securities that do not reduce interest rate risk. These securities must be reported as held-for-sale assets at the lower of cost or market value.

An institution that owns or plans to acquire high-risk mortgage securities must have a monitoring and reporting system in place to evaluate the expected and actual performance of such

securities. The institution must conduct an analysis that shows that the proposed acquisition of a high-risk mortgage security will reduce the institution's overall interest rate risk. Subsequent to purchase, the institution must evaluate at least quarterly whether this high-risk mortgage security has actually reduced interest rate risk.

The institution's analyses performed prior to the purchase of high-risk mortgage securities and subsequently thereafter must be fully documented and will be subject to examiner review. This review will include an analysis of all assumptions used by management regarding the interest rate risk associated with the institution's assets, liabilities and off-balance sheet positions. Analyses performed and records constructed to justify purchases on a post-acquisition basis are unacceptable and will be subject to examiner criticism. Reliance on analyses and documentation obtained from a securities dealer or other outside party without internal analyses by the institution are unacceptable and reliance on such third-party analyses will be subject to examiner criticism.

Management should also maintain documentation demonstrating that it took reasonable steps to assure that the prices paid for high-risk mortgage securities represented fair market value. Generally, price quotes should be obtained from at

least two brokers prior to executing a trade. If, because of the unique or proprietary nature of the transaction or product, or for other legitimate reasons, price quotes cannot be obtained from more than one broker, management should document the reasons for not obtaining such quotes.

In addition, a depository institution that owns high-risk mortgage securities must demonstrate that it has established the following:

- (1) A board-approved portfolio policy which addresses the goals and objectives the institution expects to achieve through its securities activities, including interest rate risk reduction objectives with respect to high-risk mortgage securities;
- (2) Limits on the amounts of funds that may be committed to high-risk mortgage securities;
- (3) Specific financial officer responsibility for and authority over securities activities involving high-risk mortgage securities;
- (4) Adequate information systems;

- (5) Procedures for periodic evaluation of high-risk mortgage securities and their actual performance in reducing interest rate risk; and
- (6) Appropriate internal controls.

The board of directors, or an appropriate committee thereof, and the institution's senior management should regularly (at least quarterly) review all high-risk mortgage securities to determine whether these instruments are adequately satisfying the interest rate risk reduction objectives set forth in the portfolio policy. The depository institution's senior management should be fully knowledgeable about the risks associated with prepayments and their subsequent impact on its high-risk mortgage securities.

Failure to comply with this policy will be viewed as an unsafe and unsound practice.

Purchases of high-risk mortgage securities prior to [insert date of adoption by respective FFIEC member agency] generally will be reviewed in accordance with previously-existing supervisory policies.

Securities and other products, whether carried on or off the balance sheet (such as CMO swaps, but excluding servicing assets), having characteristics similar to those of high-risk mortgage securities will be subject to the same supervisory treatment as high-risk mortgage securities.

Supervisory Policy for Other Zero-Coupon, Stripped or Original Issue Discount (OID) Products

Zero-coupon, "stripped" and certain Original Issue Discount ("OID") securities are priced at large discounts to their face value prior to maturity and exhibit significant price volatility. "Stripped" securities are the interest or principal portions of U.S. Government obligations (which are separated and sold to depository institutions in the form of stripped coupons or stripped bonds (principal)), STRIPS, and such proprietary products as CATs or TIGRs.⁷ Also, deep

7. STRIPS (Separate Trading of Registered Interest and Principal of Securities) is the U.S. Treasury program that permits separate trading and ownership of the interest and principal payments on certain long-term U.S. Treasury note and bond issues that are maintained in the book-entry system operated by the Federal Reserve Banks. CATs (Certificates of Accrual on Treasury Securities) and TIGRs (Treasury Investment Growth Receipts) are proprietary names for a form of coupon stripping that has been developed by securities firms. The securities firm purchases U.S. Treasury securities, delivers them to a trustee, and sells receipts representing the rights to future interest and/or principal payments from the U.S. Treasury securities held by the trustee.

discount OID bonds have been issued by a number of municipal entities.

Although considered free from credit risk if issued directly by the U.S. Government, longer maturities of zero coupon, stripped, and deep discount OID products (generally, remaining maturities exceeding ten years) have displayed extreme price volatility. Therefore, disproportionately large long-maturity holdings of these instruments, in relation to the total investment portfolio or total capital of the depository institution, are considered an imprudent investment practice. Such holdings will be subject to criticism by examiners who may seek the orderly disposal of some or all of these securities. Securities slated for disposal must be reported as held-for-sale assets at the lower of cost or market value.

Other Considerations

Several states have adopted, or are considering, regulations that prohibit state-chartered banks from purchasing interest-only strips or other securities discussed above. Accordingly, state-chartered institutions should consult with their state regulator concerning the permissibility of these purchases.

APPENDIX 7

Investment Securities: Domestic and International Introduction

Section 203.1

This section discusses money market investments and securities purchased by the bank for its own account. Securities purchased primarily for resale to customers, i.e., trading account securities, are discussed in a separate section of this handbook.

The term "money market" generally refers to the markets for short-term credit instruments, such as commercial paper, bankers' acceptances, negotiable certificates of deposit, repurchase agreements and federal funds. Although not carried in the investment account, such instruments generally are handled by the investment officer. The highly liquid nature of such investments allows the bank to employ temporarily idle funds in interest bearing assets that usually can be converted quickly into cash. The speed of conversion, however, depends on the quality of the investment. Quality can be monitored through credit analysis, emphasizing a review of current financial information, the use of specializing rating services and frequent collateral valuation. Since money market transactions generally involve a large volume of funds, deficiencies in credit or administrative policies can quickly result in serious problems. The investment policy should include limitations on authority of personnel, restrictions regarding asset type and amount and established credit standards. Compliance with policy guidelines should be assured through adequate internal controls, audit coverage, and internal supervisory review.

Investment securities, representing obligations purchased for the bank's own account, may include United States government obligations; various Federal agency bonds; state, county, and municipal issues; special revenue bonds; industrial revenue bonds; and certain corporate debt securities. Securities included in the investment account should provide a reasonable rate of return commensurate with safety, which must take precedence. Investment considerations should come into play only after provision for all cash needs and reasonable loan demands have been met. Accordingly, an investment account should contain some securities that may be quickly converted into cash by immediate sale or by bonds maturing. Hence, liquidity and marketability are of the utmost importance. A bond is a liquid asset if its maturity is short and if there is assurance that it will be paid at maturity. It is marketable if it may be sold quickly at a price commensurate with its yield and quality. The highest quality bonds have those two desirable qualities.

Investments, like loans, are extensions of credit involving risks that carry commensurate rewards. However,

risks in the investment portfolio should be minimized to ensure that liquidity and marketability are maintained. Bank management must recognize that the investment account is primarily a secondary reserve for liquidity rather than a vehicle to generate speculative profits. Speculation in marginal securities to generate more favorable yields is an unsound banking practice.

Occasionally, examiners will have difficulty distinguishing between a loan and a security. Loans result from direct negotiations between a borrower and a lender. A bank will refuse to grant a loan unless the borrower agrees to its terms. A security, on the other hand, is usually acquired through a third party, a broker or dealer in securities. Most securities have standardized terms which can be compared to the terms of other market offerings. Because the terms of most loans do not lend themselves to such comparison, the average investor may not accept the terms of the lending arrangement. Thus, an individual loan cannot be regarded as a readily marketable security.

Limitations and Restrictions on National Banks' Holdings

National banks are governed in their security investments by the seventh paragraph of 12 USC 24 and by the investment securities regulation of the Comptroller of the Currency (12 CFR 1). The investment securities regulation defines investment securities; political subdivision, general obligation; and Type I, II, and III securities, and establishes limitations on the bank's investment in those securities. The law, 12 USC 24, requires that for a security to qualify as an investment security, it be marketable and not predominantly speculative.

For its own account, a bank may purchase Type I securities, which are obligations of the U.S. government or its agencies and general obligations of states and political subdivisions (see 12 USC 24(7)), subject to no limitations, other than the exercise of prudent banking judgment. The purchase of Type II and III securities (see 12 CFR 1.3(d) and (e)) is limited to 10 percent of capital and surplus for each obligor when the purchase is based on adequate evidence of the maker's ability to perform. That limitation is reduced to 5 percent of capital and surplus for all obligors in the aggregate where the purchase judgment is predicated on "reliable estimates." The term "reliable estimates" refers to projections of income and debt service requirements or conditional ratings when factual credit information is not available and when the obligor does not have a record

Investment Securities: Domestic and International

Introduction

Section 203.1

of performance. Securities purchased subject to the 5 percent limitation may, in fact, become eligible for the 10 percent limitation once a satisfactory financial record has been established. There are additional limitations on specific securities ruled eligible for investment by the OCC that are detailed in 12 CFR 1.3. The par value, not the book value or purchase price, of the security is the basis for computing the limitations. However, the limitations do not apply to securities acquired through debts previously contracted.

When a bank purchases an investment security that is convertible into stock or has stock purchase warrants attached, entries must be made by the bank at the time of the purchase to write down the cost of the security to an amount representing the investment value of the security exclusive of the conversion feature or the attached stock purchase warrants. The purchase of securities convertible into stock at the option of the issuer is prohibited (12 CFR 1.10).

Mortgage Backed Securities

Most mortgage backed securities (MBS) pass-through obligations are issued by or obligations of GNMA, FNMA or FHLMC. Accordingly, banks may invest in them in unlimited amounts.

The Secondary Mortgage Market Enhancement Act of 1984 (SMMEA) amended 12 USC 24(7) and allows national banks to purchase and hold "mortgage related securities" without any statutory limitation. Collateralized Mortgage Obligations (CMO's) and Real Estate Mortgage Investment Conduits (REMIC's) are "mortgage related securities" for the purposes of SMMEA if they are offered and sold pursuant to Section 4 (5) of the Securities Act of 1933 (15 USC 77d(5)), or are mortgage related securities as that term is defined in Section 3(a) (41) of the Securities Exchange Act of 1934 (15 USC 78c(a) (41)).

Information as to when a "mortgage related security" is covered by SMMEA is usually found in the security's prospectus or offering circular. Look in the index of the prospectus under SMMEA or legal matters. A privately issued MBS that is not fully collateralized by U.S. government or Federal agency obligations must be supported by a credible opinion that it is covered by SMMEA. In the absence of such an opinion, this type of security may be subject to a Type III investment limit or, depending upon the facts, considered ineligible for national bank investment. Interest Only (IOs) portions and Residual interests in any of the above listed securities are not unconditional obligations of the issuer and

accordingly these derivative products are not eligible for the same holding limitations.

Private Placements

The absence of a public market for securities which are "privately placed" makes them ineligible as investments for national bank investment portfolios. Refer to handbook section 411.1 for a more complete discussion of private placements.

Mutual Funds and Investment Companies

A national bank may purchase for its own account without limitation shares of investment companies as long as the portfolios of such companies consist solely of obligations that are eligible for purchase without limitation by national banks for their own account pursuant to the provisions of paragraph Seventh of 12 USC 24. Shares of investment companies whose portfolios contain investments subject to the limits of 12 USC 24 or 84 may only be held in an amount not to exceed 10 percent of capital and surplus. That is, a bank may invest only an amount not to exceed 10 percent of its capital and surplus in each such investment company. Also, to be eligible for national bank investment, the investment company must be registered with the Securities and Exchange Commission under the Investment Company Act of 1940 and Securities Act of 1933 or be a privately offered fund sponsored by an affiliated commercial bank. This can be determined by a review of the fund's prospectus.

Banks that invest in such investment companies must be aware of the possibility that a bank may violate the 10 percent limitation because of the cumulative holdings of a particular security in the portfolios of more than one investment company or in combination with the bank's direct holdings. Accordingly, a bank that has invested in shares of more than one investment company must determine that its *pro rata* share of any security in the fund portfolio subject to the 10 percent limitation does not exceed it by being combined with the bank's *pro rata* share of that security held by all other funds in which the bank has invested and with the Bank's own direct investment portfolio holdings. Therefore, the holdings of investment companies whose shares are held by the bank must be reviewed quarterly.

The bank's investment policy as formally approved by its board of directors should (1) provide specifically for such investments, (2) require that for initial investments in specific investment companies prior approval of the board of directors be obtained and recorded in the

Investment Securities: Domestic and International Introduction

Section 203.1

official board minutes; and (3) ensure that procedures, standards, and controls for managing such investments are implemented prior to making the investment.

A bank's investment in shares of investment companies that use futures, forward placement and options contracts, repurchase agreements and securities lending arrangements as part of their portfolio management strategies is permitted, provided that those instruments would be considered acceptable for use in a national bank's own investment portfolio.

In addition to considering the types of instruments used for each investment company and applicable investment limits, national bank portfolio managers should weigh the practical liquidity of holdings of investment company shares. Mutual Funds Shares and Unit Investment Trust (UIT) units are much less marketable generally than many types of "investment securities," particularly U.S. government and federal agency issues. Indeed, certain investment company fee structures, such as "deferred contingency" fees (declining rear-end load fees), may actually impede marketability. Most municipal authorities will not accept mutual fund shares as collateral for pledge against uninsured public deposits or for other pledging purposes. Units of closed-end tax exempt UITs may present particular liquidity problems because they may not be readily redeemable nor have a secondary market.

Generally Accepted Accounting Principles and the instructions for the quarterly Reports of Condition require

that bank holdings of investment company shares be reported at the lower of the aggregate cost or market value. The market value of "open-end" investment company shares reported should be based on net asset value rather than offering price; shares in "closed-end" investment companies should be marked to the bid price. In no case should the carrying value of investment company holdings be increased above their aggregate cost as a result of net unrealized gains. Net unrealized losses on marketable equity securities and subsequent recoveries of those losses should be *excluded* from the income statement and be reported instead (reduced by the applicable income tax effect) as an adjustment to "Undivided Profits and Capital Reserves." A loss other than a temporary one on an individual investment held by the fund should be changed to noninterest expense on the income statement.

As part of the market value determination, mutual funds sales fees, both "front-end load" and "deferred contingency," must be deducted to reflect more accurately the current value of fund shares. Consequently, unless the market value of such shares increases sufficiently to offset those fees, their amount must be reflected at the end of the first reporting period as unrealized losses and charged against "Undivided Profits and Capital Reserves."

Generally, banks are prohibited from investing in stocks. However, detailed below are a number of exceptions to that rule:

Permitted Stock Holdings by National Banks

Type of stock	Authorizing statute and limitation
Federal Reserve Bank	12 USC 282—Subscription must equal 6 percent of the bank's capital and surplus, 3 percent paid in. (Regulation I, Federal Reserve Board, 12 CFR 209)
Safe deposit corporation	12 USC 24—15 percent of capital and surplus
Corporation holding bank premises	12 USC 371(d)—100 percent of capital. Limitation includes total direct and indirect investment in bank premises in any form. Maximum limitation may be exceeded with permission of the District Deputy Comptroller (12 CFR 7.3100).
Small business investment company	15 USC 682(b)—5 percent of capital and surplus. After January 10, 1968, national banks are prohibited from acquiring shares of such a corporation if, upon making the acquisition: <ul style="list-style-type: none"> • The aggregate amount of shares in small business investment companies then held by the bank would exceed 5 percent of its capital and surplus.

Investment Securities: Domestic and International
Introduction

Section 203.1

Permitted Stock Holdings by National Banks

<i>Type of stock</i>	<i>Authorizing statute and limitation</i>
Banking service corporation	12 USC 1861 and 1862—10 percent of capital and surplus. Limitation includes total direct and indirect investment in any form. Also, corporation must be owned by one or more banks
Foreign banking corporation	12 USC 601 and 618—10 percent of capital and surplus with the provision that capital and surplus must be \$1 million or more
Corporation authorized under Title IX of the Housing and Urban Development Act of 1968 (amendments not included)	12 USC 1718(f)—No limit.
Federal National Mortgage Association	12 USC 1718(f)—No limit.
Bank's own stock	12 USC 83—Shares of the bank's own stock may not be acquired or taken as security for loans, except as necessary to prevent loss from a debt previously contracted in good faith. Stock, so acquired, must be disposed of within 6 months of the date of acquisition.
Corporate stock acquired through debts previously contracted (DPC) transaction	Case law has established that stock of any corporation may be acquired to prevent loss from a debt previously contracted in good faith. However, if the stock is not disposed of within a reasonable time period, it loses its status as a DPC transaction and becomes a prohibited holding under 12 USC 24(7). The maximum time such stock can be retained generally is regarded to be 5 years. The maximum time limit for stock of affiliates acquired through a DPC transaction, and not held within the limitations of specific statutes, is 2 years
Corporate stock acquired as a dividend from a small business investment company (SBIC)	12 CFR 7.7535—No limit Stock of any corporation may be acquired and retained, if received as a dividend on SBIC stock
Operating subsidiaries	12 CFR 7 10—No limit Stock of any operating subsidiary corporation, the functions or activities of which are limited to those authorized to a national bank, may be acquired and held without limitation, provided that at least 80 percent of the voting stock of the subsidiary is owned by the bank. The establishment of an operating subsidiary requires the prior approval of the OCC (12 CFR 7.7378 through 7.7380)
State Housing Corporation incorporated in the state in which the association is located	12 USC 24—5 percent of its capital stock, paid in and unimpaired plus 5 percent of its unimpaired surplus fund when considered together with loans and commitments made to the corporation
Agricultural Credit Corporation	12 USC 24—20 percent of capital and surplus unless the association owns over 80 percent No limit if association owns 80 percent or more

Investment Securities: Domestic and International Introduction

Section 203.1

Permitted Stock Holdings by National Banks

<i>Type of stock</i>	<i>Authorizing statute and limitation</i>
Government National Mortgage Association	12 USC 24—No limit.
Student Loan Marketing Association	12 USC 24—No limit.
Minibank Capital Corporation	12 CFR 7.7480—2 percent of capital and surplus. Aggregate investment in all such projects should not exceed 5 percent of capital and surplus.
Charitable foundations	12 CFR 7.7445—Contribution in any one year not to exceed income tax deduction
Community development corporation	12 CFR 7.7480—2 percent of capital and surplus. Aggregate invest- ments in such projects should not exceed 5 percent of capital and surplus
Bankers' banks	12 USC 24—10 percent of capital stock and paid in and unimpaired surplus. Bankers' bank must be insured by the FDIC, owned exclusively by other banks, and engaged solely in providing banking services to other banks and their officers, directors, or employees. Ownership shall not result in any bank acquiring more than 5 percent of any class of voting securities of the bankers' bank.

Investment Policy

As provided in 12 USC 24(7), a bank's board of directors is responsible for supervising the bank's activities. Well-managed banks should have written policies that provide guidelines for the investment officer, investment committee and those dealing in securities.

The basic objectives of a sound investment policy are the same for all banks, but the emphasis placed on each objective will vary according to the individual bank's needs. The basic objectives include

- Minimizing risks.
- Generating a favorable return on investments without undue compromise of the other objectives.
- Providing for adequate liquidity
- Meeting pledging requirements

To insure that the directors do not delegate policy decisions, the investment policy must encompass more than a philosophical description of objectives.

The investment policy should include guidelines on the quality and quantity of each type of security to be held,

with the stipulation that securities acquired will be eligible and in amounts conforming to the limitations prescribed by 12 USC 24(7) and 23 CFR 1. Credit quality is of major importance.

United States government obligations are the highest quality credits and are the most readily marketable. Therefore, an adequate amount of such securities should be in the portfolio. They are "riskless" from a credit standpoint but are subject to price fluctuations because of changes in money market interest rates. Of course, long-term issues tend to fluctuate more widely than the shorter term ones.

Federal agency securities are the next highest in quality. For securities with identical maturities, the yield spread averages between 10 and 20 basis points above U.S. government bonds. Similar investments that currently enjoy wide acceptance in the banking community are U.S. government guaranteed public housing authority issues. New housing authority and public housing authority notes or bonds provide the investor with tax exempt income and a full faith and credit guaranty of the U.S. government.

Investment Securities: Domestic and International

Introduction

Section 203.1

Other tax exempt bonds enjoy varying levels of indirect U.S. government support. "Pre-refunded" or "escrowed" bonds are often fully and directly secured by obligations issued by or otherwise supported by the full faith and credit of the United States. Certain municipal housing bonds are partially payable from rental subsidies and/or mortgage credit insurance provided by federal agencies. Pools of partially guaranteed student loans are sometimes pledged for payment of municipal higher education bonds. There are numerous programs that provide federal backing for municipal bonds. Care must be taken to distinguish between those issues that are federally guaranteed and those that are not.

High quality municipal bonds frequently are desirable because of their tax exempt status. Many municipal

bonds, however, possess an unfavorable market aspect. Except for high quality issues of larger municipalities, municipals often are not readily marketable or may produce sizeable spreads between bid and ask prices. The spread may be so wide it may cost the selling bank a sizeable portion of a year's interest. Most banks hold local securities as a service to their community. The aggregate of such holdings should be reasonable relative to the capital structure of the bank.

Monthly rating service publications are useful in determining the investment quality of municipal and corporate obligations. The standard bond rating symbols are indicated in the order of their credit quality.

<u>Standard & Poors</u>	<u>Moody's</u>	<u>Description</u>
<i>Bank Quality Investments</i>		
AAA	Aaa	Highest grade obligations
AA	Aa	High grade obligations
A	A-1, A	Upper medium grade
BBB	Baa-1, Baa	Medium grade, on the borderline between definitely sound obligations and those containing predominantly speculative elements. Generally, the lowest quality bond that may qualify for bank investment.
<i>Speculative and Defaulted Issues</i>		
BB	Ba	Lower medium grade with only minor investment characteristics
B	B	Low grade, default probable.
D	Ca, c	Lowest rated class, defaulted, extremely poor prospects
<i>Provisional or Conditional Rating</i>		
Rating-P	Con. (Rating)	Debt service requirements are largely dependent on reliable estimates as to future events

A program for obtaining and evaluating current information on securities in the investment portfolio should

be an integral part of a bank's investment policy. At minimum, the examiner should expect such a program

Investment Securities: Domestic and International Introduction

Section 203.1

to include credit reviews prior to purchase and credit updates on all non-rated issues, municipal obligations with a credit rating that has declined, special revenue and other debt obligations with limited or no marketability, speculative and defaulted issues and stocks acquired through DCP transactions. Credit analysis is necessary to determine if an investment is eligible for the bank to own. The directors' failure to exercise that responsibility can result in violations of law and potential personal liability.

General obligations of state and municipal issuers are exempt from the restrictive provisions of 12 USC 24 and 12 CFR 1. However, a bank must exercise prudent banking judgment in managing the general obligation section of its portfolio.

The investment policy should require evaluation of the following minimum credit information before a bank acquires general obligation municipal bonds.

- Debt burden of municipality:
 - Relationship of debt burden to property valuation.
 - Reasonableness of debt burden on a per capita basis.
 - Sinking fund provisions.
 - Historical trends of debt.
 - Future debt service requirements.
- Tax burden of municipality
 - Assessed valuation, including basis of assessment
 - Relationship of tax burden to property valuation
 - Tax collection record
 - Recent trends in tax rates.
- Quality of budgets:
 - Requirement for balanced budget.
 - Recent trends in budget deficits or surpluses
 - Cash flow requirements.
 - Accuracy of past estimates of revenues and expenses
 - Accounting policies.
- Character of community:
 - Economic background
 - Debt paying ability
 - Population trends

Special revenue obligations may have a place in the investment portfolio. They generally are supported solely by service charges established by the issuing governmental authority that owns or operates a facility, such as toll roads, industrial plants or airports. Because such bonds are not supported by the taxing authority, they generally cannot be regarded as possessing as high a credit quality as general obligations. Special revenue obligations possess many of the characteristics of term loans. Accordingly, a bank should obtain and evaluate appropriate credit information. Factors peculiar to special revenue issues that must be considered separately include:

- The number of times gross revenues covers debt service (coverage).
- The segregation of revenue funds from general funds.
- The flow of revenues to specific reserve accounts
- Special covenants that may limit default remedies.

The investment policy also should include a maturity program. Each bank should tailor its maturity program to its individual needs, particularly its liquidity requirements. Anticipated loan increases, deposit decreases, and a reserve to meet unexpected liquidity demands should be provided. Accordingly, a reasonable percentage of liabilities should be funded in short-term, high quality investments or money market instruments. Such practices generally will assure a short-term flow of funds that may be reinvested or held to meet liquidity needs. It also is advisable that a maximum allowable maturity be defined in the policy. Investments with unusually long terms are vulnerable to market swings that may depress both their price and their useful liquidity. As a general rule, outstanding maturities should be spaced evenly with the preponderance in short- and medium-term issues.

Concentrations

Policy guidelines for risk diversification should be formulated by bank management in conformance with legal limits and prudent investment practices. Supervisory concern about a bank's investment portfolio diversification should focus on credit risk, interest-rate risk, and market risk associated with concentrations in holdings. Concentrations, or the lack of risk diversification, can result from

- Single or related issuers
- Lack of geographic distribution.

Investment Securities: Domestic and International Introduction

Section 203.1

- Holdings of obligations with similar characteristics, such as mortgage backed bonds, zero coupon bonds, hospital bonds, etc.
- Holdings of bonds having the same trustee
- Holdings of bonds having the same credit enhancer, such as insurer or letter of credit issuer
- Holdings of securitized loans having the same originator, packager, or guarantor.
- Similar credit ratings, particularly in low ratings

Concentrations of risk arising from both a bank's portfolio of securities and loans may be compatible with a bank's management strategy. However, having securities and loans repayable from the same general source, or with common originators, enhancers, or servicers greatly increases the bank's vulnerability to unforeseen credit and liquidity risks. Bank risk managers need to be aware of and monitor these types of *bank-wide* risk concentrations. They need to develop prudent concentration limits, and institute name and type limitations for securities and loans. Bank managers which do not monitor concentration risks and consider the potential for concentrations in the bank's invested funds and loan portfolios are increasing the risk to bank capital and are remiss in carrying out their responsibilities.

The investment policy should take into consideration the applicable Federal and state income tax laws, and the individual bank's tax position. Finally, the investment portfolio should be reviewed at least annually, by the board of directors, and quarterly by senior officers of the bank. Sufficient analytical data must be provided to allow the board and senior management to make an informed judgment of the investment policy's effectiveness. Such reviews should consider the information discussed in this section as well as the current market value of the portfolio.

The responsibility for supervising the bank's investment account rests solely with the board of directors and cannot be delegated to a correspondent bank, an advisory service, a brokerage house, or a rating service.

Selection of Securities Dealers

It is common for bank investment portfolio managers to rely on the advice of securities sales representatives for recommendation of proposed investments, investment strategies, and the timing and pricing of securities transactions. Accordingly it is important for bank management to know the securities firms and the personnel with whom they deal. An investment portfolio manager

should not engage in securities transactions with any securities dealer that is unwilling to provide complete and timely disclosure of its financial condition. Management must review the dealer's financial statements and make an informed judgment about the ability of the dealer to honor its commitments. An inquiry into the general reputation of the dealer also is necessary.

The board of directors and/or an appropriate board committee should review and approve a list of securities firms with whom the bank is authorized to do business. The dealer selection process should include:

- Consideration of the ability of the securities dealer and its subsidiaries or affiliates to fulfill commitments as evidenced by capital strength and operating results disclosed in current financial data, annual reports, credit reports, etc.
- Inquiry into the dealer's general reputation for financial stability and fair and honest dealings with customers, including past or current financial institution customers of the securities dealer.
- Contact with appropriate state or federal securities regulators and securities industry self-regulatory organizations, such as the National Association of Securities Dealers, concerning any formal enforcement actions against the dealer or its affiliates or associated personnel.
- Inquiry, as appropriate, into the background of the sales representative to determine his or her experience and expertise.
- Determination of whether the bank has appropriate procedures to establish possession or control of securities purchased. Purchased securities and any repurchase agreement collateral should be kept in safekeeping with selling dealers only when (1) the board is completely satisfied as to the credit worthiness of the securities dealer; and (2) the aggregate value securities held in safekeeping in this manner is within credit limitations that have been approved by the board of directors, or a committee of the board, for unsecured transactions.

As a part of the process of managing a bank's relationships with securities dealers, the board of directors may also want to consider prohibiting those employees, who are directly involved in purchasing and selling securities for the bank, from engaging in personal securities transactions with the same securities firm the bank uses for its transactions without specific board approval.

Investment Securities: Domestic and International Introduction

Section 203.1

and periodic review. Such prohibition could be included in the bank's code of ethics or code of conduct. The board also may want to adopt a policy applicable to directors, officers or employees concerning receipt of gifts, gratuities or travel expenses from approved dealer firms and their personnel (also see the Bank Bribery Law, 18 USC 215 and interpretive releases).

Delegation of Portfolio Discretion

Bank managers sometimes delegate investment decision making authority to individuals who are not bank or affiliate employees. This might be done based upon the promise of substantially increased return on a bank's securities because of a portfolio advisor or consultant's ability to act quickly on buy or sell opportunities and to execute transactions at the best possible price; to aggressively use market data and their knowledge of new securities instruments; to advantageously time the transaction execution; select the securities dealer used, and, search for and negotiate prices predicated on volume discounts.

The responsibility for supervising a national bank's investment portfolio rests solely with the board of directors. The directors of a national bank have a fiduciary duty to the shareholders, depositors, and creditors of the bank, and are charged with an implied trust to use bank funds only for permitted purposes. The OCC has stated in Interpretive Ruling number 7.4425 and has informed bank directors (see chapter III *The Director's Book-The Role of a National Bank Director* and section 501.1 *Comptroller's Handbook for National Bank Examiners*) that directors cannot delegate responsibility for their duties, but can only assign the authority for performance of those duties to others. The OCC does not object to delegation of authority to perform securities transactions to individuals not employed by the bank, or to unaffiliated firms, provided that supervision of those delegated is at the same level the OCC expects of bank employees with such authority.

When a bank's board of directors assigns authority to take investment action (i.e. make buy or sell determinations) to non-employees or to nonaffiliated companies, it effectively removes portfolio control from the bank management. Accordingly, such investments no longer meet the requirements of Generally Accepted Accounting Principals (GAAP) for securities portfolio accounting, and securities transactions must be recorded and reported on an independently established mark to market, or lower of cost or market basis.

Open Contractual Commitments to Purchase or Sell Securities

When Issued

The most common type of open contractual commitment to purchase or sell securities encountered by examiners is a "When Issued" or "When and If Issued" security transaction (WI). WI securities are new issue securities that have been awarded to a buyer but have not yet been paid for or delivered. A WI period may last several weeks or more than a month. WI periods for U.S. government securities are shorter than those for federal agency or municipal securities. During the WI period, the buyer may pay a small deposit on U.S. government transactions but usually pays nothing on federal agency and municipal trades while retaining all ownership rights to the underlying security. WI securities enjoying wide market distribution will usually begin to trade in the secondary market during the WI period, and a bank may sell its rights to the security prior to paying for it. Owning rights to a security and being able to sell those rights before paying for them has certain leverage implications that may be incompatible with prudent banking or investment practice.

Outstanding WI commitments to purchase securities should be reviewed and priced to determine their impact on liquidity, earnings and risk diversification. Purchases and sales of WI securities between examinations should be reviewed to determine if the volume of transactions is consistent with investment policy objectives. Transactions between examinations should also be inspected to determine if WI speculation has resulted in the sale of profitable WI positions, while non-profitable WI purchases are retained and recorded in the investment portfolio at a carrying value equivalent to the original cost of the security. If the investment portfolio is being used to "backstop" WI speculation, the book value of the retained securities should be adjusted to reflect the unrealized loss as of settlement date.

Forward Placement Contracts

Another common type of open contractual commitment to purchase securities is a forward placement transaction. Forward placements are purchases or sales of securities at fixed prices for mandatory, but delayed, delivery on a future date. Contractual commitments to purchase or sell securities on a forward placement basis do not involve cash deposits or margins. Forward placement contract maturities run from 30 days to sev-

Investment Securities: Domestic and International Introduction

Section 203.1

eral years. Contract prices reflect investors' interest rate expectations.

Forward contracts are cash market transactions, other than "when issued" transactions, that specify delivery (settlement) in excess of thirty (30) days following the trade date. They are neither traded on organized exchanges nor are their terms standardized. Forward contracts can only be terminated by agreement of both parties to the transaction.

Forward placement contracts are usually associated with the origination and issuance of mortgage-backed securities. A mortgage banker wishing to hedge the risk of loss resulting from interest rate fluctuations often agrees to forward sell an anticipated, but as yet unused, security at a price assuring a profit. Investors having predictable funds flows may wish to acquire rights to a security to be delivered at a fixed price and yield on a future date.

Examiners should review outstanding forward placement commitments to determine the impact of completion of forward placement transactions on liquidity and earnings. The volume and nature of transactions should be consistent with investment policy objectives. Recordkeeping and management reporting systems should facilitate ready review and control of forward placement trade positions and maturities. Losses on delivered securities should be tested and any unrecorded losses booked immediately upon discovery.

Standby Contracts

Standby contracts are optional delivery forward placement contracts. The buyer of a standby contract (put option) pays a fee for the right or option to sell (deliver) an agreed upon amount of specified securities to the issuer of the standby contract at a specified price and at a specified future date.

Financial Futures Contracts

Financial futures contracts are commodities contracts and are similar to forward placement contracts in that they involve the purchase or sale of a security or money market instrument at a fixed price and yield for delivery at a future date. Futures contracts differ from forward placement contracts because they are traded on an organized exchange which guarantees performance according to contract terms. The exchange also requires customers to pay initial and continuous maintenance margin.

Purchasers and sellers of futures contracts must pay a small initial margin deposit at the time a contract is entered into. The deposit must be maintained at a minimum level. When net unrealized losses on contracts exceed that minimum deposit, the bank must pay over maintenance margin sufficient to bring the deposit level to an acceptable minimum amount. Conversely, if the market value of the contract increases, net unrealized gains are deposited to the bank's margin account.

Maintenance margin in excess of minimum requirements may be withdrawn or used as margin deposit on additional transactions. Margin calculations and, if necessary, margin calls are made daily. Statements of account (margin runs) are rendered weekly.

Margin requirements may be satisfied by deposits of cash, U.S. government securities or stand-by letters of credit. Unrealized loss or gain should generally be reflected in the bank's profit and loss statement as maintenance margin accounts are adjusted.

Interest rate futures contracts are entered into to speculate on interest rate movement or to hedge the risk of losses resulting from interest rate fluctuations. OCC has adopted a policy of discouraging speculative use of interest rate futures. Unfortunately, there is no clear distinction between a hedger and a speculator, the terms are not always mutually exclusive.

Financial futures and forward placement contracts are not considered investment securities within the meaning of 12 USC 24(7). However, with the following distinctions, the use of these contracts is considered to be an activity incidental to banking. The minimal guidelines for national banks that engage in these markets are also described.

Distinctions

For investment portfolio or non-dealer operations in fixed rate assets, banks should evaluate the interest rate risk exposure resulting from their overall investment activities to insure that the positions they take in futures, forwards and standby contracts markets will reduce that exposure. Short positions in futures and forwards contracts should relate reasonably to existing or anticipated cash positions, and should be used to enhance liquidity of the portfolio. As asset yields are upgraded, contract gains should be used to offset losses resulting from the sale of portfolio securities rather than using short hedges against portfolio holdings for income generation. Long positions in futures and forwards should

Investment Securities: Domestic and International Introduction

Section 203.1

reasonably reflect the bank's investment strategy and ability to fulfill its commitments

Asset-liability management involves the matching of fixed rate and interest-sensitive assets and liabilities to maintain liquidity and profitability. Futures and forwards contracts may be used as a general hedge against the interest rate exposure associated with *undesired* mismatches in interest-sensitive assets and liabilities. Long positions in contracts could be used as a hedge against funding interest-sensitive assets with fixed-rate sources of funds. Short positions in contracts could be used as a hedge against funding fixed-rate assets with interest-sensitive liabilities.

Dealer-bank trading activities that employ futures, forwards and standby contracts should be performed in accordance with safe and sound banking practices related reasonably to the bank's legally permitted trading activities.

Minimal Guidelines

The board of directors should consider any plan to engage in those activities and should endorse *specific written policies* in authorizing them. Policy objectives must outline permissible contract strategies and their relationships to other banking activities. Recordkeeping systems must be sufficiently detailed to permit internal auditors and examiners to determine whether operating personnel have acted according to authorized objectives. Bank personnel are expected to describe and document in detail how the positions they have taken in futures, forwards and standby contracts contribute to attaining the bank's objectives.

The board of directors should establish limits applicable to futures, forward and standby contract positions. The board, a duly authorized board committee, or the bank's internal auditors should review periodically (at least monthly) contract positions to ascertain conformance with such limits.

The bank should maintain general ledger memorandum accounts or commitment registers to identify adequately and control all commitments to make or take delivery of securities. Such registers and supporting journals should, at a minimum, include:

- The type and amount of each contract.
- The maturity date of each contract
- The current market price and cost of each contract
- The amount of money held in margin accounts

All open positions should be reviewed and market values determined at least monthly (or more often, depending on the volume and magnitude of positions), regardless of whether the bank is required to deposit margins for a given contract. Underlying security commitments relating to open futures and forwards contracts should not be reported on the balance sheet. Margin deposits and any unrealized losses (and, in certain instances, unrealized gains) are usually the only entries to be recorded on the books. All futures and forwards contracts should be valued on the basis of either market or the lower of cost or market, at the option of the bank. Forward contracts executed for trading account purposes should be valued on a basis consistent with other trading positions. Losses on standby contracts must be computed only by the issuer (the party committed to purchase under the contract) and only when the market value of the security is below the contract price, reduced by the amount of the deferred fee income. Market basis for forward and standby contracts should be based on the market value of the underlying security, except where publicly quoted forward prices are available. All losses resulting from monthly contract value determinations should be recognized as a current expense item. Those banks that value contracts on a market basis will recognize gains as a current income item.

Fees received by a bank for the issuance of a standby contract should be deferred at initiation of the contract and accounted for as follows:

- Upon expiration of an unexercised contract, as income.
- Upon a negotiated settlement of the contract prior to maturity, as an adjustment to the expense of such settlement, and the net should be transferred to the income account.
- Upon exercise of the contract, as an adjustment to the basis of the acquired securities. Such adjusted cost basis should be compared to market value of those securities.

Bank financial reports should disclose in an explanatory note any futures, forwards and standby contract activity that materially affects the bank's financial condition. To minimize their credit risk, banks should implement a system for monitoring exposure associated with various customers and dealers with whom operating personnel are authorized to transact business. Banks should establish other internal controls, including periodic reports

Investment Securities: Domestic and International Introduction

Section 203.1

to management and internal audit programs, to assure adherence to bank policy and to prevent unauthorized trading and other abuses.

Long-term contracts over 150 days, which give the other party to the contract the option to deliver securities to the bank, ordinarily should not be issued. Regulatory authorities have found that often such contracts are related not to the investment or business needs of the institution, but primarily to the earning of fee income or to speculating on future interest rate movements.

National banks wishing to engage in the futures, forwards and standby contracts markets must submit a letter notice stating their intention to the Deputy Comptroller for their district.

Banks should enter into interest rate futures contracts primarily to reduce the risk of loss from interest rate fluctuations and not to produce income.

A simple use of interest rate futures by a bank would involve a direct offset or hedge to a particular investment or portion of its investment portfolio. For example, a banker wishing to limit the effects of portfolio depreciation could purchase a futures contract(s) to deliver securities (short). If interest rates rise and bond prices decline, profits on the futures contract can be used to offset the increase in unrealized loss in portfolio. Depreciated securities could then be sold at a loss without impairing current earnings. The sale proceeds could be reinvested at higher yields to insure improved future earnings. Failure to sell the depreciated securities would have the effect of improving current earnings at the expense of future earnings. If, however, interest rates decline, the short futures contract would be reversed at a loss. This current loss could be offset by the sale of portfolio investments at a gain. However, sale proceeds would have to be reinvested at lower prevailing yields, thus impairing future earnings. Examiners reviewing futures transactions must be aware of the earnings trade-offs inherent in many futures transactions. Anxiety for short-term income should not be allowed to impair future earnings prospects or to erode the practical liquidity of portfolios.

Interest rate futures contracts may also be used to reduce the negative impact of interest rate fluctuations on funds management strategies. Take the example of a banker who anticipates rising interest rates. He or she may attempt to increase the bank's ratio of variable rate assets versus variable rate liabilities and to lock-in fixed rate source funds at current rates. That would probably

be done by extending liability maturities and simultaneously shortening maturities on fixed rate earning assets. Thus, the banker would hope that the spread between interest earned and paid will widen as rates rise. Interest rate futures can then be used to limit the level of interest rate risk associated with the funds management commitment by buying a futures contract to take delivery of securities (long). If, contrary to expectations, the general level of interest rates goes down, the futures contract can be sold at a profit. The profit may be used to offset losses by making the wrong funds management commitment. Futures transactions, employed as part of a funds management strategy, should be reviewed to determine if a reasonable correlation exists between the type, amount and maturity of the futures instrument(s) and the bank's strategy and interest rate expectations.

Examiners must be satisfied that policies and internal control systems will prevent unauthorized trading and that losses are recognized as they are incurred.

Investment policy should provide for position limits for all types of open contractual commitments to purchase or sell securities. Limits should be considered in aggregate, by type and nature (long and short), by maturity month, by open or gapped position. There should be a logical relationship between investment policy limits on the amount of the securities underlying WI, forwards and futures contracts and the position limit per type of contract; i.e., if investment policy guidelines limit the holding of 30-year maturity federal agency securities to a certain amount, that limit should include all WI, forward or futures contract positions in similar securities.

Position limits for forward placements must also consider the credit risk associated with a dealer on the other side of a trade being able to perform according to contract terms. Position limits per dealer based on credit determinations are appropriate for forward placement commitments.

Investment policies must explain the manner and frequency of position valuations, because of the leverage associated with open contractual commitments to purchase or sell securities. The desired frequency of pricing is associated with the volume and nature of activities; monthly pricings are the minimally acceptable frequency. Pricing should be obtained from sources independent of the dealer on the other side of a trade. If bank management cannot obtain regular independent

Investment Securities: Domestic and International Introduction

Section 203.1

price quotes, they should stop making open contractual commitments to buy or sell securities.

Investment policies must also include a "stop loss" sale or consultation provision that relates to a predetermined loss exposure limit. If losses in open contractual commitment positions reach a certain unacceptable level, the position would be automatically sold out or consultation would ensue in order to rethink investment strategies. This "stop loss" exposure limit should have a reasonable correlation to the bank's capital structure and earnings trends as well as the overall levels of risk inherent in other types of banking activity.

Investment policies should also formalize personnel responsibilities in open contractual commitment areas. Purchase and sale authorizations should be fixed. Transactions should require prior dual authorization.

Open contractual commitment internal control procedures should be reviewed to determine if one person can assume an unwarranted degree of control over the nature and extent of Wt, futures and forward placement commitments. Recordkeeping systems must record transactions on a trade date basis. General ledger memorandum accounts and supporting records must be maintained. Posting to those accounts should be originated and reviewed by persons who do not also have the authority to execute transactions. Ledgers should be periodically compared to broker confirmations and/or account statements. Reports to senior management and the directorate should present enough information to allow them to make an informed judgment as to the prudence of the activities.

Customer Securities Transactions

"Recordkeeping and Confirmation Requirements for Securities Transactions," 12 CFR 12, applies to every national bank that effects securities transactions, including discount brokerage activities, for customers. The regulation establishes requirements for maintaining records, notifying customers, and setting forth specific written policies. Transactions which are subject to the rules of the Municipal Securities Rulemaking Board are not subject to 12 CFR 12.

Unsuitable Investment Portfolio Practices

Trading

The terms "trading" or "overtrading" refer to excessive turnover in the bank's investment portfolio which is not consistent with the bank's stated investment objectives

or legitimate needs. Investment securities may be carried in the bank's investment portfolio at amortized cost only when the bank can demonstrate the intent and ability to hold the securities to their maturity. When securities transactions are entered into in anticipation of short-term gains, they are no longer characteristic of investment portfolio activities and should be conducted in a securities trading account and periodically marked to their market value.

Securities trading should only take place in a closely supervised trading account and be undertaken only by institutions that have strong capital and current earnings positions.

Trading in the investment portfolio is characterized by a high volume of purchase and sale activity, which when considered in light of a short holding period, clearly demonstrates management's intent to profit from short-term price movements. Trading in a bank's securities portfolio should be criticized, and the board of directors should be advised to discontinue the practice. It is an unsafe and unsound practice to record and report securities holdings that result from trading transactions using accounting standards intended for investment portfolio transactions. The discipline associated with accounting standards applicable to trading accounts is necessary. Securities held in trading accounts should be periodically (at least monthly) marked to market, with unrealized gain or losses recognized in current income. Prices used in the periodic evaluations should be obtained from sources independent of the securities dealer from whom the securities were purchased or to whom the securities were sold. Securities fraud may be charged if the reporting of trading activities as investment portfolio activities results in an intentionally misleading published financial report for a publicly traded company.

"When-issued" Securities Trading

"When-issued" securities trading is the buying and selling of securities in the interim between the announcement of an offering and the issuance and payment date of the securities. A purchaser of a "when-issued" security acquires all the risks and rewards of owning a security and may sell the "when-issued" security at a profit before taking delivery and paying for it. Frequent purchase and sale of securities during the "when-issued" period generally indicate trading activity and should not be conducted in a bank's investment portfolio.

Investment Securities: Domestic and International

Introduction

Section 203.1

"Pair-offs"

A "pair-off" is a security purchase transaction which is closed out or sold at, or prior to, the settlement date. For example, an investment portfolio manager will commit to purchase a security. Then, prior to the predetermined settlement date, the portfolio manager will "pair-off" the purchase with a sale of the same security prior to, or on, the original settlement date. Profits or losses on the transaction are settled by one party to the transaction remitting to the counter party the difference between the purchase and sale price. Like "when-issued" trading, "pair-offs" permit speculation on price movements without paying for the securities.

Corporate or Extended Settlement

Regular-way settlement for transactions in U.S. government and federal agency securities is one business day after the trade date. Regular-way settlement for corporate and municipal securities is five business days after the trade date. The use of a corporate settlement method (5 business days) or extended settlement (6 to 30 days) for U.S. government securities purchases appears to be offered by dealers to facilitate speculation similar to "pair-offs" and "when issued" trading.

Short Sales

A short sale is the sale of a security that is not owned. The purpose of a short sale is generally to speculate on the fall in the price of the security. Short sales are speculative transactions that should be conducted in a trading account, and when conducted in the investment portfolio, they are considered to be unsuitable.

Gains Trading

"Gains trading" is a securities trading activity conducted in an investment portfolio, and is often termed "active portfolio management". "Gains trading" is characterized by the purchase of a security as an investment, and the subsequent sale of that same security at a profit within several days, weeks, or months. Those securities initially purchased with the intent to resell are retained as investment portfolio assets if they cannot be sold at a profit. These "losers" are retained in the investment portfolio because investment portfolio holdings are accounted for at cost, and losses are not recognized unless the security is sold. "Gains trading" often results in a portfolio of securities with extended maturities, lower credit quality, high market depreciation, and limited practical liquidity.

In many cases, "gains trading" has involved the trading of "when issued" securities, "pair-offs," or "corporate settlements" because the extended settlement period associated with these practices allows speculators the opportunity for substantial price changes to occur before payment for the securities is due. It has also involved the use of dealer supplied repurchase agreement financing to carry securities holdings.

In other cases, management accumulates securities positions and just waits for the right market conditions to sell and take gains. A repetitive pattern of sales and gains taken during attractive markets, and no sales during adverse markets, suggests that securities are being held for resale and they should be marked to the lower of cost or market.

Coupon Stripping

Coupon stripping involves detaching unmatured coupons from securities and selling either the coupons or the remaining, mutilated security. Such transactions are often motivated by anxiety for immediate income recognition or by tax considerations. This practice significantly diminishes the worth, marketability, and liquidity of the securities.

Ex-coupon securities, or the stripped coupons, are distinctly different from securities that have the unmatured coupons attached. The ex-coupon security and resulting coupons:

- Have diminished and uncertain market value and impaired practical liquidity.
- Cannot be wire transferred on the Federal Reserve Communication System.
- Are not eligible for pledge against owning bank's own trust deposits.
- Are not acceptable as collateral for U.S. government deposits or borrowings from Federal Reserve banks.
- Are not, absent adequate customer disclosure, suitable for sale to customers or as repurchase agreement collateral with customers.

If an institution has engaged or elects to engage in such transactions, they must be reported as follows:

- The original purchase price must be allocated between the principal portion and the coupons at the time the security is divided. This allocation will be based upon the yield to maturity of that security at the time it was purchased by the institution.

- The profit or loss on the portion sold must be recognized during the period in which the sale occurred as "other income" or "other expense." It will be the difference between that portion of the original purchase price, allocated as above to the portion sold, and the actual selling price of that portion. The portion retained will be carried on the books of the institution at its allocated portion of the original purchase price. The amount of any discount (or premium if any) must be amortized to maturity. Detached coupons or principal portions held by a bank either as a result of purchase or of mutilating securities held for its own account will be reported as "Other notes, bonds, and debentures," and not as "U.S. Treasury securities," "Obligations of other U.S. Government agencies and corporations," or "Obligations of States and political subdivisions in the United States."

Separate Trading of Registered Interest and Principal of Securities (STRIPS) are direct obligations of the U.S. Treasury that have their principal and interest components separated. Each component part is assigned a separate CUSIP number and may be separately owned and sold. Because STRIPS are an obligation of the U.S. government national banks may buy, sell, deal-in, or underwrite STRIPS without dollar limitation. Also, because STRIPS are maintained in book-entry form they overcome many of the disadvantages of detached coupons and other proprietary stripped coupon derivative products such as CATS and TIGRS.

Stripped securities products such as STRIPS, CATS, TIGRS, stripped coupons and stripped bonds and Original Issue Discount Bonds (OIDs) may have long maturities, and can exhibit extreme price volatility. Accordingly, disproportionately large (in relation to the bank's total portfolio) long-maturity holdings of zero coupon securities are unsuitable investments for banks.

Stripped Mortgage Backed Securities

Stripped Mortgage Backed Securities (SMBS) consist of two classes of securities with each class receiving a different portion of the monthly interest and principal cash flows from the underlying mortgage backed securities. In its purest form, an SMBS is converted into an interest-only (IO) strip, where the investor receives 100 percent of the interest cash flow, and a principal-only (PO) strip, where the investor receives 100 percent of the principal cash flow.

IOs and POs have volatile price characteristics based, in part, on the prepayment of the underlying mortgages

and, consequently, on the maturity of the stripped security. Generally, POs will increase in value when interest rates decline while IOs increase in value when interest rates rise. In theory, the purchase of an IO strip may serve to offset the interest rate risk associated with mortgages and similar instruments held by a depository institution. Similarly, a PO may be useful to offset the effect of interest rate movements on the value of mortgage servicing. However, when purchasing an IO or PO, the investor is speculating on the movement of future interest rates and how this movement will affect the prepayment of the underlying collateral. Furthermore, those SMBS that do not have the guarantee of a government agency or a government-sponsored agency as to the payment of principal and interest have an added element of credit risk.

As a general rule, SMBS cannot be considered as suitable investments for the vast majority of bank investors. Speculative positions or non-hedge positions in SMBS should not be considered as suitable investments for national banks and should be strongly criticized. SMBS, however, may be appropriate general hedges for banks that have highly sophisticated and well managed mortgage backed securities portfolios, mortgage portfolios or mortgage banking functions. In such banks, however, the acquisition of SMBS should be undertaken only in conformance with carefully developed and documented plans prescribing specific positioning and loss limits and control arrangements for enforcing such limits. These plans should be approved by the bank's board of directors and vigorously enforced.

SMBS holdings must be accounted for in accordance with Financial Accounting Standards Board Statement 91 which requires that the carrying amount be adjusted when actual prepayment experience differs from prepayment estimates.

Residuals

Residuals are the excess of cash flows from a mortgage backed securities transaction after the payments due to the bondholders and the trust administrative expenses have been satisfied. This cash flow is extremely sensitive to prepayments, and thus has a high degree of interest-rate risk. Generally, the value of Residual interests rises when interest rates rise. Theoretically a Residual can be used as a risk management tool to offset declines in the value of fixed rate mortgage or Mortgage Backed Securities portfolios. However, it should be understood by all residual interest pur-

Investment Securities: Domestic and International Introduction

Section 203.1

chasers that the "yield" on these instruments is inversely related to their effectiveness as a risk management vehicle. The highest yielding Residuals have limited risk management value, usually because of their complicated structure and/or unusual collateral characteristics that make modeling and understanding the economic cash flows very difficult. Alternatively, those Residuals priced for modest yields generally have positive risk management characteristics.

It is important to understand that a Residual cash flow is highly dependent upon the prepayments received. Banks should exercise caution when purchasing a Residual interest, especially higher "yielding" interests, because the associated risk may warrant an even higher return to adequately compensate the investor for the interest-rate risk assumed. Purchases of Residual interests should be supported by in-house evaluation of possible rate of return ranges in combination with varying prepayment assumptions.

Holdings of Residuals should be accounted for in the same way as stripped mortgage-backed securities and should be reported as "other assets" on regulatory reports. Speculative or non-hedge holdings of Residuals should be strongly criticized.

Resale and Repurchase Agreements

Money market instruments, usually short-term U.S. government securities, are purchased for the bank's own account or acquired under an agreement to resell and are then sold under an agreement to repurchase. The rate of interest received and paid is generally dictated by prevailing market rates. Profits are based on a modest positive spread between interest earned and interest paid. A bank may attempt to improve profits by increasing the volume of such transactions by using the proceeds of completed transactions to finance an inventory of assets to be used in further repurchase arrangements. An alternative method of increasing profits is to increase the earnings yield of the instruments employed in these transactions by lowering their quality or by lengthening their maturity.

Risks inherent in that type of repurchase transaction should be controlled by policy guidelines that:

- Establish account limits.
- Require approximately matched asset and liability maturities.
- Provide for reasonable collateral margin and valuation techniques.

- Provide for collateral custody by the bank or an independent third party acting for the bank.
- Subject the underlying securities of a resale agreement to periodic market valuation, in order to determine market exposure.
- Mandate credit approvals for parties providing securities acquired under agreements to resell.
- Insist that characteristics of the money market instruments be compatible with the bank's own investment standards.

National banks that engage in repurchase or reverse repurchase agreements are encouraged to have policies and controls to suit their particular circumstances. Banking Circular 210, dated October 31, 1985, describes minimum guidelines needed to manage credit risk exposure to counterparties under securities repurchase agreements, and for controlling the securities underlying repurchase agreement transactions. These guidelines should be followed by national banks that enter into repurchase agreements with other financial institutions or securities dealers.

Repositioning Repos

Repositioning repos are often used to fund the acquisition of depreciated "when issued" (WI), forward placement positions, "pair-off" transactions, "corporate or extended" settlement transactions, or securities otherwise being held for "gains trading."

A bank may want to commit to a large position in securities with the intent of closing-out the position by selling the securities at a profit whenever the opportunity arises. If the securities position is sufficiently large, the selling dealer may provide or arrange for repurchase agreement "financing" to complete the transaction. This type of "financing" is called a "repositioning repurchase" agreement.

In such agreements, the dealer agrees to buy back the security under an agreement to resell. In reality the purchasing bank never remits the full purchase price to the selling dealer, instead the bank purchasing the securities remits to the funding dealer a "margin" payment which is generally equivalent to the difference between the purchase price and the current market value of the security. This type of repurchase arrangement can create serious funds management problems as variable rate source funds with short maturities are used to finance the acquisition of long maturity, fixed rate assets.

Investment Securities: Domestic and International Introduction

Section 203.1

Securities dealers are interested in arranging repurchase financing for several reasons:

- In a forward-contract or security-purchase commitment, such as a WI or pair-off transaction, no money has been exchanged. In the absence of a repurchase agreement, if the financial institution decides to cancel or back-out of the transaction rather than take a loss, the selling dealer will have to absorb the loss and/or bring suit to enforce the contract.
- The purchaser can acquire a large amount of securities in exchange for a comparatively small margin payment. This results in more commission-fee income for the selling dealer.
- A repositing repo "locks-in" the customer/dealer relationship. The financial institution must then provide its own financing and probably recognize a loss if it wishes to sever its relationship with the dealer.
- Once the concept of repositing repos or leverage financing of securities is accepted by the financial institution, there is virtually no limit to the amount of securities a dealer can conceivably sell to the customer bank.

Repositing repos are considered unsafe and unsound as a means of funding investment portfolio activities because:

- They are the result of speculative securities transactions.
- During periods of rising interest rates, they are used as a method of loss avoidance. That is, if the securities purchase position can be sold and settled at a profit, the bank does so. However, if the purchased securities can only be sold and settled at a loss, the securities are recorded and carried in the bank's investment portfolio at cost, and financed via repurchase agreement.
- A financial institution usually does not enter into a simultaneous purchase and repositing repo transaction unless the underlying security is depreciated or funds are not available from more traditional sources at competitive rates. As interest rates increase, bond prices decrease.

As depreciation continues to increase, the practical liquidity of portfolio holdings is eroded and capital funds are impaired at the same time that interest earnings and expense spreads are diminishing.

Securities acquired and funded via repositing repos are to be regarded as trading account holdings or securities held for resale and recorded on a mark to market, or lower of cost or market basis.

Repo to Maturity

A repo to maturity is often used in a rising or high interest rate environment when bond prices are depressed. A securities dealer offers to purchase securities from a bank under agreement to resell provided the bank uses the repo proceeds to purchase additional bonds from the securities dealer. To induce the banker to enter into the transaction, the repo rate is usually set lower than prevailing repo rates. The dealer immediately sells the securities thereby incurring no cost-of-carry or market risk. The bank and the dealer agree to continue the repo arrangement until the repoed bond matures.

Repos to maturity are considered unsafe and unsound because:

- The intent of the transaction is to permanently dispose of a depreciated bank asset rather than enter into a short term borrowing arrangement. Hence, the bank avoids the recognition of a loss on the sale of a depreciated security.
- The proceeds of the funds generated from the repo arrangement are used to purchase additional securities at a price which may be inflated, thereby inflating the balance sheet and providing a "built-in" depreciation in the investment portfolio. The depreciation or unrealized loss erodes the practical liquidity of the investment portfolio and threatens capital funds.
- The purchase of bonds at inflated prices, if done with the knowledge of bank officers, may be construed as willful misstatement of bank records and regulatory reports.

Dollar Repos and Dollar Rolls

A dollar repurchase agreement (dollar repo) is a transaction involving the sale of a mortgage-backed security (MBS) from an investment portfolio and the simultaneous forward purchase of a different but similar MBS within a specified time and at a specified price. Fixed-coupon and yield maintenance dollar repos are the most common types of dollar repo agreements. Both kinds of dollar repos involve the contemporaneous sale and commitment to repurchase the same types of MBSs with approximately the same maturity and outstanding principal. In a fixed-coupon agreement, the

Investment Securities: Domestic and International Introduction

Section 203.1

seller and purchaser agree that delivery will be made with a MBS having the same coupon as the security sold. In a yield-maintenance agreement, the parties agree that delivery will be made with a security with a different coupon but at a price that will provide the seller with a yield that is specified in the agreement. Yield maintenance dollar repos are always considered to be sales and purchases and require a current recordation of gains and losses.

At the start of a fixed-coupon dollar repo, the bank sells the security to the dealer and the security is no longer registered in the bank's name. Although the portfolio holding has been sold and delivered-out, there is no adjustment of the portfolio records to reflect the sale of the security or the gain or loss on the sale of the portfolio holding. In fact, all accounting within the portfolio continues as if the bank still owns the security. The bank receives no principal or interest payments on the security during the dollar repo agreement's term. When the substantially identical security underlying the forward placement contract is delivered to the bank, it is substituted for the security still being carried on the books, but sold under agreement to repurchase. The security to be purchased is typically on a "to be announced" (TBA) basis, meaning the pools of mortgages to collateralize the purchased security have been formed but not specifically identified.

Under Generally Accepted Accounting Principles (GAAP), the fixed-coupon dollar repo transaction is reported as a security sold under agreement to repurchase (a financing), and not as a sale. This is because from the accounting profession's point of view, the sale and contemporaneous purchase of a similar security is a "wash" transaction which should not be recognized as a sale. However, cash taken in on the sale needs to be recognized along with the liability to purchase the similar security.

Banks often consider dollar repos as another source of funding and execute them whenever their cost is estimated to be less than other types of funding. However, during a period of rising interest rates, dollar repos can also be used to sell depreciated securities in a manner that avoids recognizing the loss that normally occurs if the transaction is accounted for as a sale of a bank asset.

Securities dealers can use dollar repo arrangements to deliver a different but similar security as a way to profit from the differences in prices between the instruments being sold and purchased. This practice, commonly

referred to as "worst delivery," involves obtaining a relatively expensive MBS from the seller, and delivering the cheapest security obtainable in the current market to the seller at the dollar repo's maturity. Although the cheapest security has the same coupon interest rate as the sold security, its expected prepayment characteristics may be different, and create the price differential. In a rising interest rate environment, it will probably be cheaper to purchase and deliver a mortgage-backed security with a slow prepayment history. In this situation, the investor will continue to receive the same coupon rate on the principal of the security, but will be unable to reinvest the prepaid principal of the security at higher current rates as rapidly as an investor holding a security with a faster repayment history. Dealers will also take seasoned securities from the bank, but deliver securities without a prepayment record, such as TBAs. The securities without payment histories typically sell for less than seasoned securities with an established, favorable payment history. Dealers active in the dollar repo market study the history of mortgage pool prepayments to take advantage of these differences.

Fixed-coupon dollar repos represent transactions that must involve substantially identical MBSs. The following guidelines must be observed if fixed-coupon dollar repo transactions are to be considered a financing. MBSs are judged to be substantially identical only when all of the following criteria are met.

- The securities are collateralized by similar mortgages (e.g., single-family residential mortgages for single-family residential mortgages).
- The replacement security is issued by the same entity that issued the original security, and must be identical in form and type (e.g., GNMA 1 for GNMA 1).
- The securities have the same original stated term to maturity (e.g., 30 years), and the expected remaining life is nearly identical.
- The securities have identical coupon interest rates.
- The securities have approximately the same market yield.
- The aggregate principal amounts of MBSs given up and MBSs forward purchased in the transaction are within industry-established parameters for good delivery. The Public Securities Association (PSA) currently defines good delivery as a 2.5 percent gain or loss in aggregate principal amounts.

Investment Securities: Domestic and International Introduction

Section 203.1

The following conditions must also be met.

- The bank must own the MBS and hold it in its portfolio for a reasonable period of time. The minimum holding period for the security is the number of days to the next issuance date of the MBS by the issuing agency (generally 30 days).
- The settlement term on the dollar repo cannot exceed 12 months from the initial transaction date.

If any of those criteria are not met, the transaction should be accounted for as a sale and the forward purchase of MBSs rather than as a financing. Thereafter, the forward position should be marked to market at each reporting date until the securities are reacquired.

A dollar roll is an extension of a dollar repo. It occurs when a bank decides not to accept delivery of a fixed-coupon MBS at the repurchase date but rather "rolls it forward" by means of another sale and forward purchase transaction in which the position is offset and extended for another specified period of time. Typically, to the extent the market value of the fixed-coupon security has increased or decreased in value from the original sale date to the roll date, the bank will pay or receive payment for such price fluctuations.

Once the roll period commences, the rolled fixed-coupon dollar repo continues to be accounted for as a financing when:

- Within 12 months from the date of the initial sell and forward buy transaction, the bank must accept delivery, close out its forward position, fund and place the MBS in its investment portfolio. For future dollar repos using these reacquired securities to be accounted for as financings, the security must be acquired and remain in the bank's possession at least until the next issuance date of the MBS (generally 30 days). The funding for the retention of the security for this holding period must come from a source independent of the securities transactions, such as deposits or federal funds lines. This mandatory delivery condition is intended to demonstrate the bank's ability to fund the purchase of the securities and its intent to hold them for investment.
- At all times during the rollover or extension period, the bank must be able to demonstrate its ability to fund the reacquisition of the MBSs and close out its forward position.

If the above conditions are not met, the transaction must be accounted for as a sale and purchase of MBSs rather

than as a financing, starting with the month the ability of the bank to fund the delivery of the securities has not been demonstrated or at the end of the 12-month period, whichever comes first. Thereafter, the forward position must be marked to market at each reporting date until the MBSs are reacquired.

Bank dealers who conduct dollar repos and rolls should not account for these transactions as financings. They should be recorded on a cash or forward basis as purchases and sales.

Securities Lending

A national bank may lend its own investment securities or trading account securities. National banks may also lend customers' securities held in custody, safekeeping, trust, or pension accounts to a third party pursuant to a written agreement with the customer. Securities dealers and commercial banks are the primary borrowers of securities. They borrow securities to cover securities fails (securities sold but not available for delivery), short sales, and option and arbitrage positions.

Securities lending is conducted through open ended "loan" agreements, which may be terminated on short notice by the lender or borrower. The borrower of the securities pays a fee to the owner of the securities. A bank lending customer securities will share in the fee income generated by loaning the securities. The objective of such lending is to receive a safe return in addition to the normal interest or dividends received from the securities. Securities loans are collateralized with cash, U.S. government or federal agency securities, or letters of credit. At the outset, each loan is collateralized at a predetermined margin. If the market value of the collateral falls below the predetermined acceptable level while a loan is outstanding, a margin call is made by the lender institution. If a loan becomes over-collateralized because of appreciation of collateral or market depreciation of a loaned security, the borrower usually has the opportunity to request the return of any excessive margin.

When a securities loan is terminated, the securities are returned to the lender and the collateral to the borrower. Fees received on securities loans are divided between the lender institution and the customer account that owns the securities. In situations involving cash collateral, part of the interest earned on the temporary investment of cash is returned to the borrower and the remainder is divided between the lender institution and the customer account that owns the securities.

Investment Securities: Domestic and International Introduction

Section 203.1

All national banks that participate in securities lending should establish written policies and procedures governing these activities. OCC Banking Circular 196, dated May 7, 1985, discusses the minimum acceptable topics to be covered by the written policies and procedures.

Government Securities Act Requirements

Specific provisions of the Government Securities Act (GSA) apply to all national banks, including those with limited government securities activities which are exempt from filing a notice as a Government Securities Broker-Dealer with the OCC. The provisions of the GSA that apply to all national banks include (a) national banks that engage in repurchase transactions with customers while retaining custody or control of the subject government securities, and (b) all depository institutions that hold government securities for customers. The following discussion does not apply to the additional provisions of the GSA regulations concerning national banks that are required to file as government securities broker-dealers (See Section 204.1).

Except for Part 450, (custodial holdings of securities by depository institutions) the definition of U.S. government security includes U.S. Treasury obligations, as well as obligations of the Government National Mortgage Association (GNMA), the Federal National Mortgage Association (FNMA), the Federal Home Loan Mortgage Corporation (FHLMC), and the Student Loan Marketing Association (SLMA). Options on these securities are also considered to be government securities for all parts of the regulations.

Hold-in-Custody Repurchase Agreements

All national banks that retain custody of securities sold under an agreement to repurchase must comply with the requirements for hold-in-custody repurchase agreements described in 17 CFR 403.5(d). For purposes of the GSA a national bank is also considered to be retaining custody of the repurchase agreement securities when the securities are maintained through an account at another institution (e.g., a correspondent bank, or the local Federal Reserve Bank) and the securities continue to be under the control of the national bank.

The following requirements apply to all hold-in-custody repurchase agreements:

- Hold-in-custody repurchase agreements must be transacted pursuant to a written repurchase agreement (see 17 CFR 403.5(d)(1)(i)).

- If the customer agrees to allow substitution of securities in a hold-in-custody repurchase transaction, then authority for the national bank to substitute securities must be contained in the written repurchase agreement (see 17 CFR 403.5(d)(1)(iv)).
- Where the national bank reserves the right to substitute securities, a specific disclosure statement as written into the regulation must be prominently displayed in the written repurchase agreement immediately preceding the provision allowing the right to substitute. No editing or paraphrasing of the required language is permitted under the regulations, with the exception that substitution of other terms for the words buyer and seller (which are bracketed in the disclosure statement) may be used.
- A national bank issuing a hold-in-custody repurchase agreement must disclose to the customer in writing that the funds held pursuant to a repurchase agreement are not a deposit, and, therefore, not insured by the Federal Deposit Insurance Corporation (see 17 CFR 403.5(d)(1)(iii)).
- Written confirmations describing the specific securities subject to the transaction must be sent to the customer by close of business on the day the transaction is initiated, as well as on any day on which substitution of securities occurs (see 17 CFR 403.5(d)(1)(ii)).
- Confirmations must identify the specific securities by issuer, maturity, coupon, par amount, market value, and CUSIP or mortgage pool number of the underlying securities (see 17 CFR 403.5(d)(2)(i)).

The frequency or short duration of a particular type of transaction, such as an overnight repurchase agreement or a daily "sweep" of a customer's deposits into a hold-in-custody repurchase transaction, does not eliminate the requirement for a financial institution to send a prompt and accurate confirmation to the customer.

Pooling of securities as collateral for repurchase agreements is no longer permitted. "Blind pooled" hold-in-custody repurchase transactions occur when a seller does not deliver securities and does not identify specific securities as belonging to a specific customer. Instead, the bank sets aside, or otherwise designates, a pool of securities to collateralize its outstanding repurchase obligations. The regulations require that the written con-

Investment Securities: Domestic and International Introduction

Section 203.1

firmation sent to a customer must identify the specific securities that are the subject of the hold-in-custody repurchase transaction. A specific security identified to a customer must be in an authorized denomination, that is, in a deliverable par amount.

The regulations do not require written agreements for repurchase transactions where the securities are delivered to the customer or to another depository acting pursuant to a tripartite agreement with the financial institution and the customer.

Custodial Holdings of Government Securities

All national banks that hold or safekeep U.S. government securities for customers must comply with 17 CFR 450. These regulations apply when a national bank holds the customers' securities directly or maintains the customers' securities through another institution.

The Department of the Treasury has determined that the rules and standards of the Comptroller of the Currency applying to government securities held in a fiduciary capacity are adequate to meet the requirements of this regulation. Thus, a national bank will be exempt from Part 450 requirements provided two conditions are met: The depository institution must adopt policies and procedures that subject the custodial holdings to all the requirements of 12 CFR 9. Also, such custodial holdings must be subject to examination by the OCC for compliance with these fiduciary requirements. (see 17 CFR 450.3 (a)(1)&(2)).

To comply with the custodial holding requirements of Part 450, depository institutions must observe the following requirements:

- All government securities held for customers, including those subject to repurchase agreements with customers, must be segregated from the depository's own assets and kept free from lien of any third party granted or created by the depository (see 17 CFR 450.4 (a)(1)).
- A depository institution that holds securities for a customer through another institution ("custodian institution") must notify the custodian institution that the securities are customer securities (see 17 CFR 450.4(a)(2)(i)(A)).
- The custodian institution must maintain the customer securities in an account that is designated for customers of the depository institution, and that does not contain proprietary securities of the depository (see 17 CFR 450.4 (a)(2)(i)(B)).
- The depository institution must notify the custodian institution that these securities are to remain free of any lien, charge or claim in favor of the custodian or any persons attempting to make a claim through the custodian (see 17 CFR 450.4(a)(2)(i)(C)). The custodian institution upon receiving such notice from the depository institution, is required to treat these securities as customer securities and maintain them in compliance with Section 450.4.
- When holding customer securities for a depository, the custodian institution does not have to keep records that identify individual customers of the depository, unless the custodian institution is acting directly on behalf of the customer, such as in a tripartite repurchase agreement transaction (see 17 CFR 450.4(e)).

When a depository institution maintains customer securities in an account at a Federal Reserve bank, it is deemed to be in compliance with requirements to hold customer securities free of lien if any lien of the FED, or other party claiming through it, expressly excludes customer securities. The depository institution is not required to maintain customer securities in a separate custody account at the FED, although, such segregation is encouraged. However, the depository institution must segregate the customers' securities on its own records and observe the following recordkeeping requirements:

- A depository institution safekeeping U.S. government securities for customers must issue to the customer a confirmation or safekeeping receipt for each government security held (see 17 CFR 450 (b)(1)).
- The confirmation or safekeeping receipt must identify the issuer, maturity date, par amount and coupon rate of the security being confirmed (see 17 CFR 450 (b)(1)).
- A records system of government securities held for customers must be maintained separate and distinct from other records of the depository institution (see 17 CFR 450.4(c)).
- These records must:
 - identify each customer and each government security held for a customer,
 - describe the customer's interest in the security and.

Investment Securities: Domestic and International Introduction

Section 203.1

—indicate all receipts and deliveries of securities and cash in connection with the securities.

- A copy of the safekeeping receipt or confirmation given to customers must be maintained
- This system of records must provide an adequate basis for audit (see 17 CFR 450 4(c)(1-5)).
- The required records for Part 450 must be maintained in an easily accessible place for at least two years and not disposed of for at least six years (see 17 CFR 450 4(f)).
- The depository institution providing customer safekeeping is required to conduct a count of physical securities and securities held in book-entry form at least annually (see 17 CFR 450 4(d)).
- In order to count securities held outside of the depository, such as book-entry securities held at a Federal Reserve Bank, the depository must reconcile its records with those of the outside custodian (see 17 CFR 450 4(d)(1)).
- The depository institution responsible for the count must verify any securities in transfer, in transit, pledged, loaned, borrowed, deposited, failed to receive or deliver, or subject to a repurchase or reverse repurchase agreement, when the securities have been out of the depository's possession for longer than 30 days (see 17 CFR 450 4(d)(2)).
- The dates and results of the counts and reconciliations must be documented within seven days of the required count, with the differences in securities counts noted (see 17 CFR 450 4(d)(3)).

International Division Investments

This section discusses money market investments and securities purchased by the bank's international division and overseas branches for its own account. Securities purchased primarily for resale to customers, i.e., trading account securities, are seldom encountered in a bank's international division or overseas branches, but when they are found, the procedures in the "Bank Dealer Activities" section apply. International securities trading is normally conducted in foreign affiliates, which are regulated by the Federal Reserve Board and are subject to 12 CFR 211 (Regulation K).

The same types of "money market" instruments exist in international banking as in domestic banking. They include short-term credit terms, such as commercial paper, other bankers' acceptances purchased, negotiable

certificates of deposit, and assets purchased or sold under repurchase agreements. In some banks such instruments are handled by either international division officers or, in certain instances, by a separate international investment department. In other banks they are handled by the bank's domestic investment officer. If the international examination is made in conjunction with the domestic examination, the examiners should decide together who will review money market holdings as well as investment activities. Usually, domestic examiners review the overall maturity position, earnings versus risk considerations, federal income tax aspects, and overall risk diversification factors of international division investments as they relate to the overall condition of the bank's investment securities department.

Investments held by most international divisions predominantly represent securities issued by various governmental entities of the countries in which the bank's foreign branches are located. Such investments are held for a variety of purposes:

- They are required by various local laws.
- They are used to meet foreign reserve requirements.
- They result in reduced tax liabilities.
- They enable the bank to use new or increased rediscount facilities or benefit from greater deposit or lending authorities.
- They are used by the bank as an expression of "good-will" toward a country.

The examiner should be familiar with the applicable sections of 12 CFR 211 (Regulation K) regarding a national bank's holdings abroad as well as other regulations discussed in this section.

Because of mandatory investment requirements by some countries, those securities held cannot always be as "liquid" and "readily marketable" as required in domestic banking. However, the amount of "mandatory" holdings normally will represent only a relatively small amount of the bank's total investments or capital funds.

A bank's international division may also hold securities strictly for investment purposes which are expected to provide a reasonable rate of return commensurate with safety. As with domestic investment securities, safety must take precedence followed by liquidity and marketability. Such securities are liquid if their maturities are short and there is assurance that they will be paid at maturity. They are marketable if they can be sold in

Investment Securities: Domestic and International Introduction

Section 203.1

a very short time period at a price commensurate with yield and quality. As with domestic banking, speculation in marginal foreign securities to generate more favorable yields is an unsound banking practice and should be discouraged.

Generally, banks are prohibited from investing in stocks. However, a number of exceptions are detailed in this handbook that are often applicable to the international division. For example, the bank may hold stock in overseas corporations that hold title to foreign bank premises (12 USC 371d and 12 CFR 7.3100). Both stock and other securities holdings as required by various laws of a particular country in which the bank maintains a branch are permitted in unlimited amounts under 12 CFR 211.3 (Foreign Branches of Member Banks). Other sections of 12 CFR 211 permit the bank to acquire and hold, directly or indirectly, stock in foreign banks subject to certain limitations.

For foreign securities authorized for investment purposes under 12 USC 24(7), Standard and Poor's,

Moody's, and other U.S. rating service publications rate Canadian and other selected foreign securities. However, in many other countries, securities rating services are limited or non-existent. When they do exist, the ratings are only indicative and should be supplemented by additional information regarding legality, credit soundness, marketability, foreign exchange and country risk factors. Local attorneys' opinions are often the best source of determining whether a particular foreign security has the full faith and credit backing of a country's government.

Sufficient analytical data must be provided to allow the bank's board of directors and senior management to make informed judgments regarding the effectiveness of the international division's investment policy and procedures. The international investment portfolio should be reviewed at least annually by the board of directors and quarterly by senior management to assure adherence to written policies and procedures.

**Investment Securities: Domestic and International
Examination Objectives**

Section 203.2

- 1 To determine if policies, practices, procedures and internal controls regarding investments are adequate
- 2 To determine if bank officers are operating in conformance with the established guidelines.
- 3 To determine the scope and adequacy of the audit function.
- 4 To determine the overall quality of the investment portfolio and how that quality relates to the soundness of the bank.
- 5 To determine compliance with laws, rulings and regulations
- 6 To initiate corrective action when policies, practices, procedures or internal controls are deficient or when violations of laws, rulings or regulations have been noted.

Investment Securities: Domestic and International Examination Procedures

Section 203.3

- 1 Complete or update the Investment Securities section of the Internal Control Questionnaire
- 2 Based on the evaluation of internal controls and the work performed by internal/external auditors (see separate program) determine the scope of the examination.
- 3 Test for compliance with policies, practices, procedures and internal controls in conjunction with performing the following examination procedures. Also, obtain a listing of any deficiencies noted in the latest review done by internal/external auditors from the examiner assigned "Internal and External Audits," and determine if corrections have been accomplished.
 - a Determine the extent and effectiveness of investment policy supervision by
 - Reviewing the abstracted minutes of the board of directors and/or appropriate committee minutes
 - Determining that proper authorizations have been made for investment officers or committees.
 - Determine that there are proper authorizations, restrictions, and limitations on the delegation of investment portfolio authorities to nonaffiliated institutions or to non-employees.
 - Determine that the board has approved securities dealers with whom the bank transacts business.
 - Evaluating the sufficiency of analytical data used by the board or investment committee
 - Reviewing the reporting methods used by department supervisors and internal auditors to insure compliance with established policy
 - Preparing a memo for the examiner assigned "Duties and Responsibilities of Directors" and the examiner in charge of the international examination, if applicable, stating conclusions on the effectiveness of directors' supervision of the domestic and/or international division investment policy. All conclusions should be documented
 - 4 Perform appropriate verification procedures
 - 5 Obtain the following
 - a Trial balances of investment account holdings and money market instruments, such as commercial paper, bankers' acceptances, negotiable certificates of deposit, securities purchased under agreements to resell and federal funds sold
 - b A list of any assets carried in loans and discounts on which interest is exempt from federal income taxes and which are carried in the investment account on Call Reports
 - c A list of open purchase and sale commitments
 - d A schedule of all securities, forward placement contracts, futures contracts, and standby contracts purchased and/or sold since the last examination
 - e A maturity schedule of securities sold under repurchase agreements.
 - f A list of pledged assets and secured liabilities
 - g A list of the names and addresses of all securities dealers doing business with the bank
 - h A list of all U.S. Government guaranteed loans which are recorded and carried as an investment account security
 - i For international division and overseas branches, a list of investments
 - Held to comply with various foreign governmental regulations requiring such investments
 - Used to meet foreign reserve requirements
 - Required as stock exchange guarantees or used to enable the bank to provide securities services
 - Representing investment of surplus funds
 - Used to obtain telephone and telex services
 - Representing club and school memberships
 - Acquired through debts previously contracted
 - Representing minority interests in nonaffiliated companies
 - Held for other purposes
 - Representing trading account securities
- 6 Using updated data available from reports of condition, NBSS printouts, investment advisor and correspondent bank portfolio analysis reports, ob-

Investment Securities: Domestic and International Examination Procedures

Section 203.3

tain or prepare an analysis of investment and money market holdings that includes:

- a. A month-by-month schedule of par, book and market value of issues maturing in 1 year.
- b. Schedules of par, book and market values of holdings in the liquidity segment and the permanent, or investment for income, segment of the investment portfolio. Those schedules should be indexed by maturity date. The schedule should be detailed by maturity dates over the following time periods: 1 to 2 years, 3 to 5 years, 6 to 10 years, 11 to 20 years, and over 20 years.
- c. A schedule of book or par values of municipal and corporate holdings by rating classifications.
- d. Book value totals of holdings by obligor or industry, related obligors or industries, geographic distribution, yield, and special characteristics, such as moral obligations, conversion or warrant features.
- e. Par value schedules of Type I, II and III investment holdings, by those legally defined types.
- f. For the international division, totals (U.S. \$ equivalents) of holdings by:
 - Total portfolio (book and market values)
 - Name of issuer (par value).
 - Issuer's country of domicile (book value)
 - Interest rate (book and par value).
 - Pledged securities (market value)
7. Review the reconciliation of investment and money market account(s) trial balances to general ledger control account(s).
8. Using an appropriate sampling technique, select from the trial balance(s) municipal investments and money market holdings for examination. If transaction volume permits, include all securities purchased since the last general examination in the population of items to be reviewed. If verification steps are to be performed, use the same population.

(Before continuing, refer to steps 16 through 18. They should be performed in conjunction with steps 9 through 15. International division holdings should be re-

viewed with domestic holdings to ensure compliance, when combined, with applicable legal requirements.)

9. Perform the following procedures for each investment and money market holding selected in step 8.
 - a. Check appropriate legal opinions or published data outlining legal status.
 - b. If market prices are provided to the bank by an independent party (excludes affiliates and securities dealers selling investments to the bank) or if they are independently tested as a documented part of the bank's audit program, those prices should be accepted. If the independence of the prices cannot be established, test market values by reference to one of the following sources:
 - Published quotations
 - Appraisals by outside pricing services.
 - c. If market prices are provided by the bank and cannot be verified by reference to published quotations or other sources, test those prices by using the "comparative yield method" to calculate approximate yield to maturity:

Approximate Yield to Maturity =

$$\text{Annual Interest} + \frac{\text{Par Value} - \text{Book Value}}{\text{Number of Years to Maturity}}$$

1/2 (Bank Provided Market Price + Par Value)

- Compare the bank provided market price and the examiner calculated approximate yield to maturity to an independent publicly offered yield or market price for a similar type of investment with similar rating, trading volume and maturity or call characteristics.
 - Compare non-rated issues to fourth rated (BBB, Baa) bonds.
 - Investigate market value variances in excess of 5 percent.
- d. For investments and money market obligations in the sample that are rated, compare the ratings provided to the most recent published ratings.
10. Perform credit analysis of:
 - a. The obligors on securities purchased under agreements to resell, when the readily marketable value of the securities is not sufficient to satisfy the obligation or when collateral cus-

Investment Securities: Domestic and International Examination Procedures

Section 203.3

tody procedures are inadequate to assure the bank's unassailable right to the collateral.

- b. All nonrated securities and money market instruments selected in step 8 or acquired since the last examination. (Consider using grading sheet contained in the appendix of this handbook.)
 - c. All previously detailed or currently known speculative issues.
 - d. All defaulted issues.
 - e. Any issues contained in the current Interagency Country Exposure Review Committee credit schedule obtained from the international loan portfolio manager by:
 - Comparing the schedule to the foreign securities trial balance obtained in step 5 to ascertain which foreign securities are to be included in Interagency Country Exposure Review Committee credits.
 - For each security so identified, transcribing the following appropriate information to a separate examiner's line sheet or a related examiner's credit line sheet:
 - Amount (and U.S. dollar equivalents if a foreign currency) to include par, book and market values.
 - How and when acquired.
 - Maturity date(s)
 - Default date, if appropriate.
 - Any pertinent comments.
 - Returning schedule and appropriate examiner's line sheet(s) to the examiner assigned "International Loan Portfolio Management." No further examination procedures are necessary for these items
11. Classify speculative and defaulted issues according to the following standards (except those securities in the Interagency Country Exposure Review and FFIEC uniform classifications of municipal securities):
- a. The entire book value of speculative grade municipal general obligation securities which are not in default will be classified substandard. Market depreciation on other speculative issues should be classified doubtful. The remaining book value usually is classified substandard
 - b. The entire book value of all defaulted municipal general obligation securities will be classified doubtful. Market depreciation on other defaulted bonds should be classified loss. The remaining book value usually is classified substandard.
 - c. Market depreciation on non-exempt stock should be classified loss.
 - d. Report comments should include:
 - Description of issue.
 - How and when each issue was acquired
 - Default date, if appropriate.
 - Date interest paid to.
 - Rating at time of acquisition.
 - Comments supporting the classification.
12. Review the bank's maturity program by:
- a. Reviewing the maturity schedules:
 - Compare book and market values and, after considering the gain or loss on year-to-date sales, determine if the costs of selling intermediate and long-term issues appear prohibitive.
 - Determine if recent acquisitions show a trend toward lengthened or shortened maturities. Discuss such trends with management
 - b. Reviewing the pledged asset and secured liability schedules and isolating pledged securities by maturity segment (such as liquidity account and investment account). Then determine the market value of securities pledged in excess of net secured liabilities.
 - c. Reviewing the schedule of securities sold under repurchase agreement and determining if:
 - Financing for securities purchases is provided via repurchase agreement by the securities dealer who originally sold the security to the bank.
 - Funds acquired through the sale of securities under agreement to repurchase are invested in money market assets or if short-term repurchase agreements are being used to fund longer term, fixed rate assets.

Investment Securities: Domestic and International Examination Procedures

Section 203.3

- The extent of matched asset repo and liability repo maturities and the overall effect on liquidity resulting from unmatched positions
 - The interest rate paid on securities sold under agreement to repurchase is appropriate relative to current money market rates.
 - The repurchase agreement is at the option of the buying or selling bank.
- d Reviewing the list of open purchase and sale commitments and determining the effect of their completion on maturity scheduling
- e Submitting investment portfolio information regarding the credit quality and practical liquidity of the investment portfolio to the examiner assigned "Funds Management."
- 13 If the bank is engaged in dollar repos or rolls
- a Review policies and ensure that bank practice complies with written controls and
- Determine whether the board has approved the use of dollar repos.
 - Ensure that the board has authorized particular individuals to conduct dollar repos and that they have sufficient knowledge to do so properly
 - Determine if the bank has established dollar repo credit policy guidelines and if initial and periodic credit and reputation analysis of counterparties is conducted by the bank's credit division
- b Review management's analysis of funding sources to determine if dollar repos were found to be the least expensive type of funding for the desired time period
- c Ensure that all yield maintenance dollar repos are treated as purchases and sales. If fixed-coupon dollar repos are recorded as financing transactions, determine that the securities returned are substantially identical to those sold by meeting the following criteria. If these criteria are not met, ensure that the forward position is marked to market monthly until the securities are reacquired and that
- The securities are collateralized by similar types of mortgages.
 - The replacement securities are issued by the same entity that issued the initial security and are identical in form and type
- The securities have the same original stated term to maturity and their expected remaining lives are nearly identical
 - The securities have identical coupon interest rates.
 - The securities have approximately the same market yield
 - The aggregate principal amounts of mortgage-backed securities (MBS) sold, and MBSs forward purchased involved in the transaction are within industry-established parameters for good delivery. The Public Securities Association (PSA) currently defines good delivery as a 2.5 percent gain or loss difference in the aggregate principal amounts.
 - The settlement term of the dollar repo does not exceed 12 months from the initial transaction date.
 - The bank has owned the MBS for the minimum period until the next issuance date of the MBS by the agency (generally 30 days) before employing it in a dollar repo.
- d If the bank treats dollar rolls as financing transactions, ensure that the following criteria are met. If the conditions below are not met, the transaction must be accounted for as a sale and purchase of MBSs rather than as a financing, as soon as the bank demonstrates the inability to fund or exceeds the 12-month period, whichever comes first.
- Within 12 months of the initial dollar repo, the bank must accept delivery of the security and retain it for the minimum period until the next issuance date of the MBS (generally 30 days). The funding for the security during this holding period must come from a source independent of the securities transactions, such as deposits or Fed fund lines
 - At all times during the rollover period, the bank must be able to demonstrate its ability to fund the reacquisition of the MBSs and close out its forward position.
- 14 Provide to the examiner assigned "Funds Management":
- Information necessary to prepare the "Ability to Meet Short Term Funding Needs Analysis Schedule," including:

Investment Securities: Domestic and International Examination Procedures

Section 203.3

- Market value of unpledged government and federal agency securities maturing within one year.
 - Market value of other unpledged government and federal agency securities which would be sold without loss.
 - Market value of unpledged municipal securities maturing within one year.
 - Par value of money market instruments, such as bankers acceptances, commercial paper, and certificates of deposit. (Provide amounts for each category.)
 - Commitments to purchase securities, including a description of the security, the purchase price and the settlement date.
 - Information necessary to prepare the "Rate Sensitivity Analysis Schedule," including
 - Month-by-month maturity schedule of investments for a one-year period.
 - Month-by-month maturity schedule of money market instruments.
15. Determine whether the bank's investment policies and practices are satisfactorily balancing earnings and risk considerations by:
- a. Using NBSS or average call report data to calculate investments as a percentage of total assets, average yields on U.S. government and nontaxable investments, and:
 - Comparing results to peer group statistics
 - Determining the reasons for significant variances from the norm
 - Determining if trends are apparent and the reasons for such trends.
 - b. Calculating current market depreciation as a percentage of gross capital funds
 - c. Reviewing the analysis of municipal and corporate issues by rating classification and:
 - Determining the total in each rating class and the total of non-rated issues.
 - Determining the total of non-rated investment securities issued by obligors located outside of the bank's service area (exclude U.S. government guaranteed issues)
 - Reviewing acquisitions since the prior examination and ascertaining reasons for trends that may suggest a shift in the rated quality of investment holdings
- d. Reviewing coupon rates or yields (when available) and comparing those recently acquired investments and money market holdings with coupon rates or yields that appear high, or low, to similarly acquired instruments of analogous types, ratings and maturity characteristics. Discuss significant rate or yield variances with management.
 - e. Reviewing schedule of securities, futures and forward placement contracts, purchased and sold since the last examination and determining whether the volume of trading is consistent with policy objectives.
 - f. If the majority of sales resulted in gains, determining if profit-taking is consistent with stated policy objectives or is motivated by anxiety for short-term income.
 - g. Determining whether the bank has discounted or has plans to discount future investment income by selling interest coupons in advance of interest payment dates.
 - h. Reviewing the list of commitments to purchase or sell investments or money market instruments. Determine the effect of completion of these contracts on future earnings.
16. Review the bank's federal income tax position and:
- a. Determine, by discussion with appropriate officer(s), if the bank is taking advantage of procedures to minimize tax liability in view of other investment objectives.
 - b. Review or compute actual and budgeted:
 - Tax exempt holdings as a percentage of total assets.
 - Applicable income taxes as a percentage of net operating income before taxes
 - c. Discuss with management the tax implications of losses resulting from securities sales.
17. Determine that proper risk diversification exists within the portfolio by:
- a. Reviewing totals of holdings by single obligor or industry, related obligors or industries, geographic distribution, yields, and securities that have special characteristics (include individ-

Investment Securities: Domestic and International Examination Procedures

Section 203.3

- ual due from bank accounts from the list received from the examiner assigned "Due From Banks" and all money market instruments) and
- Detail, as concentrations, all holdings equaling 25 percent or more of capital funds
 - List all holdings equaling at least 10 percent but less than 25 percent of capital funds and submit that information to the examiner assigned "Loan Portfolio Management." These holdings will be combined with any additional advances in the lending areas
- b Performing a credit analysis of all non-rated holdings determined to be a concentration if not performed in step 10.
18. If the bank is engaged in financial futures, forward placement or standby contracts, determine if
- The policy is specific enough to outline permissible contract strategies and their relationships to other banking activities.
 - Recordkeeping systems are sufficiently detailed to permit a determination of whether operating personnel have acted in accordance with authorized objectives
 - The board of directors or its designee has established specific contract position limits, and reviews contract positions at least monthly to ascertain conformance with those limits
 - Gross and net positions are within authorized positions and limits, and if trades were executed by persons authorized to trade futures
 - The bank maintains general ledger memorandum accounts or commitment registers which, at a minimum, include:
 - The type and amount of each contract
 - The maturity date of each contract
 - The current market price and cost of each contract
 - The amount held in margin accounts
 - All futures contracts and forward and standby contracts are revalued on the basis of market or the lower of cost or market at each month-end
 - Securities acquired as the result of completed contracts are valued at the lower of cost or market upon settlement
- Fee income received by the bank on stand-by contracts is accounted for properly.
 - Financial reports disclose futures, forwards and stand-by activity.
 - The bank has instituted a system for monitoring credit risk exposure in forward and standby contract activity.
 - The bank's internal controls, management reports, and audit procedures are adequate to assure adherence to policy.
 - The bank has submitted a notice of intent to the Deputy Comptroller (District).
19. If the bank is engaged in financial futures, forward placement or standby contracts, determine if the contracts have a reasonable correlation to the bank's business needs and capacity to fulfill its obligations under the contracts by:
- Comparing the contract commitment and maturity dates to the anticipated offset
 - Reporting significant gaps to the examiner assigned "Funds Management."
 - Comparing the amounts of outstanding contracts to the amounts of the anticipated offset.
 - Ascertaining the extent of the correlation between expected interest rate movements on the contracts and the anticipated offset.
 - Determining the effect of the loss recognition on future earnings, and, if significant, reporting it to the examiner assigned "Analytical Review of Income and Expense."
20. If the bank is engaged in financial futures contract trading activity, determine whether:
- The board of directors specifically approved written policies about nonhedging futures contract strategies.
 - Nonhedging uses of futures contracts only takes place in bank dealer units
 - Bank participation is limited to contracts on instruments in which the bank is authorized to and does in fact deal
 - Futures contract positions used for nonhedging purposes are limited to amounts that do not exceed trade date position limits on related cash instruments
 - Aggregate bank-wide positions in any futures contract do not exceed a reasonable percent-

Investment Securities: Domestic and International Examination Procedures

Section 203.3

- age of the total "open interest" in a contract month, consistent with safe and soundness considerations.
- Controls, limits, and accounting procedures are established (see BC-79) with appropriate tests to evaluate the nonhedging program on an on-going basis.
21. If the bank owns shares of mutual funds or unit investment trusts, review the prospectuses and call reports to:
- a. Determine if the investment companies' portfolios consist solely of obligations eligible for purchase by national banks for their own account pursuant to 12 USC 24(7).
 - b. Determine whether the bank's investment in shares of investment companies, whose portfolios contain investments subject to the limits of 12 USC 24 or 84, does not exceed 10 percent of its capital and surplus for each investment company. Check for violations of the 10 percent limitation of 12 USC 24(7) because of the bank's cumulative holdings of a particular security in the portfolios of more than one investment company, or in combination with the bank's direct holdings.
 - c. Determine whether investment companies using futures, forward placements and options contracts, repurchase agreements, and securities lending arrangements, use them in a manner considered acceptable for use in a national bank's own investment portfolio.
 - d. Ascertain whether investment companies whose shares are owned by the bank are registered with the Securities and Exchange Commission for public trading or are privately offered funds sponsored by an affiliated commercial bank.
 - e. Determine if investment company shares are revalued quarterly and accurately reported.
22. On the basis of pricings, ratings, and credit analyses performed above, and using the investments selected in step 8 or from lists previously obtained, test for compliance with applicable laws, rulings and regulations by:
- a. Determining if the bank holds Type II or III investments that have predominantly speculative characteristics or securities that are not readily marketable (12 CFR 1.3(b))
 - b. Reviewing the recap of investment securities by legal types, as defined by 12 CFR 1, on the basis of the legal restrictions of 12 USC 24, specific OCC Interpretive Rulings and competent legal opinions, as follows:
 - If a Type II or III security is readily marketable, and if the purchaser's judgment was based on evidence of the obligor's ability to perform, determine if the par value of such securities issued by a single obligor, which the bank owns or is committed to purchase, exceeds 10 percent of the bank's capital funds (12 CFR 1.5(b) and 1.7(b)).
 - If the holding of a Type II or III security was based on a reliable estimate of the obligor's ability to perform, determine if the aggregate par value of such issues exceeds 5 percent of the bank's capital funds (12 CFR 1.5(b) and 1.7(b)).
 - c. For those investment securities that are convertible into stock or which have stock purchase warrants attached.
 - Determining if the book value has been written down to an amount that represents the investment value of the security, independent of the conversion or warrant provision (12 CFR 1.10).
 - Determining if the par values of other securities that have been ruled eligible for purchase, are within specified capital limitations.
 - d. Reviewing pledge agreements and secured liabilities and determining that:
 - Proper custodial procedures have been followed
 - Eligible securities are pledged.
 - Securities pledged are sufficient to secure the liability that requires securing
 - Treasury Tax and Loan Remittance Option and Note Option are properly secured
 - Private deposits are not being secured.
- (Information needed to perform the above steps will be contained in the pledge agreement, Treasury circulars 92 and 176, as amended; 12 USC 265; 31 CFR 203.15, 12 CFR 9.10; 12 CFR 7.7410 and 7.7415; and appropriate state statutes.)

Investment Securities: Domestic and International Examination Procedures

Section 203.3

- e Reviewing accounting procedures to determine that:
- Investment premiums are being extinguished by maturity or call dates (12 CFR 18 and 12 CFR 1.11).
 - Premium amortization is charged to operating income (12 CFR 1.11 and 18).
 - Lump sum write-offs of bond premiums are reflected as other operating expenses (12 CFR 18)
 - Accretion of bond discount requires a concurrent accrual of deferred income tax payable (12 CFR 7 7505)
 - Accretion of investment discount that totals 5 percent or more of annual investment income is the subject of appropriate notation for financial statement reporting purposes (12 CFR 18)
 - Securities gains or losses are reported net of applicable taxes and net gains or losses are reflected in the period in which they are realized (12 CFR 18).
- f Determining if securities purchased under agreement to resell are in fact securities (not loans), are eligible for investment by the bank and are within prescribed limits (12 USC 24, 12 CFR 1, and 12 CFR 7 1131) If not, determine whether the transaction is within the limits of 12 USC 84.
- g Reviewing securities sold under agreement to repurchase and determining if they are, in fact, securities and not guaranteed loans.
- h Determining that securities and money market investments held by foreign branches comply with 12 CFR 211.3 (Foreign Branches of Member Banks—Regulation K) as to
- Acquiring and holding securities (12 CFR 211.3(b)(3))
 - Underwriting, distributing, buying, and selling obligations of the national government of the country in which the branch is located (12 CFR 211.3(b)(4))

(Further considerations relating to the above are contained in other sections of 12 CFR 211. Also review any applicable sections of 12 CFR 220 (Credit by Brokers and Dealers), 12 CFR 224 (Rules Governing Borrowers Who Obtain Credit), Federal Reserve System Interpretations

6150 (Treating international bank securities as "exempted" securities under 15 USC 78c(a)(12)), and 6200 (Covering borrowing by a domestic broker from a foreign broker) Edge Act and Agreement corporations are discussed in the "Related Organizations" section)

23. Test for compliance with other laws, rulings and regulations as follows:
- a. Review lists of affiliate relationships and lists of directors and principal officers and their interests and:
 - Determine if the bank is an affiliate of a firm that is engaged primarily in underwriting or selling securities (12 USC 377).
 - Determine if directors or officers are engaged in or employed by firms that are engaged in similar activities (12 USC 78, 377 and 378) It is an acceptable practice for bank officers to act as directors of securities companies not doing business in the U.S., the stock of which is owned by the bank as authorized by the board of directors of the Federal Reserve.)
 - Review the list of federal funds sold, securities purchased under agreements to resell, interest bearing time deposits and commercial paper, and determine if the bank is investing in money market instruments of affiliated banks or firms (12 USC 371(c), and 12 CFR 7 7376 and 7 7370).
 - Determine if transactions involving affiliates, insiders or their interests have terms that are less favorable to the bank than transactions involving unrelated parties (12 USC 371(c) and 375)
 - b. Review sales receipts to determine if bank-owned securities or money market instruments have been purchased with funds held by the bank in a fiduciary capacity (12 CFR 9 12).
 - c. Forward copy of the list of due from commercial banks or other depository institutions—time to examiner assigned "Due From Banks" to determine compliance with 12 USC 463.
 - d. Determine if Federal Reserve stock equals 3 percent of the subject bank's booked capital and surplus accounts (12 USC 282).
 - e. Review the nature and duration of federal funds sales to determine if term federal funds

Investment Securities: Domestic and International Examination Procedures

Section 203.3

are being sold in an amount exceeding the limit imposed by 12 USC 84.

- f If the bank effects securities transactions for customers, determine if it is in compliance with 12 CFR 12 by substantiating Internal Control questions 37 through 48.
- 24 With regard to potential unsafe and unsound investment practices and possible violations of 15 USC 78j, review the list of securities purchased and/or sold since the last examination and
- a Determine if the bank engages one securities dealer or salesperson for virtually all transactions. If so:
 - Evaluate the reasonableness of the relationship on the basis of financial condition, past securities enforcement actions, board approval, dealer's location and reputation.
 - Compare purchase and sale prices to independently established market prices as of trade dates, if appropriate.
 - b Determine if investment account securities have been purchased from the bank's own trading department. If so:
 - Independently establish the market price as of trade date.
 - Review trading account purchase and sale confirmations and determine if the security was transferred to the investment portfolio at market price.
 - c Determine if the volume of trading activity in the investment portfolio appears unwarranted. If so:
 - Review investment account daily ledgers and transaction invoices to determine if sales were matched by a like amount of purchases.
 - Determine whether the bank is financing a dealer's inventory.
 - Compare purchase and sale prices with independently established market prices as of trade dates, if appropriate. The carrying value should be determined by the market value of the securities as of the trade date.
 - Cross-reference descriptive details on investment ledgers and purchase confirmations to the actual bonds or safekeeping receipts to determine if the bonds delivered are those purchased.
- Review and make a determination about trading activity taking place in the investment portfolio.
- Review the FFIEC objectionable investment portfolio practices (BC-228) and determine whether these practices are taking place in the bank's investment portfolio.
 - Review recurring month-end securities purchases and subsequent resale at the beginning of the next month. Determine whether the bank is financing a dealer's inventory position or engaged in a practice of unwritten or verbal repos or loans to the dealer to carry inventory.
- 25 Discuss with appropriate officer(s) and prepare report comments on:
- a Defaulted issues.
 - b Speculative issues.
 - c Incomplete credit information.
 - d Absence of legal opinions.
 - e Significant changes in maturity scheduling.
 - f Shifts in the rated quality of holdings.
 - g Concentrations.
 - h Unbalanced earnings and risk considerations.
 - i Unsafe and unsound investment practices.
 - j Apparent violations of laws, rulings and regulations and the potential personal liability of the directorate.
 - k Significant variances from peer group statistics.
 - l Market value depreciation, if significant.
 - m Weaknesses in supervision.
 - n Policy deficiencies.
- 26 Reach a conclusion regarding the quality of department management. Communicate your conclusion to the examiner assigned "Management Appraisal" and the examiner-in-charge of the international examination, if applicable.
- 27 Prepare a memorandum and update work programs with any information that will facilitate future

Investment Securities: Domestic and International
Examination Procedures

Section 203.3

examination. If the bank has overseas branches, indicate those securities requiring review during the next overseas examination and the reasons for the review.

Investment Securities: Domestic and International Internal Control Questionnaire

Section 203.4

Review the bank's internal controls, policies, practices and procedures regarding purchases, sales and servicing of the investment portfolio. The bank's system should be documented in a complete, concise manner and should include, where appropriate, narrative descriptions, flowcharts, copies of forms used and other pertinent information. Items marked with asterisks require substantiation by observation or testing.

Investment Securities Policies

1. Has the board of directors, consistent with its duties and responsibilities, adopted written investment securities policies, including WI securities, futures and forward placement contracts, that outline:
 - a. Objectives?
 - b. Permissible types of investments?
 - c. Diversification guidelines, to prevent undue concentration?
 - d. Maturity schedules?
 - e. Limitation on quality ratings?
 - f. Policies regarding exceptions to standard policy?
 - g. Valuation procedures and frequency?
2. Are investment policies reviewed at least annually by the board to determine if they are compatible with changing market conditions?
3. Have policies been established for transferring securities from the trading account to the investment securities account?
4. Have limitations been imposed on the investment authority of officers?
- *5. Do security transactions require dual authorization?
6. If the bank has due from commercial banks or other depository institutions—time, federal funds sold, commercial paper, securities purchased under agreements to resell or any other money market type of investment:
 - a. Is purchase or sale authority clearly defined?
 - b. Are purchases or sales reported to the board of directors or its investment committee?

- c. Are maximums established for the amount of each type of asset?
- d. Are maximums established for the amount of each type of asset that may be purchased from or sold to any one bank?
- e. Do money market investment policies outline acceptable maturities?
- f. Have credit standards and review procedures been established?
7. If the bank holds shares of mutual funds or unit investment trusts, has the board of directors adopted policies and procedures that include:
 - a. Specific provisions for purchases of mutual fund and unit investment trust shares?
 - b. Requirements for prior approval of initial investment in investment companies?
 - c. Procedures, standards, and controls for managing such investments?

Custody of Securities

- *8. Do procedures preclude the custodian of bank securities from:
 - a. Having sole physical access to securities?
 - b. Preparing release documents without the approval of authorized persons?
 - c. Preparing release documents not subsequently examined or tested by a second custodian?
 - d. Performing more than one of the following transactions: (1) execution of trades, (2) receipt or delivery of securities, (3) receipt and disbursement of proceeds?
- *9. Are securities physically safeguarded to prevent loss or unauthorized removal or use?
10. Are securities, other than bearer securities, held only in the name of the bank?
11. When a negotiable certificate of deposit is acquired, is the certificate safeguarded in the same manner as any other negotiable investment instrument?

Investment Securities Records

12. Do subsidiary records of investment securities show all pertinent data describing the security, its location, pledged or unpledged status, pre-

Investment Securities: Domestic and International Internal Control Questionnaire

Section 203.4

mium amortization, discount accretion, and interest earned, collected and accrued?

- *13. Is the preparation and posting of subsidiary records performed or reviewed by persons who do not also have sole custody of securities?
- *14. Are subsidiary records reconciled, at least monthly, to the appropriate general ledger accounts, and are reconciling items investigated by persons who do not also have sole custody of securities?
- 15. For international division investments, are entries for U.S. dollar carrying values of foreign currency denominated securities rechecked at inception by a second person?

Purchases, Sales and Redemptions

- *16. Is the preparation and posting of security and open contractual commitments purchase, sale, and redemption records performed or reviewed by persons who do not also have sole custody of securities or authorization to execute trades?
- *17. Are supporting documents, such as brokers' confirmations and account statements for recorded purchases and sales checked or reviewed subsequently by persons who do not also have sole custody of securities or authorization to execute trades?
- *18. Are purchase confirmations compared to delivered securities or salekeeping receipts to determine if the securities delivered are the securities purchased?

Futures Contracts, Forward Placement Controls

- 19. Do futures and forward contract policies:
 - a. Outline specific strategies?
 - b. Relate permissible strategies to other banking activities?
- 20. Are the formalized procedures used by the trader:
 - a. Documented in a manual?
 - b. Approved by the board or an appropriate board committee?
- 21. Are the bank's futures commission merchant(s) and/or forward brokers:
 - a. Notified in writing to trade with only those persons authorized as traders?

b. Notified in writing of revocation of trading authority?

- 22. Has the bank established futures and forward trading limits:
 - a. For individual traders?
 - b. For total outstanding contracts?
 - c. Which are endorsed by the board or an appropriate board committee?
 - d. The basis of which is fully explained?
- 23. Does the bank obtain prior written approval detailing amount of, duration and reason:
 - a. For deviations from individual limits?
 - b. For deviations from gross trading limits?
- 24. Are these exceptions subsequently submitted to the board or an appropriate board committee for ratification?
- 25. Does the trader prepare a pre-numbered trade ticket?
- 26. Does the trade ticket contain all of the following information:
 - a. Trade date.
 - b. Purchase or sale.
 - c. Contract description.
 - e. Quantity.
 - f. Price.
 - g. Reason for trade.
 - h. Reference to the position being matched (immediate or future cash settlement).
 - i. Signature of trader.
- 27. Are the accounting records maintained and controlled by persons who cannot initiate trades?
- 28. Are accounting procedures documented in a procedures manual?
- 29. Are all incoming trade confirmations:
 - a. Received by someone independent of the trading and recordkeeping functions?
 - b. Verified to the trade tickets by this independent party?
- 30. Does the bank maintain general ledger control accounts disclosing, at a minimum:

Investment Securities: Domestic and International Internal Control Questionnaire

Section 203.4

- a. Futures or forwards contracts memoranda accounts?
- b. Deferred gains or losses?
- c. Margin deposits?
- 31. Are futures and forward contracts activities:
 - a. Supported by detailed subsidiary records?
 - b. Agreed daily to general ledger controls by someone who is not authorized to prepare general ledger entries?
- 32. Do periodic statements received from futures commission merchants reflect:
 - a. Trading activity for the period?
 - b. Open positions at the end of the period?
 - c. Market value of open positions?
 - d. Unrealized gains and losses?
 - e. Cash balances in accounts?
- 33. Are all of these periodic statements:
 - a. Received by someone independent of both the trading and recordkeeping functions?
 - b. Reconciled to all of the bank's accounting records?
- 34. Are the market prices reflected on the statements:
 - a. Verified with listed prices from a published source?
 - b. Used to recompute gains and losses?
- 35. Are daily reports of unusual increases in trading activity reviewed by senior management?
- 36. Are weekly reports prepared for an appropriate board committee which reflect:
 - a. All trading activity for the week?
 - b. Open positions at the end of the week?
 - c. Market value of open positions?
 - d. Unrealized gains and losses?
 - e. Total trading limits outstanding for the bank?
 - f. Total trading limits for each authorized trader?
- 37. Is the futures and forwards contracts portfolio revalued on a monthly basis to market value or to the lower of cost or market?
- 38. Are revaluation prices provided by persons or sources totally independent of the trading function?

Recordkeeping and Confirmation Requirements for Customer Securities Transactions (12 CFR 12)

- 39. Are chronological records of original entry containing an itemized daily record of all purchases and sales of securities maintained? (12 CFR 12.3)
- 40. Do the original entry records reflect:
 - a. The account or customer for which each such transaction was effected?
 - b. The description of the securities?
 - c. The unit and aggregate purchase or sale price (if any)?
 - d. The trade date?
 - e. The name or other designation of the broker/dealer or other person from whom purchased or to whom sold?

If the bank has had an average of 200 or more securities transactions per year for customers over the prior three-calendar-year period, exclusive of transactions in U.S. government and federal agency obligations, answer questions 41, 42 and 43.

- 41. Does the bank maintain account records for each customer which reflect:
 - a. All purchases and sales of securities?
 - b. All receipts and deliveries of securities?
 - c. All receipts and disbursements of cash for transactions in securities for such account?
 - d. All other debits and credits pertaining to transactions in securities?
- 42. Does the bank maintain a separate memorandum (order ticket) of each order to purchase or sell securities (whether executed or cancelled) which includes:
 - a. The account(s) for which the transaction was effected?
 - b. Whether the transaction was a market order, limit order, or subject to special instructions?
 - c. The time the order was received by the trader or other bank employee responsible for affecting the transaction?
 - d. The time the order was placed with the broker/dealer, or if there was no broker/dealer, the time the order was executed or cancelled?

Investment Securities: Domestic and International
Internal Control Questionnaire

Section 203.4

- e. The price at which the order was executed?
f. The broker/dealer used?
43. Does the bank maintain a record of all broker/dealers selected by the bank to effect securities transactions and the amount of commissions paid or allocated to each such broker during the calendar year?
44. Does the bank, subsequent to effecting a securities transaction for a customer, mail or otherwise furnish to such customer either a copy of the confirmation of a broker/dealer relating to the securities transaction or a written trade confirmation prepared by the bank?
45. If customer notification is provided by furnishing the customer with a copy of the confirmation of a broker/dealer relating to the transaction, and if the bank is to receive remuneration from the customer or any other source in connection with the transaction, and the remuneration is not determined pursuant to a written agreement between the bank and the customer, does the bank also provide a statement of the source and amount of any remuneration to be received?
46. If customer notification is provided by furnishing the customer with a trade confirmation prepared by the bank, does the confirmation disclose:
- The name of the bank?
 - The name of the customer?
 - Whether the bank is acting as agent for such customer, as principal for its own account, or in any other capacity?
 - The date of execution and a statement that the time of execution will be furnished within a reasonable time upon written request of such customer?
 - The identity, price and number of shares or units (or principal amount in the case of debt securities) of such securities purchased or sold by such customer?
47. For transactions which the bank effects in the capacity of agent, does the bank, in addition to the above, disclose
- The amount of any remuneration received or to be received, directly or indirectly, by any broker/dealer from such customer in connection with the transaction?
 - The amount of any remuneration received or to be received by the bank from the customer and the source and amount of any other remuneration to be received by the bank in connection with the transaction, unless remuneration is determined pursuant to a written agreement between the bank and the customer?
 - The name of the broker/dealer used; or where there is no broker/dealer, the name of the person from whom the security was purchased or to whom it was sold, or the fact that such information will be furnished within a reasonable time upon written request?
48. Does the bank maintain the above records and evidence of proper notification for a period of at least three years?
49. Does the bank furnish the written notification described above within five business days from the date of the transaction, or if a broker/dealer is used, within five business days from the receipt by the bank of the broker/dealer's confirmation (12 CFR 12.5)? If not, does the bank use one of the alternative procedures described in 12 CFR 12.5?
50. Unless specifically exempted in 12 CFR 12.7, does the bank have established written policies and procedures ensuring (12 CFR 12.6):
- That bank officers and employees who make investment recommendations or decisions for the accounts of customers, who participate in the determination of such recommendations or decisions, or who, in connection with their duties, obtain information concerning which securities are being purchased or sold or recommended for such action, report to the bank, within 10 days after the end of the calendar quarter, all transactions in securities made by them or on their behalf, either at the bank or elsewhere in which they have a beneficial interest (subject to certain exemptions of 12 CFR 12.6(d))?
 - That in the above required report the bank

**Investment Securities: Domestic and International
Internal Control Questionnaire**

Section 203.4

officers and employees identify the securities purchased or sold and indicate the dates of the transactions and whether the transactions were purchases or sales?

- c. The assignment of responsibility for supervision of all officers or employees who: (1) transmit orders to or place orders with broker/dealers, or (2) execute transactions in securities for customers?
- d. The fair and equitable allocation of securities and prices to accounts when orders for the same security are received at approximately the same time and are placed for execution either individually or in combination?
- e. Where applicable, and where permissible under local law, the crossing of buy and sell orders on a fair and equitable basis to the parties to the transaction?

Other

- 51. Does the board of directors receive regular reports on domestic and international division investment securities, which include:
 - Valuations.
 - Maturity distributions.

- Average yield.
- Reasons for holding and benefits received (international division and overseas holdings only).

- 52. Are purchases, exchanges and sales of securities and open contractual commitments ratified by action of the board of directors or its investment committee and thereby made a matter of record in the minutes?

Conclusion

- 53. Is the foregoing information an adequate basis for evaluating internal control in that there are no significant additional internal auditing procedures, accounting controls, administrative controls, or other circumstances that impair any controls or mitigate any weaknesses indicated above (explain negative answers briefly, and indicate conclusions as to their effect on specific examination or verification procedures)?
- 54. Based on a composite evaluation, as evidenced by answers to the foregoing questions, internal control is considered _____ (good, medium, or bad).

→ Investment Securities: Domestic and International
Verification Procedures

Section 203.5

- 1 Test the addition of the investment and money market holdings trial balances.
- 2 Test the reconciliations of the trial balances to the general ledger.
- 3 If investment or money market holdings are held in safekeeping at locations outside the bank, request the safekeeping agent to provide lists of securities held including name, description, par value, interest rate, due date, pledge status, and payment date of next coupon. (For international division securities, all requests and direct verification should be made in the name of the bank, on its letterhead, and returned to its audit department with a code designed to direct such information to the examiners.)
- 4 Using appropriate sampling techniques, select investment and money market holdings from the trial balances and:
 - a For investment and money market instruments held at the bank:
 - Examine and count the securities
 - Compare details of certificates to trial balances
 - If securities are pledged to secure the bank's liabilities, determine that they are properly segregated from other securities.
 - Determine if coupons are intact
 - Investigate any discrepancies.
 - b For investment and money market instruments not held at the bank:
 - Compare trial balance details to safekeeping receipts and the safekeeping agent's confirmation list.
 - Determine that pledge status, if any, is properly noted on the safekeeping agent's confirmation list.
 - Investigate any discrepancies.
 - c For investment and money market holdings purchased since the last examination.
 - Verify cost by examining invoices, broker's advices or other independent sources.
 - Determine that the securities were properly recorded in the general ledger.
- Determine that purchases were approved by the board of directors or its designated committee.
- For investment and money market holdings purchased at a premium or discount, test book value by:
 - Determining the bank's method of calculating and recording amortization of premiums and accretion of discounts.
 - Determining the gross amount of premium or discount at purchase date.
 - Determining the period to maturity or call date.
 - Calculating the amount of premium remaining to be amortized or discount remaining to be accreted.
 - Determining that book value is reflected properly in the general ledger.
 - Investigating any discrepancies.
 - Scanning previously tested amortization or accretion schedules for investment or money market holdings acquired prior to the last examination and investigating any significant departure from these schedules.
- 5 Test gains and losses on disposal of investment securities since the last examination by sampling investment sales records and:
 - a Determining sales price by examining invoices or brokers' advices.
 - b Checking computation of book value on settlement date.
 - c Calculating gain or loss and tracing the amount to its proper recording in the general ledger.
 - d Determining that the general ledger has been properly relieved of the investment, accrued interest, premium, discount and other related accounts.
 - e Determining that sales were approved by the board of directors or its designated committee
- 6 Test accrued interest by:

→ Investment Securities: Domestic and International Verification Procedures

Section 203.5

- a. Determining the bank's method of calculating and recording interest accruals
 - b. Obtaining trial balance(s) of accrued interest, if maintained separately from trial balances of investment and money market holdings.
 - c. Testing the addition of the trial balance(s) and the reconciliation of the trial balance(s) to the general ledger
 - d. Determining that interest accruals are not being made on defaulted issues
 - e. Randomly selecting at least one of each type of the various investment and money market holdings selected as sample items in step 4 and
 - Determining the interest rate and last interest payment date of coupons and money market instruments
 - Calculating accrued interest and comparing it to the trial balance(s).
- 7 Obtain and prepare, for each kind of investment and money market holding, a schedule showing the accrued interest balance and the investment balance at the end of each quarter since the last examination and
- a. Calculate the ratios of accrued interest to investment balance for each type and time period.
 - b. Investigate significant fluctuations and/or trends
- 8 Obtain or prepare, for each kind of investment and money market holding, a schedule showing the monthly income amounts and the average monthly balance since the last examination and
- This step should be performed only if the examiner-in-charge determines that it is necessary as an extension of similar computations made in NBSS reports)
- a. Calculate yield
 - b. Investigate significant fluctuations and/or trends
9. If the bank is engaged in financial futures, forward placement or standby contracts
- Reconcile outstanding contracts to general ledger memoranda accounts
 - Determine the current market value (gross and net) of outstanding contracts.
 - Confirm the existence of contracts with broker(s) doing business with the bank
 - For a sample of transactions currently outstanding and closed out since the last examination:
 - Verify cost and profit and loss by examining broker's preliminary and final confirmations, margin calls and margin runs
 - Trace a sample of settlement funds and profit and loss entries to determine if they were properly recorded.
 - Determine if there is a high correlation between the contracts and offset to the contracts
 - Test fee income received by the bank in connection with the sale of a standby contract
 - Evaluate the credit risk exposure associated with various customers and dealers.

Investment Securities: Domestic and International
Laws, Regulations and Rulings

Section 203.6

	<i>Laws*</i>	<i>Regulations†</i>	<i>Rulings‡</i>	<i>OCC Issuances**</i>
Affiliates— Transactions with	84, 371(c), 377 378		7.7365 7.7370	
Borrowers Who Obtain Credit		224		
Coin and Bullion				BC-58 Revised Supp 1
Concentrations of Credit				EC-219 (rev.)
Credit by Brokers and Dealers		220		
Foreign Restricted List of Securities Issued by the S E C				BC-98 (rev) Supp. 1,2,3
Forms for Financial Statements		11 71 Assets (2) and (4)		
Interest Rate Futures Contracts, Forward Placement Contracts, Standby Contracts				BC-79 (3rd rev.)
International Banking Operations (Sections applicable to Securities and Money Market Investments)		211 (Regulation K)		
Investment in Investment Companies Composed Wholly of Bank Eligible Investments				BC-220
Investment Securities	24(7)	1		
Limitation of Deposit with Non-member Banks	463			
Loans of Securities by National Banks				BC-196

*12 USC, unless specifically stated otherwise

†12 CFR, unless specifically stated otherwise

**BC—Banking Circular EC—Examining Circular

Investment Securities: Domestic and International
Laws, Regulations and Rulings

Section 203.6

	<i>Laws*</i>	<i>Regulations†</i>	<i>Rulings‡</i>	<i>OCC Issuances**</i>	
Lost, Missing, Counterfeit or Stolen Securities		17 CFR 240 17f-1		BB 89-14	←
Manipulative and Deceptive Devices	15 USC 78j				
National Corporation for Housing Partnerships and National Housing Partnerships				BC-21 Supp 1,2	
Non-banking Organizations — Interest in	1843				
Persons Engaged in Underwriting as Director	78				
Pledged Assets and Secured Liabilities	90 and 265	9 10 and 9 14 31 CFR 203 15	7 7410 7 7415		
Purchase or Sale of Loans in Whole or in Part— Participations				BC-181 (rev)	
Purchase and Sale of Government Guaranteed Loans				BC-197	
Recordkeeping and Confirmation Requirements		12			
Repurchase Agreements		17 CFR 403		BC-210, BB 88-35	←
Retail Repurchase Agreements				BC-157	

*12 USC unless specifically stated otherwise

†12 CFR unless specifically stated otherwise

**BC—Banking Circular; EC—Examining Circular

Investment Securities: Domestic and International
Laws, Regulations and Rulings

Section 203.6

	<i>Laws*</i>	<i>Regulations†</i>	<i>Rulings‡</i>	<i>OCC Issuances**</i>
Securities Denominated in Foreign Currencies				BC-216
Selection of Securities Dealers and Unsuitable Investment Practices				BC-228
Uniform Agreement on the Classification of Assets and Appraisal of Securities Held by National Banks				BC-127

*12 USC, unless specifically stated otherwise

†12 CFR, unless specifically stated otherwise

**BC—Banking Circular EC—Examining Circular

APPENDIX 8

Off-balance Sheet Products

This section describes the primary off-balance sheet products used by commercial banks; namely, options, swaps, futures, and forwards. The information is designed to identify the products, provide definitions, and aid examiners in evaluating bank management's proficiency in using the products. This section focuses on a purchasing bank's use of the products, but sometimes refers to dealer operations to clarify and provide more comprehensive background information.

Since managing financial risk is becoming more important to banks, the use of off-balance sheet products will continue to grow. As the markets become more liquid and information is proliferated, more banks will use off-balance sheet products to manage various risks or to improve income through speculating on price movements. Examiners must understand the characteristics of these products and the techniques for managing the risks they create.

Options

1. Product Description

The owner of an option contract has the right to buy or sell a specified asset, at a specified price, on or before a specified date. The party granting the right is referred to as the option seller, or writer, and the party receiving the option is called the option buyer. The seller is obligated to perform on the contract, whereas the purchaser has a right, but not an obligation, to perform on the contract.

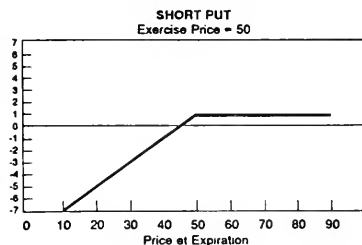
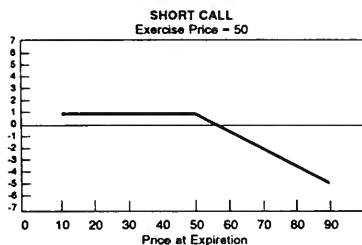
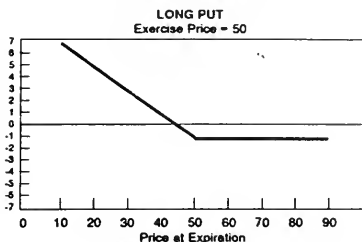
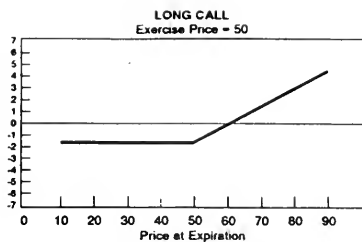
A call option gives the buyer the right to purchase the underlying instrument and a put option gives the buyer the right to sell the underlying instrument. Purchasing a call option is considered a long position and the buyer expects to profit from the price of the underlying instrument exceeding the strike, or exercise price, within the life of the contract. The put purchaser expects to profit from the price of the underlying instrument declining below the exercise price of the contract. The exercise price is the price at which the contract owner has the right to buy or sell the underlying instrument. Return profiles of a long call, a long put, a short call, and a short put are shown in the facing column.

Options are available on a myriad of instruments. However, commercial banks typically use interest rate and currency options. These types of options can be used in bank dealer activities, in a trading account, or to hedge various risks associated with the underlying instruments or portfolio. This discussion will be limited to the uses of purchased instruments, rather than the trading or warehousing of products.

Interest Rate Options

Interest rate options are available on several different contracts, indices, and futures contracts traded on various exchanges. The presence of an exchange offers liquidity to the market and reduces credit risk because the exchange stands between all trades. Banks are permitted to engage in these contracts to manage overall interest rate exposure, exposure on a specific contract, or in conjunction with the trading department.

Options on short-term interest rates are available on the Chicago Board Options Exchange (CBOE). These options are on the 13-week T-bill rate, which is the recognized benchmark for short-term interest



rates. Other short-term interest rate options include options on Eurodollar time deposit futures contracts and those on T-bill futures contracts. These instruments are available on the International Monetary Market (IMM) of the Chicago Mercantile Exchange.

Options on long-term interest rates are also available on the CBOE. These options are based on the average yield to maturity of the 7- and 10-year T-notes and the 30-year T-bond. Other long- and intermediate-term interest rate options include options on T-bonds and T-notes and are available on the Chicago Board of Trade (CBOT).

Interest rate options are also available in the OTC market. OTC interest rate options are used by banks because they can be specially tailored to fit a bank's particular risk management needs. They are not standardized like the exchange traded options and can have as long a maturity as required to hedge the particular interest rate risk. The OTC options used primarily by banks are interest rate caps, floors, and collars.

An interest rate cap, or ceiling, allows a party to hedge against increasing interest rates over a predetermined rate for a specified period of time. The purchaser of an interest rate cap receives from the cap writer the excess of a reference rate (usually a floating rate index), over the cap rate. The payment received, if any, will occur on specified settlement dates. If the cap rate equals or exceeds the reference rate, no payments are made. An example of when management would purchase an interest rate cap would be if the bank were liability sensitive, when asset repricing maturities were longer than their liability repricings, and management decided that the probability of rates increasing was high. An interest rate cap could be purchased, and if rates increased as expected, the profit on the interest rate cap could be used to offset the bank's increased funding costs.

An interest rate floor allows the purchaser to hedge against rates declining below a specified (floor) rate over a period of time. The purchaser of the floor will receive payments from the floor writer when the reference rate falls below the floor rate. The payments will be the difference between the floor rate and the reference rate. If the floor rate is less than the reference rate, no payments are made. An

example of when management would purchase an interest rate floor would be if the bank were asset sensitive, where asset repricing maturities were shorter than liability repricings, and management decided that the probability of rates declining was high. An interest rate floor could be purchased and if rates did decrease as expected, the profit on the floor could be used to offset lower yields on the variable rate assets.

An interest rate collar is a combination of a cap and a floor. The purchaser of a collar buys a cap and sells a floor. The premium earned on the floor offsets the price paid for the cap. The collar essentially allows the bank to receive cap protection at a reduced premium cost. However, the bank sacrifices the right to fully benefit from a substantial drop in rates since the collar only allows the bank to benefit from falling rates until the floor is reached.

Currency Options

Currency option trading is a large part of many large banks' trading operations. These options are traded for customers, traded for profit, and used in the overall management of exposure to foreign exchange. Exchange traded options are available on all major currencies, including the U.S. Dollar, Japanese Yen, German Deutschemark, British Pound Sterling, Swiss Franc, Canadian Dollar, French Franc and Australian Dollar. Options on the futures contracts of these "major" currencies are also traded on various exchanges. Options on several other currencies are available on various exchanges. The most liquid of the currencies are the Mark, Yen, Pound, and \$US.

Currency options can be used to hedge a bank's exposure to foreign exchange rate movements. This exposure can come from various sources, including loans and securities denominated in foreign currencies. An example of when a bank would use a foreign currency option would be if it had a bond denominated in German Marks. If the mark depreciates against the dollar while the bank holds the bond, the bank will lose money when converting the marks back to dollars. Bank management could purchase a put option on the mark which allows the bank to sell the mark at a given price. If the mark does depreciate, the profit on the put could be used to offset the exchange loss on the mark-denominated bond.

II. Market—Where to Find Current Value and Ratings

Options contracts can be exchange traded, standardized, and traded on an organized exchange, or over-the-counter (OTC), which are customized and usually to accommodate a specialized hedging requirement. Exchange-traded options are traded on several exchanges, both in the U.S. and abroad. Exchange-traded options have standardized specifications and the exchange is the counterparty on all trades, thus reducing credit risk. The counterparty on an OTC option can be a broker-dealer, institution, or an individual. Therefore, OTC options usually contain more credit risk, along with the other risks associated with exchange-traded options. The "Money and Investing" section of *The Wall Street Journal* contains price information on exchange-traded options traded in the U.S.

III. What You Should Look for (Suitability)

Options are legitimate products that commercial banks may use to hedge various interest rate and currency risks. The most obvious approach would be hedging a specific instrument with a specific option. For example, management has a T-bond that it wants to hedge to counter a rise in interest rates, which would cause the price of its bond to drop. Management could purchase a put on the T-bond giving it the right to put the bond to the option seller at a pre-determined price. If rates rise, the bank can put the bond and avoid a loss. If rates do not rise, management has only lost the money paid for the option.

Options strategies can also be used to enhance returns on specific instruments or on a portfolio of instruments. An example of this would be covered call writing. The premium received on the call option will enhance the overall return on the bond. Management must consider, however, that if the price of the bond rises, it risks having the bond called away. Banks that write covered call options must report the underlying security as held for sale at the lower of cost or market value. However, if the bank chooses to continue to carry the underlying security at amortized cost, its policies and procedures must prohibit the delivery of the underlying security. A written agreement with the option holder must state that the bank will settle only in cash upon exercise of the option.

Options can also be used to speculate on price movements. This activity should be limited to banks with strong capital and the management sophistication to manage the risks involved. Management must be able to explain the reasons for their options strategies. The line between hedging and speculating is often thin.

The examiner must ensure that bank management understands the risks associated with these products and implements systems and controls to quantify and manage those risks. Specifically, this will include an analysis of the following:

Policies: Management must implement specific written policies which authorize the activities in which the bank will engage. The policies should set limits for all the risks associated with these products including, but not limited to, position limits, maturity limits, credit limits, and earnings-at-risk limits. These limits should be incorporated into the risk management system used by the bank. Limits should also be established for delta, gamma, vega, and theta (refer to the paragraph on Other Risk in this section).

Procedures: Management must establish procedures and internal controls to ensure that policy limits are enforced. Procedures should be written for credit approval; segregation of duties in operations; revaluation, if necessary; and, provision of periodic reports to management.

Risk Management System: The risk management system must include a model to quantify accurately the risk associated with the position and to provide the means to manage the risk effectively. The risk should be monitored relative to the limits imposed by the policies. In hedging situations, correlation studies for the appropriate instruments should detail the mechanics of the hedge. Examiners must ensure the accuracy of the models used to measure and monitor the risk. This may include analyzing earnings of the position, or the gains and losses associated with given hedges, and comparing these to the expected result. The system must incorporate all risks associated with the product and accurately reflect them relative to limits on earnings at risk.

Audit: Internal and external audits should be performed on this area. Examiners must determine the adequacy of each. This should focus particularly on the effectiveness of internal controls and the adequacy of the management information system. This

area should also address management's willingness to implement the proper control systems to monitor activities of this sophistication. Examiners will also determine the expertise of the auditors.

The lack of the above information may lead to unsafe and unsound banking practices.

IV. Accounting Treatment

A bank engaging in options should have accounting policies and procedures that include recordkeeping requirements, and methods for determining whether options are reducing or increasing risk and for accounting for each option, based on its type and purpose. Accounting policies and procedures for options should be approved by the board of directors. They should be designed to ensure consistent and appropriate accounting for options.

Regulatory accounting requirements for options are in the Call Report. The accounting method used depends on whether the bank has sold (written) or purchased the option.

Accounting by the Purchaser

The purchaser of an option does not record market valuation adjustments. If the market value of the underlying financial instrument is unfavorable relative to the contract price, the purchaser will generally allow the option to expire unexercised. The purchaser recognizes a gain only at the time the option is exercised.

The par value of the instruments underlying each outstanding option contract purchased should be reported in Call Report Schedule RC-L "Off-Balance Sheet Items." The notional principal amount of caps, floors, and collars is also included in Schedule RC-L of the Call Report.

For all options contracts, netting of purchased options against written options is not permitted. In addition, banks may not offset their written options to buy against their written options to sell.

Accounting by the Seller

The seller of an option must account for that option at the lower of its cost or market value. In addition, fee income received by the seller of an option must be deferred until the option expires, is exercised, or is

terminated. Market values of outstanding written options should be determined at least monthly and more often if the bank maintains a material amount of these contracts.

The determination of the lower of cost or market adjustment depends on whether the seller of the option is obligated to purchase or sell the underlying asset. If the seller of the option is obligated to purchase the underlying asset, losses are recorded if the market value of the asset is less than the contract price minus the deferred option fee. For example, assume the bank wrote an option to purchase a Treasury note in 30 days for \$100,000. The bank received a fee of \$1,000 for a net contract price of \$99,000. If the current market value of the Treasury note is \$98,000, the bank would record an unrealized loss of \$1,000.

If the seller of the option is obligated to sell the underlying asset, losses are recorded if the market value of the underlying asset is greater than the contract price plus the deferred option fee. For example, assume the bank wrote an option to sell a Treasury note in 30 days for \$100,000. The bank received a fee of \$1,000 for a net contract price of \$101,000. If the current market value of the Treasury note is \$102,000, the bank would record an unrealized loss of \$1,000.

Unrealized losses are reported as other noninterest expense in the Call Report with an offsetting entry to other liabilities. If there is no unrealized loss, deferred fees are recorded as other liabilities. If an option contract expires unexercised, any related deferred fee income may be reported as other income.

If an option contract is settled prior to its maturity, the deferred fee income is accounted for as an adjustment of the settlement amount. Net settlement gains are reported as other noninterest income. Net settlement expenses are reported as other noninterest expense.

If an option requires the seller to purchase an asset, the deferred fee income is used to reduce the cost basis of the acquired asset if the option is exercised. Assets acquired should be recorded at the lower of this adjusted cost or their market value on the date of purchase. If an option requires the seller to sell an asset, the deferred fee income should be accounted for as an increase in the sales price of the asset sold.

V. Risks

Interest Rate Risk: Only open positions will possess interest rate risk. Using an option as a hedging vehicle is intended to reduce interest rate risk.

Credit Risk: Negligible for exchange-traded options because the exchange is the counter party on every trade. OTC options contain credit risk because the purchaser (and not the seller) is exposed to the counterparty performing on the contract. The exposure is limited to the amount of the cost to maintain the required position if the counterparty fails to perform. Also, credit risk is only evident if the option is in-the-money. There is no risk if the option is out-of-the-money because it will go unexercised.

Liquidity Risk: Liquidity risk depends on the contract and the expiration. Usually, OTC contracts contain more liquidity risk since they are customized contracts that may serve only a specified purpose.

Other Risk: Theoretical risk measures.

Delta measures the sensitivity of an option's price for a given change in the spot price of the underlying commodity.

Gamma measures the sensitivity of Delta to changes in the price of the underlying instrument. It measures the amount Delta will move when the spot rate moves. It is very important when hedging because it determines the amount the option book will have to change to maintain an effective hedge.

Theta, or time decay, is the sensitivity of an option's price to the passage of time. The value of an option will decrease as time passes, but it does not do so at an even rate. Theta can also be thought of as "rent" paid for maintaining a gamma position.

Vega, or volatility risk, is the sensitivity of the price of an option to changes in volatility.

VI. Legal Limitations

Options are not considered investment securities under 12 U.S.C. 24(7th). However, the use of these contracts is considered to be an activity incidental to banking, within safe and sound banking principles. Refer to subsection III, Suitability, in this section for details on the systems, controls and limits which bank management must implement prior to engaging in options activities.

VII. Risk-based Capital Requirement

Foreign exchange, commodity, and interest rate contracts have the following process for determining the risk-based capital requirement. Three steps determine: the current credit exposure; the potential credit exposure; and the risk-weight. Additional details follow:

1. Mark to market (positive values only).
2. Add-on for potential credit exposure:
 - Interest Rate 0 % (\leq 1 Yr.) .5 % ($>$ 1 Yr.)
 - Exchange Rate 1 % (\leq 1 Yr.) 5 % ($>$ 1 Yr.)
3. Assign to Risk Category, Maximum 50 percent.

The risk-based capital requirement is computed by multiplying the sum of the current and potential credit exposure (step one plus step two) by the risk weight (step three).

Note also that exchange rate contracts that have an original maturity of 14 calendar days or less and instruments traded on exchanges and subject to daily margin requirements are exempt from the risk-based capital calculation.

(Further details relative to the risk-based capital calculation can be found in the *Comptroller's Manual for National Banks* under 12 CFR 3.1, Appendix A. If the regulation is still not clear, the Chief National Bank Examiner's Office can assist in finding an answer.)

III. References

Fabozzi, Frank J., ed., *The Handbook of Fixed Income Securities*, 2d ed. (Homewood, Illinois: Dow Jones-Irwin, 1987).

McMillan, Lawrence G., *Options as a Strategic Investment*, 2d ed. (New York: New York Institute of Finance, 1986).

Oberhofer, George D., *Rate Risk Management: Fixed Income Strategies Using Futures, Options and Swaps* (Chicago: Probus Publishing Company, 1988).

Siegel, Daniel R., and Diane F. Siegel, *The Futures Markets: Arbitrage, Risk Management and Portfolio Strategies* (Chicago: Probus Publishing Company, 1990).

Smith, Jr., Clifford W., Charles W. Smithson, and D. Sykes Wilford, *Managing Financial Risk* (New York: HarperCollins, 1990).

OCC Documents

Bank Accounting Advisory Series, Issue No. 1, June 1990.

Comptroller's Handbook for National Bank Examiners, Section 203 (Washington, D.C., March 1990).

Banking Circular 79 (3rd Rev.), National Bank Participation in the Financial Futures and Forward Placement Markets, April 19, 1983.

Swaps

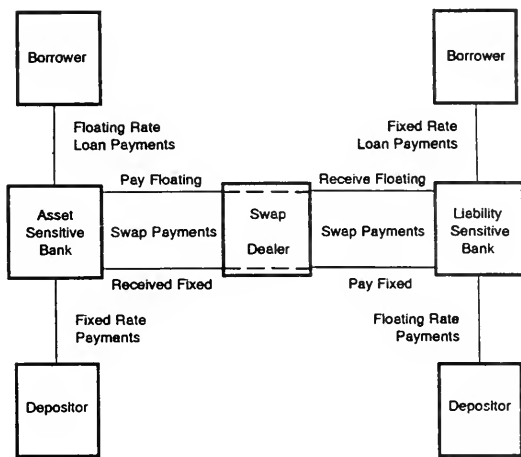
I. Product Description

A swap is a contract between two counterparties to exchange net cash flows on agreed upon dates, for a specified period of time, on an established notional principal. The payment to one or the other counterparties is the difference between the two cash flows. The contracts are usually done between a swap dealer and a customer, rather than between two customers. The swap market originated in the foreign exchange markets in the early 1970s and has since spread to interest rates and commodities. Banks use interest rate swaps as an asset/liability tool to hedge undesired mismatches. The notional principal outstanding of interest rate swaps has grown to well over \$1 trillion. The commodity swap market is relatively new to domestic banks and is continuing to evolve. The basic structure of a swap is shown below. The example uses a fixed for floating interest rate swap, but the basic structure and mechanics are similar for all swaps.

Although swaps are over-the-counter instruments, meaning they are not traded on an organized exchange, there is a degree of standardization in the contracts since the advent of International Swap Dealers Association (ISDA). Counterparties often form a master swap agreement that establishes the basic language of a swap agreement. Master agreements often incorporate the *ISDA Code of Standard Wording, Assumptions, and Provisions for Swaps* to provide basic wording and assumptions. Counterparties can change the master agreement as required.

Banks are a natural intermediary in the swap markets because they, and their customers, have exposure to interest rate, currency and commodity price movements. Banks can offer swaps as a risk management tool for their customers. Also, since banks are in the business of evaluating credit risk, they are suited to analyze their customers' credit risk with the bank itself. Customers do not have to find a

Fixed/Floating Interest Rate Swap



counterparty for their transaction or analyze the counterparty's credit quality.

Banks can run a book of swaps and manage the overall risk on a portfolio basis rather than on a contract-by-contract basis, which is virtually impossible because of the inherently unmatched nature of the swap market.

Currency Swaps

Currency swaps, the oldest type of swap, originated as multinational companies began experiencing increased foreign exchange risk after the breakdown of the Bretton Woods fixed exchange rate system in 1973. A currency swap is similar to an interest rate swap, except the cash flows are based on two different fixed currency rates (e.g., fixed dollar rate for a fixed yen rate).

Interest Rate Swaps

Banks generally will use interest rate swaps in two ways. The first way is as an end user in the overall asset/liability and interest rate risk programs. The swaps will be used to lower their cost of funds or to manage exposure to interest rate movements. The second use normally seen in banks will be as a dealer in the swap market. Several large banks are market makers in interest rate swaps and act as principal for their customers. This type of operation is usually found in the trading or capital markets division of a bank.

Interest rate swaps can be broken into coupon swaps and basis swaps. A coupon swap exchanges an interest payment stream of one configuration for another on the same notional principal, e.g., fixed rate for floating rate. A basis swap bases payments on two floating rate indices, e.g., LIBOR for Prime. Interest rate swaps are also used to lower a bank's cost of funds by exploiting credit spreads between the fixed and floating rate markets.

Commodity Swaps

On July 17, 1989, the Commodity Futures Trading Commission (CFTC) gave banks broad exemption from regulation relative to swap transactions involving commodities. A commodity swap is a financial contract between two counterparties that has a periodic payout over its life equal to the net difference between a fixed price and the currently prevailing spot price for a given volume of a commodity. The swap allows an entity to hedge income or

expense structures that are sensitive to the price volatility of one or more commodities.

Since the CFTC exemption, bank participation in this market has been growing rapidly. The majority of the business has been in petroleum products, specifically crude oil and heating oil. The business escalated after the crisis in the Persian Gulf surfaced in August 1990. However, banks have begun to deal in other energy products, such as jet fuel and natural gas and in various metals. To date, the business has been concentrated in large, sophisticated institutions that have the systems capability and technical expertise to manage the risks associated with this product.

II. Market—Where to Find Current Value and Ratings

Swaps are not exchange traded products and have no easily accessible market prices and ratings. Swap dealers quote prices based on the terms of the swap and prices are quoted on a Reuters screen; however, there is no other easily accessible market data.

III. What You Should Look for (Suitability)

Interest rate, currency, and commodity swaps are legitimate products that banks may use to hedge various risks associated with interest rate, currency, and commodity price movements.

Interest rate swaps generally will be used as an asset/liability management strategy to hedge exposure to fixed or floating rates (coupon swap), to floating rate indices (basis swap), or to lower funding costs. For example, a coupon swap would be used by a bank which has a positive gap (fixed rate funding and floating assets). The bank could enter into a swap agreement with a dealer in which it pays a floating rate and receives a fixed rate, thus achieving a more neutral asset/liability position.

A basis swap could be used if the bank's deposits were tied to the commercial paper rate, while its loans were tied to LIBOR. Although both indices are floating, they do not have 100 percent correlation and could expose the bank to basis risk. The bank could merely enter into a swap in which it receives the commercial paper rate and pays LIBOR, thus limiting its exposure to the basis differentials between LIBOR and the commercial paper rate.

Only banks with sophisticated risk management systems should offer these products as risk management tools for customers (i.e., trading).

The examiner must determine whether bank management understands the risks associated with these products and implements systems and controls to quantify and manage those risks effectively. Specifically, this will include an analysis of the following:

Policies: Management must implement specific written policies that authorize the activities in which the bank will engage. The policies should set limits for all the various risks associated with these products including, but not limited to, position limits, maturity limits, credit limits, and earnings-at-risk limits.

Procedures: Management must establish procedures and internal controls to ensure that policy limits are enforced. Procedures should be written for credit approval; segregation of duties in operations; revaluation, if necessary; and, provision of periodic reports to management.

Risk Management System: The risk management system must include a model to quantify the risk associated with the position and to provide the means to manage that risk effectively. The risk should be monitored relative to the limits imposed by the policies. In hedging situations, correlation studies for the appropriate instruments should detail the mechanics of the hedge. Examiners must ensure the accuracy of the models used to measure and monitor the risk. This may include analyzing earnings of the position, or the gains and losses associated with given hedges, and comparing them to the expected result. The system must incorporate all risks associated with the product and accurately reflect them relative to limits on earnings at risk.

Audit: Internal and external audits should be performed. Examiners must determine the adequacy of each. This should focus particularly on the effectiveness of internal controls and the adequacy of the management information system. This area should also address management's willingness to implement the proper control systems to monitor activities of this sophistication. Examiners will also determine the expertise of the auditors.

The lack of the above information may lead to unsafe and unsound banking practices.

IV. Accounting Treatment

A bank engaging in swaps should have accounting policies and procedures that include recordkeeping requirements and methods for determining whether swaps are reducing risk or increasing risk and for accounting for each swap, based on its type and purpose. Accounting policies and procedures for swaps should be approved by the board of directors. They should be designed to ensure consistent and appropriate accounting for swaps.

Some banks may recognize interest income using the accrual method, similar to other earning assets of the bank. That is, they will accrue the interest income or expense associated with a swap, based on current rates. The income or expense is then recognized over the life of the swap.

Other banks may adopt a more aggressive approach and "upfront" their swap income for "matched" swap positions. This is done by recording, at inception, the present value of the total expected net cash flows of the matched swaps. Banks adopting this method generally believe that the swap is a trading account security and the present value of the net cash flows represents the fair market value of the swap position.

To illustrate the difference between the accrual method and the upfront method, assume a bank enters into a \$10 million notional amount interest rate swap to pay a fixed rate of 9.2 percent and receive LIBOR. They also enter into a \$10 million notional amount swap to receive a fixed rate of 9.3 percent and pay LIBOR. The term of both swaps is five years. The bank effectively has a built in spread of .1 percent on this position. Under the accrual method, the bank recognizes monthly swap income of \$833 (annual spread of .1 percent times \$10 million notional amount divided by 12 months). Using the upfront method, the bank recognizes an immediate gain of approximately \$38,000 (the present value of the five-year net cash flows from the swap, assuming a 10 percent discount rate). This \$38,000 is then amortized over the life of the swap agreements.

Upfronting swap income raises several concerns. First, the present value calculation is a mechanical process, subject to the assumptions of the bank. Discount rates used to compute this present value are difficult to establish and vary greatly between banks.

Another concern is the fact that significant interest rate, credit, operational, and legal risks remain over the life of the swap. These risks may cause the bank actually to realize less income than previously recognized.

In practice, banks that upfront their swap income rarely have perfectly matched swap contracts. Often, the maturities and notional amounts differ. Transactions involving the upfront of income should be examined closely to ascertain that the bank has not overstated its income materially.

The notional value of all outstanding interest rate swap and similar agreements should be reported in Schedule RC-L. Netting swap agreements is not permitted for regulatory reporting.

V. Risks

Interest Rate Risk: When a swap is used to hedge existing interest rate risk, the overall risk should be lessened. Unmatched positions will have interest rate or basis risk; however, purchasing banks should not engage in this activity.

Credit Risk: Credit risk exists in the swap market because the counterparty may not fulfill the contract. The credit risk for swaps is greater than that for futures, but less than the amount for forwards (pure credit risk). Also, the swap will have credit risk only when it is in-the-money, and not when it is out of the money. The bank must ensure proper credit analysis and proper credit approval to manage this risk.

Liquidity Risk: Liquidity risk varies with the type of swap. Interest rate and currency swaps have liquid markets, but commodity swaps are relatively new and the liquidity in this market is not as deep.

Other Risk: Settlement Risk: Settlement risk exists on the days when the cash flows are exchanged. Bank management must establish proper settlement limits and procedures to monitor the processing of these limits.

VI. Legal Limitations

Swaps are not considered investment securities under 12 U.S.C. 24(7th). However, the use of these contracts is considered to be an activity incidental to banking, within safe and sound banking principles. (Refer to subsection III, Suitability, in this section for

details on the systems, controls and limits that bank management must implement prior to engaging in swap activities.)

VII. Risk-based Capital Requirement

Foreign exchange, commodity, and interest rate contracts have the following process for determining the risk-based capital requirement. Three steps determine: the current credit exposure; the potential credit exposure; and the risk-weight. Additional details follow:

1. Mark to market (positive values only).
2. Add-on for potential credit exposure:
 - Interest Rate 0 % (\leq 1 Yr.) .5 % ($>$ 1 Yr.)
 - Exchange Rate 1 % (\leq 1 Yr.) 5 % ($>$ 1 Yr.)
3. Assign to Risk Category, Maximum 50 percent.

The risk-based capital requirement is computed by multiplying the sum of the current and potential credit exposure (step one plus step two) by the risk weight (step three).

Note also that exchange rate contracts that have an original maturity of 14 calendar days or less and instruments traded on exchanges and subject to daily margin requirements are exempt from the risk-based capital calculation.

(Further details relative to risk-based capital calculation can be found in the *Comptroller's Manual for National Banks* under 12 CFR 3.1, Appendix A. If the regulation is still not clear, the Chief National Bank Examiner's Office can assist in finding an answer.)

VIII. References

Fabozzi, Frank J., ed., *The Handbook of Fixed Income Securities*, 2d ed. (Homewood, Illinois: Dow Jones-Irwin, 1987).

McMillan, Lawrence G., *Options as a Strategic Investment*, 2d ed. (New York: New York Institute of Finance, 1986).

Oberhofer, George D., *Rate Risk Management: Fixed Income Strategies Using Futures, Options and*

Swaps (Chicago: Probus Publishing Company, 1988).

Siegel, Daniel R., and Diane F. Siegel, *The Futures Markets: Arbitrage, Risk Management and Portfolio Strategies* (Chicago: Probus Publishing Company, 1990).

Smith, Jr., Clifford W., Charles W. Smithson, and D.

Sykes Wiltford, *Managing Financial Risk* (New York: HarperCollins, 1990).

OCC Documents

Bank Accounting Advisory Series, Issue No. 1, June 1990.

Comptroller's Handbook for National Bank Examiners, Section 203 (Washington, D.C., March 1990).

Futures

I. Product Description

A futures contract is an obligation to deliver or receive a specified amount of a commodity or financial instrument at a specified price on a specific date in the future. No cash is passed between the buyer and seller at the inception of the contract. Also, futures contracts rarely settle by actual delivery of the underlying commodity; instead, they are cash settled. Futures contracts are traded on several exchanges in the U.S. and abroad and are available on several financial instruments and commodities. This section will focus on futures on debt instruments and commodities because they are the contracts primarily used by banks.

Interest rate futures are used to speculate on interest rate movements or to hedge exposure to them. This section will focus on the hedging aspects of interest rate futures, although the line drawn between the hedger and the speculator is often indistinct.

Futures contracts are available on government securities, mortgage-backed securities, and Eurodollar time deposits, all of which can be used to hedge interest rate exposure. Typical uses will be to hedge the risk of a particular security, portfolio of securities, or as an asset/liability tool to hedge overall balance sheet exposure.

Using futures contracts in the ways listed above substitutes basis risk for interest rate risk. Although the interest rate risk may be hedged with the offsetting futures contract, the basis differential between the cash and futures markets must be managed. Bank management must determine the correlation between the cash and futures markets relative to all the hedging arrangements used by the bank.

Currency futures are available on major currencies and can be used to hedge exposure to currency movements. An example would be a bank that purchased a foreign currency denominated bond. In addition to the risks associated with domestic bonds, foreign bonds also have foreign exchange risk. If the currency in which the bond is denominated depreciates against the dollar over the term of the bond, the bank will lose money when the bond is exchanged for dollars. However, if the bank enters into a futures contract to ensure a specific amount (the amount of the bond plus interest), at a specific price, and at a

specific time (the maturity date of the bond), the foreign exchange risk can be managed.

Commodity futures will be used primarily to hedge commodity risk incurred from mismatches in swap positions. Since purchasing banks will not be running a commodity swap portfolio, the hedging uses of commodity futures used by commodity swap dealers will not be discussed. The principles are the same as those for interest rate or currency futures.

II. Market—Where to Find Current Value and Ratings

Futures on a variety of underlying instruments are traded on various exchanges around the world. The "Money and Investing" section of *The Wall Street Journal* has the prices of futures contracts traded on domestic exchanges.

III. What You Should Look for (Suitability)

Futures contracts are legitimate risk management products that banks may use to hedge risks associated with interest rate or currency price movements. One of the most common strategies is to hedge a specific instrument with a specific futures contract. For example, a bank owns a \$1MM T-bond and management believes interest rates may rise, thus causing the value of this bond to fall. Management could short sell the equivalent of \$1MM of T-bond futures (10 \$100M contracts). If rates rise and the price of the bond declines, the loss will be offset by the profit associated with the short futures position.

Bank management may also use futures contracts to hedge undesired asset/liability mismatches. For example, a negative gap position could be hedged by shorting interest rate futures. If interest rates rise and cause margins to narrow, the gain associated with the short futures position will offset this loss. Conversely, long positions in interest rate futures contracts could be used to hedge an undesired positive gap. If rates decline, causing the interest sensitive assets to yield less, the gain on the futures position will help offset the loss. Keep in mind that with either of the above two strategies, the amount of futures contracts bought or sold should reflect the amount of interest sensitive assets or liabilities that management desires to hedge.

Speculating in futures should be done only by those banks with strong capital and the level of risk man-

agement sophistication necessary to manage this type of activity.

The examiner must ensure that bank management understands the risks associated with these products and implements systems and controls to effectively quantify and manage those risks. Specifically, this will include an analysis of the following:

Policies: Management must implement specific written policies that authorize the activities in which the bank will engage. The policies should set limits for the risks associated with these products including, but not limited to, position limits, maturity limits, credit limits, and earnings-at-risk limits that should be incorporated into the risk management system used by the bank.

Procedures: Management must establish procedures and internal controls to ensure that policy limits are enforced. Procedures should be written for credit approval; segregation of duties in operations; revaluation; and, provision of periodic reports to management.

Risk Management System: The risk management system must include a model to quantify accurately the risk associated with the position and provide the means to effectively manage that risk. The risk should be monitored relative to the limits imposed by the policies. In hedging situations, correlation studies for the appropriate instruments should detail the mechanics of the hedge. Examiners must ensure the accuracy of the models used to measure and monitor the risk. This may include analyzing earnings of the position or the gains and losses associated with given hedges and comparing them to the expected result. The system must incorporate all risks associated with the product and accurately reflect them relative to limits on earnings at risk.

Audit: Internal and external audits should be performed. Examiners must determine the adequacy of each. Audits should particularly focus on the effectiveness of internal controls and the adequacy of management information systems. This area should also address management's willingness to implement the proper control systems to monitor activities of this sophistication. Examiners will also determine the expertise of the auditors.

The lack of the above information may lead to unsafe and unsound banking practices.

IV. Accounting Treatment

A bank engaging in futures should have accounting policies and procedures that include recordkeeping requirements and methods for determining whether futures are reducing risk or increasing risk and for accounting for futures contracts. Accounting policies and procedures for futures should be approved by the board of directors. They should be designed to ensure consistent and appropriate accounting for futures.

Accounting for futures should follow the requirements of the Instructions to the Call Report. The Call Report requires banks to account for futures consistently, either at market value or at the lower of cost or market value.

Market values on all futures should be determined at least monthly, or more often, if the bank has a material amount of these contracts.

The par value of outstanding futures should be reported in Call Report Schedule RC-L "Off-Balance Sheet Items." For reporting purposes, contracts are considered outstanding until they have been cancelled by acquisition or delivery of the underlying security, or, for futures only, by offset. For Call Report purposes, offset is defined as the purchase and sale of an equal number of contracts on the same underlying instrument for the same delivery month, executed through the same clearing member on the same exchange.

Offsetting allows a bank to net the contracts involved to report in Schedule RC-L. Note, however, that offsetting is permitted only for futures contracts that meet the above requirements and not for forwards.

For futures that are accounted for on a mark-to-market basis, net valuation gains should be reported as other noninterest income in the Call Report. Net valuation losses should be reported as other noninterest expense. For futures that are accounted for on a lower of cost or market basis, write-downs to market are recorded as other noninterest expense on the Call Report.

Note that regulatory accounting does not permit loss or gain deferral for futures (hedge accounting). In other words, a bank accounts for these contracts the same, whether they are entered into for speculative or hedging purposes. The only exception to this

policy is for mortgage banking operations. Banks are permitted to use hedge accounting for mortgage banking operations.

V. Risks

Interest Rate Risk: Varies with the purpose and types of contracts used. Open futures positions will have interest rate risk just as an open position in other types of contracts. Futures contracts should be used to hedge (rather than increase) interest rate risk on a bank-wide basis.

Credit Risk: Virtually no credit risk because the exchange stands between all trades.

Liquidity Risk: Little liquidity risk involved with financial futures. However, open interest and other position limits should be implemented and monitored to ensure that a position does not become too large to unwind at a reasonable price. Furthermore, liquidity risk must be monitored and understood for the various products. Some types of futures have much more liquidity than other futures. Also, liquidity is generally greater for short dated contracts and less as the maturities increase.

Other Risks: Settlement Risk, Basis Risk

Settlement risk will exist when the contract expires and the underlying instrument will be delivered. Settlement limits should be established by contract and by counterparty.

Basis risk exists when using futures contracts as hedges because futures and cash prices do not always move in the same manner. Management needs to address and manage this risk particularly when the contract type or maturity of the two instruments is not exactly matched.

VI. Legal Limitations

Futures are not considered investment securities under 12 U.S.C. 24(7th). However, the use of these contracts is considered to be an activity incidental to banking, within safe and sound banking principles. Refer to subsection III, Suitability, in this section for details on systems, controls, and limits that bank management must implement prior to engaging in futures contract activities.

VII. Risk-based Capital Weight

Futures contracts are exempt from risk-based capital weighting, because they are traded on organized exchanges which require daily margin payments.

(Further details relative to the risk-based capital weighting calculation can be found in the *Comptroller's Manual for National Banks* under 12 CFR 3.1, Appendix A. If the regulation is still not clear, the Chief National Bank Examiner's Office can assist in finding an answer.)

VIII. References

Fabozzi, Frank J., ed., *The Handbook of Fixed Income Securities*, 2d ed. (Homewood, Illinois: Dow Jones-Irwin, 1987).

McMillan, Lawrence G., *Options as a Strategic Investment*, 2d ed. (New York: New York Institute of Finance, 1986).

Oberhofer, George D., *Rate Risk Management: Fixed Income Strategies Using Futures, Options and Swaps* (Chicago: Probus Publishing Company, 1988).

Siegel, Daniel R., and Diane F. Siegel, *The Futures Markets: Arbitrage, Risk Management and Portfolio Strategies* (Chicago: Probus Publishing Company, 1990).

Smith, Jr., Clifford W., Charles W. Smithson, and D. Sykes Wilford, *Managing Financial Risk* (New York: HarperCollins, 1990).

Financial Accounting Standards Board Statement No. 80, Futures Contracts.

OCC Documents

Bank Accounting Advisory Series, Issue No. 1, June 1990.

Comptroller's Handbook for National Bank Examiners, Section 203 (Washington, D.C., March 1990).

Banking Circular 79 (3rd Rev.), National Bank Participation in the Financial Futures and Forward Placement Markets, April 19, 1983.

Forwards

I. Product Description

A forward contract is a customized obligation to receive or deliver a specified amount of a commodity or security, at a specified price, at a specific date in the future. The terms of the contract are negotiated directly by the counterparties and can only be terminated with the consent of both parties. The contract is sold or bought immediately, but not paid for until some future date. This feature, along with the lack of an exchange acting as an intermediary, gives forwards credit risk not evident in futures contracts.

Forward contracts are the oldest and simplest of the off-balance sheet products. They are very similar to a futures contract except there is no organized exchange present, no daily settlement, and no margin requirement. Since forwards are not standardized instruments, they can be negotiated on virtually any commodity or financial instrument. However, the most common forwards used by commercial banks are interest rate forwards and foreign exchange forwards. Commodity forward contracts may become more important to commercial banks with the increased activity in the commodity markets.

A foreign exchange forward contract is a contract to deliver or receive a specified amount of a foreign currency, at a specified price, at some date in the future. These contracts allow banks to hedge foreign currency risk by locking in a rate now, for delivery later. The advantage of a foreign exchange forward over a future is that it can be customized to the particular needs of the customer. For example, if a bank has foreign currency exposure that is longer than the available futures contract in that currency, it could enter into a forward contract at the required date and avoid the risk of rolling over the futures position when the longest contract expires.

Interest rate forwards, or forward rate agreements (FRAs), are contracts to pay or receive a specified interest rate, at a specified date in the future, on a specified notional amount. FRAs are agreements on interest rates only, not to make loans or receive deposits.

II. Market—Where to Find Current Value and Ratings

Forward contracts are not traded on organized

exchanges, thus there is no readily available published market value. Dealers of forward contracts will quote prices based on the terms of the contracts, but no published price quotes are available.

III. What You Should Look for (Suitability)

Forward contracts are legitimate risk management products that banks may use to hedge exposure to interest rate and currency price movements. The most important hedging feature is that the contracts are negotiated between the parties and not established by an exchange. This adds flexibility and allows a bank to hedge risks that go beyond the maturity of available futures or options contracts. For example, a bank has a loan to fund in three years because of a commitment issued by the loan department. It desires to hedge against rates rising above the agreed upon funding price. Because futures contracts do not extend three years, the bank could instead enter into a forward rate agreement in which it will receive the loan price less a spread, three years into the future. This way the bank will not be exposed to rates rising and being unable to fund the loan at a profitable rate. Forwards can be used when a bank has interest rate or foreign currency exposure that exists beyond the available futures strip or has other unique circumstances.

Speculating using forward contracts should only be done by banks with strong capital and the management sophistication required to manage risks of this type.

The examiner must ensure that bank management understands the risks associated with these products and implements systems and controls to effectively quantify and manage those risks. Specifically, this will include an analysis of the following:

Policies: Management must implement specific written policies that authorize the activities in which the bank will engage. The policies should set limits for all the various risks associated with these products including, but not limited to, position limits, maturity limits, credit limits, and earnings-at-risk limits that should be incorporated into the risk management system used by the bank.

Procedures: Management must establish procedures and internal controls to ensure that policy limits

are enforced. Procedures should be written for credit approval; segregation of duties in operations; revaluation, if necessary; and, provision of periodic reports to management.

Risk Management System: The risk management system must include a model to quantify accurately the risk associated with the position and provide the means to effectively manage that risk. The risk should be monitored relative to the limits imposed by the policies. In hedging situations, correlation studies for the appropriate instruments should detail the mechanics of the hedge. Examiners must ensure the accuracy of the models used to measure and monitor the risk. This may include modeling earnings of the position or the gains and losses associated with given hedges and comparing them to the expected result. The system must incorporate all risks associated with the product and reflect them accurately relative to limits on earnings at risk.

Audit: Internal and external audits should be performed. Examiners must determine the adequacy of each. This should particularly focus on the effectiveness of internal controls and the adequacy of the management information system. This area should also address management's willingness to implement the proper control systems to monitor activities of this sophistication. Examiners will also determine the expertise of the auditors.

The lack of the above information may lead to unsafe and unsound banking practices.

IV. Accounting Treatment

A bank engaging in forwards should have accounting policies and procedures that include recordkeeping requirements and methods for determining whether forwards are reducing risk or increasing risk and for accounting for each forward contract, based on its type and purpose. Accounting policies and procedures for forwards should be approved by the board of directors. They should be designed to ensure consistent and appropriate accounting for forward contracts.

Accounting for forwards should follow the requirements of the Call Report Instructions. The Call Report requires banks to account for forwards consistently, either at market value or at the lower of cost or market value.

Market values on all forwards should be determined at least monthly, or more often, if the bank has a material amount of these contracts.

The par value of outstanding forwards should be reported in Call Report Schedule RC-L "Off-Balance Sheet Items." For reporting purposes, contracts are considered outstanding until they have been cancelled by acquisition or delivery of the underlying security.

For forwards accounted for on a mark-to-market basis, net valuation gains should be reported as other noninterest income in the Call Report. Net valuation losses should be reported as other noninterest expense. For forwards accounted for on a lower of cost or market basis, write-downs to market are recorded as other noninterest expense on the Call Report.

Note that regulatory accounting does not permit loss or gain deferral for forwards (hedge accounting). In other words, a bank accounts for these contracts the same, whether they are entered into for speculative or hedging purposes. The only exception to this policy is for mortgage banking operations. Banks are permitted to use hedge accounting for mortgage banking operations.

V. Risks

Interest Rate Risk: Varies with the type and use of the contract. Forward contracts should be used to reduce interest rate exposure rather than speculate on future interest rate movements.

Credit Risk: Substantial since no cash is exchanged until the maturity of the contract. Management must effectively measure and manage this risk by incorporating proper credit procedures to analyze the credit risk with each counterparty with whom it participates.

Liquidity Risk: Limited, since the forward currency and interest rate markets are sophisticated, liquid markets. However, liquidity will vary among different contracts and management must understand and monitor liquidity risk in the forward portfolio.

Other Risk: Settlement Risk: Settlement risk will exist at the time the contract calls for delivery. Settlement limits should be established to limit this risk to the extent possible.

VI. Legal Limitations

Forwards are not considered investment securities under 12 U.S.C. 24(7). However, the use of these contracts is considered to be an activity incidental to banking, within safe and sound banking principles. Refer to subsection III, Suitability, in this section for details on systems, controls, and limits that bank management must implement prior to engaging in forward contract activities.

VII. Risk-based Capital Requirement

Foreign exchange, commodity and interest rate contracts have the following process for determining the risk-based capital requirement. The three steps determine: the current credit exposure; the potential credit exposure; and, the risk-weight. Additional details follow:

1. Mark to market (positive values only).
2. Add-on for potential credit exposure:
 - Interest Rate 0 % (\leq 1 Yr.) .5 % ($>$ 1 Yr.)
 - Exchange Rate 1 % (\leq 1 Yr.) 5 % ($>$ 1 Yr.)
3. Assign to Risk Category, Maximum 50 percent.

The risk-based capital requirement is computed by multiplying the sum of the current and potential credit exposure (step one plus step two) by the risk weight (step three).

Note also that exchange rate contracts that have an original maturity of 14 calendar days or less and instruments traded on exchanges and subject to daily margin requirements are exempt from the risk-based capital calculation.

(Further details relative to risk-based capital calcula-

tion can be found in the *Comptroller's Manual for National Banks* under 12 CFR 3.1, Appendix A. If the regulation is still not clear, the Chief National Bank Examiner's Office can assist in finding an answer.)

VIII. References

Fabozzi, Frank J., ed., *The Handbook of Fixed Income Securities*, 2d ed. (Homewood, Illinois: Dow Jones-Irwin, 1987).

McMillan, Lawrence G., *Options as a Strategic Investment*, 2d ed. (New York: New York Institute of Finance, 1986).

Oberhofer, George D., *Rate Risk Management: Fixed Income Strategies Using Futures, Options and Swaps* (Chicago: Probus Publishing Company, 1988).

Siegel, Daniel R., and Diane F. Siegel, *The Futures Markets: Arbitrage, Risk Management and Portfolio Strategies* (Chicago: Probus Publishing Company, 1990).

Smith, Jr., Clifford W., Charles W. Smithson, and D. Sykes Willford, *Managing Financial Risk* (New York: HarperCollins, 1990).

OCC Documents

Bank Accounting Advisory Series, Issue No. 1, June 1990.

Comptroller's Handbook for National Bank Examiners, Section 203 (Washington, D.C., March 1990).

Banking Circular 79 (3rd Rev.), National Bank Participation in the Financial Futures and Forward Placement Markets, April 19, 1983.

APPENDIX 9

CAPITAL TREATMENTS FOR DERIVATIVES

CURRENT RISK-BASED CAPITAL TREATMENT

The current risk-based capital guidelines include an explicit capital charge for the credit risk (counterparty risk) exposure of over-the-counter derivative products.¹ This capital charge applies to interest rate and foreign exchange (FX) swaps, forward rate agreements (FRAs) and purchased interest rate and FX options. The treatment has been extended to apply to newer derivative products, including commodity and equity index swaps.

The capital charge for these derivative instruments is determined by a two-step process: (1) the calculation of the "credit risk equivalent" (CRE) amount of the contract and (2) the assignment of the CRE amount to the proper risk-weighting category, based on the counterparty to the contract. For each applicable contract, a bank first calculates the CRE of that contract:

$$\text{CRE} = \text{Mark-to-Market Exposure} + \text{Potential Risk Add-On}$$

The Mark-to-Market Exposure (MTM) is the present value of the net cash flows ("replacement cost") owed to the bank by the counterparty.

The Potential Risk Add-On (Add-On) is an additional buffer to account for a possible increase in the current MTM. It provides an additional cushion in case, over the remaining life of the contract, interest rates (or exchange rates, or whatever the price index is) move further in the direction that increases the MTM value of the contract, thereby increasing the bank's counterparty exposure.

The Add-On is calculated as the product of the "notional principal" times a "factor." The notional principal is the quoted basis that underlies the cash flows. Table 1 shows the Potential Risk Add-On Factors:

Table 1
Factors for the Potential Risk Add-on Calculation

<u>Remaining Maturity</u>	<u>Interest Rate Contracts</u>	<u>Exchange Rate Contracts</u>
1 year and Under	0.0%	1.0%
Over 1 year	0.5%	5.0%

¹ Instruments traded on an exchange that requires the daily payment of any variations in the market value of the contract through a cash margin are exempted from this capital charge.

For the recent innovations in swap contracts, such as equity index swaps and commodity swaps, the FX add-ons are applied.

The resulting CRE amount is then risk-weighted by the appropriate factor, based on the identity of the counterparty. However, the maximum risk weight assigned to an interest rate or exchange rate contract is 50%. The risk-weighted amount is then subject to the 8% risk-based capital requirement.

BASLE COMMITTEE INITIATIVES

The Basle Committee on Bank Supervision's consultative papers (released in April 1993) propose to expand the existing capital treatment of derivatives to include a capital charge for: (a) the market risk of derivative products that are part of a bank's trading activities, and (b) the foreign exchange risk in a bank's net open foreign currency position, including derivative instruments such as foreign currency options, futures, and swaps. The proposal for foreign exchange risk would also apply to positions in precious metals. These proposals would be in addition to the current risk-based capital treatment for counterparty risk, and hence, would represent an *increase* in the capital requirements for derivatives. However, to the extent that more netting would be allowed, it would *reduce* any prospective capital charges. In addition, the market risk proposal would not apply to derivatives held outside of banks' trading portfolios.

Market Risk Proposal

This proposal would incorporate into a bank's capital requirement, the market risk of equity and debt derivatives that are part of a bank's trading activities. The capital charge for market risk would have two components: a charge for specific risk (risks associated with the issuer of the security) and one for general market risk (the risk of adverse market movements).²

The charge for specific risk would be calculated on an instrument-by-instrument basis. No "offsetting" or hedging of this risk would be permitted in computing the capital charge. This charge would apply to both long and short positions and, for derivatives, would be *in addition to* the existing charge for counterparty risk. However, only those derivatives where the underlying instrument relates to a specific non-government issuer (such as a future or option on a specific corporate debt security) would be subject to a specific risk charge.

² Although the proposal addresses both debt and equity securities and derivatives, only the treatment for debt-related instruments are discussed here, because these are the most prevalent type of instrument among US banks.

The charge for general market risk would be calculated on a portfolio basis, with a partial recognition of hedging arrangements. All long and short positions would first be slotted into a 13-time band maturity ladder, based on the instrument's maturity or repricing characteristics. Positions in each time band would be weighted by a price-sensitivity factor.³ The weighted long and short positions would then be netted, first within each time band and then across time bands. This would result in a residual net long or short position. However, full netting or hedging would not be allowed, either within or across time bands. The limited recognition of hedging would be accomplished through a series of "disallowance" factors that would be applied to one side of each matched or "netted" amount. The resulting capital charge would be the sum of the net residual position plus the "disallowed" amounts.

Off-balance sheet interest rate contracts would be included in the slotting and calculation procedure by converting these derivatives into representative security positions -- the underlying cash positions of the derivative contract. Each contract would be reported with two entries: a long and a short position. Futures, forwards, and options would have one entry reported in the time band corresponding to the settlement date of the contract plus the maturity of the underlying instrument, and an offsetting entry in the time band that corresponds to the settlement date of the contract. For example, a bank that buys a 5-year Treasury note futures contract for delivery in two months would record this position as a long position in the 5-7 year time band (the bank is long or "owns" the 5-year note) and a short position in the 1-3 month time band (to represent the financing cost if the bank purchases the note).

The entries for an interest swap would reflect the notional principal amount of the swap and would be reported in the time bands that correspond to the floating-rate repricing date and the residual maturity of the swap. For example, a two-year interest rate swap, where the bank receives a floating rate quarterly and pays the fixed rate, would be treated as a long position (positive, because the bank is receiving the cash flow) in the 1- to 3-month time band and a short position (negative, because the bank is paying the cash flow) in the 1- to 2-year time band.

The treatment of options is somewhat more complex due to their asymmetrical risk profiles. The Committee's paper proposes a basic methodology based on delta-equivalent values and seeks comment on several alternative methodologies. Under the delta approach⁴, an option would be converted to its delta-weighted equivalent amount and then slotted into the maturity ladder, using the two-entry approach described for futures. Unlike other derivative instruments, higher disallowance factors would be applied to options positions. The effect of

³ These factors would cover approximately two standard deviations of the historical one-month volatility of interest rates in most major markets.

⁴ The delta of an option represents its change in value relative to the change in the value of the underlying instrument. An option's delta times its notional amount equals the option's delta-equivalent value.

these higher disallowance factors would be a higher capital charge for options and positions that are hedged by options.

Foreign Exchange Proposal

This proposal would impose an additional capital requirement on a bank's net open foreign currency and precious metal positions. A bank would choose either a "shorthand" or "simulation" method to calculate its capital requirement. The shorthand method would apply an 8% capital charge to the total of the net short position in any currency, including that of the reporting currency, plus the total of each net position (short or long) in any precious metal. Under the simulation method, the capital charge would equal the 95th percentile of the hypothetical losses that would have occurred had the bank held its current foreign exchange and precious metal positions over the past 5 years, *plus* 3% of the overall net open position as measured by the shorthand method.

Derivative products would be included in the calculation of the bank's net open positions. For banks that actively trade FX options, the options would be converted to their delta-equivalent amounts.

FDICIA SECTION 305 PROPOSAL

FDICIA section 305 requires each banking agency to revise its risk-based capital standards to ensure that those standards take adequate account of interest rate risk (IRR). The OCC, in conjunction with the FDIC and FRB, published a Notice of Proposed Rulemaking to implement this portion of section 305 on September 14, 1993. The proposed rulemaking would establish procedures for measuring banks' IRR exposures and determining the amount of capital that may be needed for IRR. Interest rate risk would be measured as the change in the net economic value of a bank for a specified change in interest rates. The change in an institution's net economic value would be defined as the change in the present value of its assets minus the change in the present value of its liabilities plus or minus the change in the present value of its off-balance-sheet contracts.

A bank's exposure to IRR would be measured either by the bank's internal risk measurement system, if approved as adequate by the OCC in the examination process, or by a basic supervisory model. The methodology used in the supervisory model is similar to the methodology proposed by the Basle Committee to measure the general market risk in trading portfolios: a maturity ladder framework with price sensitivity weights. The treatment of derivative products would generally mirror the treatment outlined above for the Market Risk Proposal.

The proposed rulemaking solicits comment on two alternative methods for determining the amount of capital a bank may need to account for IRR. One method ("Minimum Capital Standard" approach) would impose an explicit minimum capital charge based on the amount of measured IRR exposure in excess of a supervisory threshold. The other method ("Risk Assessment" approach) would not introduce an explicit minimum capital charge into the risk-based capital standard, but rather, would assess the need for capital case-by-case, considering both the level of measured exposure and qualitative factors. These factors would include the quality of a bank's IRR management, internal controls, and the overall financial condition of the bank, including its earnings capacity, capital base, and the level of other risks which may impair future earnings or capital.

OFFICE OF THE COMPTROLLER OF THE CURRENCY

GUIDELINES ON BANK DERIVATIVE ACTIVITIES



NEWS RELEASE

Comptroller of the Currency
Administrator of National Banks

NR 93-116

Washington, DC 20219

For: Immediate Release

Contact: Leonora S. Cross (202) 874-4970

Date: October 27, 1993

OCC Issues Guidelines on Bank Derivative Activities

The Office of the Comptroller of the Currency (OCC) today issued guidelines for national banks to use in their financial derivatives activities. The guidelines are the result of an initiative by Comptroller of the Currency Eugene A. Ludwig, to ensure that banks recognize and manage the risks they are undertaking. "In derivatives, the slicing, dicing, and recombining of risk elements of products makes it harder to see the risk," Ludwig said. "Banks need to be prepared to expect the unexpected, and these guidelines should help them do that."

The guidelines, which will be mailed to all national bank examiners and the 3,700 national banks supervised by the OCC, outline prudent practices that enable a bank to participate in derivatives activities in a safe and sound manner. National banks engaged in derivatives transactions are expected to follow the guidelines and incorporate appropriate measures into their risk management systems. Accounting issues are reserved for a later discussion.

Comptroller of the Currency Ludwig will testify on bank derivatives activities before the House Committee on Banking, Finance, and Urban Affairs on October 28.

Major elements of the guidelines include:

- **Senior Management and Board Oversight** — The board of directors and senior management are responsible for ensuring that derivatives activities are safe and sound, consistent with the bank's overall business and risk management strategies, based on written policies and procedures, and monitored properly. "The OCC expects each national bank to have a 'no surprises' risk management policy made concrete in systems and controls," Mr. Ludwig said.
- **Market Risk Management** — National banks should have risk management systems appropriate to the way they are participating in the derivatives market, e.g., as a dealer or active position-taker or as a limited end-user. Those systems should allow quick response to changes in market factors.

(- more -)

- **Credit Risk Management** — National banks should have credit risk management policies and procedures guiding their derivatives activities that are similar to those required in traditional lending activities. Those policies should include credit limits and reporting, as well as a method of quantifying and responding to risk exposure at various stages of the transaction.
- **Liquidity Risk Management** — National banks should have effective controls over their liquidity exposure from derivatives activities. Those controls should include established exposure limits, diversification standards, and regular and independent monitoring.
- **Operations and Systems Risk Management** — National banks involved in derivatives activity should dedicate the quality and quantity of financial, personnel, and systems resources appropriate to the activity and should ensure that derivatives operations are managed independently of the business unit.
- **Legal Issues** — National banks should be certain that counterparties in derivatives transactions have all necessary legal and regulatory authority to engage in derivatives activities, and that contracts are legally sound. They also should be aware of the legal issues involved in close-out netting arrangements, and assure themselves of their enforceability.
- **Capital Adequacy** — In addition to meeting statutory and regulatory standards, a participating bank's capital should support the risk arising from its derivatives activities.

Derivatives, as discussed in the guidelines, are financial products, such as interest rate swaps and futures contracts, that are based on the performance of financial instruments or services. They separate out the different types of risk in the product on which they are based and allow banks or other parties to accept only that portion of the risk that fits their goals.

#####

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

TO: Chief Executive Officers of National Banks, General Managers of Federal Branches and Agencies, Deputy Comptrollers, Department and Division Heads, and Examining Personnel

PURPOSE

This banking circular provides guidance on risk management practices to national banks and federal branches and agencies engaging in financial derivatives activities. The guidelines in this circular represent prudent practices that will enable a bank to conduct financial derivatives activities in a safe and sound manner. National banks engaged in financial derivatives transactions are expected to follow these guidelines. (Financial derivatives transactions are sometimes referred to herein as "financial derivatives," "derivatives transactions," or "derivatives.")

REFERENCE

This banking circular replaces and supersedes Banking Circular 79 (3rd Rev.), "National Bank Participation in the Financial Futures and Forward Placement Markets," dated April 19, 1983.

SCOPE

Financial derivatives transactions currently represent a relatively small portion of the total credit, market, liquidity, and operational risk to which most banks are routinely exposed. However, because of their complexity, many banks involved in financial derivatives transactions have developed sophisticated approaches in managing those traditional types of risk. These guidelines reflect such approaches and, therefore, represent sound procedures for risk management generally. Therefore, to the extent possible, they should be applied to all of a bank's risk-taking activities.

PRESENTATION

An outline of the guidance in this banking circular follows. Within the topical discussions, a summary statement of the guidance appears in bold type. Each summary is followed by supplemental discussion. References to "national banks" or "banks" throughout the circular also include, to the degree appropriate, federal branches and agencies of foreign banks.



BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

OUTLINE

	<i>Page</i>
Definition	4
Background	4
Guidance	5
A. Senior Management and Board Oversight	5
1. Written Policies and Procedures	6
2. General Risk Monitoring and Control	7
3. Risk Management Systems	8
4. Audit Coverage	9
B. Market Risk Management	9
1. Dealers and Active Position-Takers	9
2. Limited End-Users	10
C. Credit Risk Management	11
1. Credit Approval Function	12
2. Pre-Settlement Risk	13
3. Settlement Risk	14
4. Credit Risk Monitoring	14
D. Liquidity Risk Management	15
1. Market/Product Liquidity Risk	15
2. Cash Flow/Funding Liquidity Risk	16
3. Early Termination Arrangements and Credit Enhancements	16
4. Monitoring	17



BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

	<i>Page</i>
E. Operations and Systems Risk Management	18
1. Quality of Personnel	18
2. Systems	19
3. Segregation of Duties	19
4. Valuation Issues	20
5. Documentation	21
F. Legal Issues	21
1. Bilateral Netting	22
2. Multilateral Netting	23
3. Physical Commodity Transactions	24
G. Capital Adequacy	24
H. Accounting	25



BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

DEFINITION

Financial derivatives may be broadly defined as financial instruments which derive their value from the performance of assets, interest or currency exchange rates, or indexes. Derivative transactions include a wide assortment of financial contracts, including structured debt obligations and deposits, swaps, futures, options, caps, floors, collars, forwards, and various combinations thereof.

BACKGROUND

Financial derivatives, properly used, provide national banks with substantial benefits. They provide banks greater flexibility in managing risk by separating out the different types of risks that are found in financial instruments and services, and by transferring those risks to parties who are more willing, or better suited, to take or manage them. Financial derivatives transactions also often provide users with the lowest cost funding alternatives by reducing transaction costs and, in some cases, by exploiting arbitrage opportunities across financial markets. Further, banks can use financial derivatives to efficiently reduce undesirable exposures to factors such as interest rate changes or currency fluctuations. Finally, banks can offer financial derivatives to customers seeking risk management tools to assist in meeting business objectives. The Office of the Comptroller of the Currency (OCC) encourages national banks to use derivatives for such purposes.

The complexities of financial derivatives, however, raise concerns about some institutions' use of derivatives under certain circumstances. National banks engaging in derivatives transactions must do so in accordance with safe and sound banking practices. The OCC is concerned about how the use of financial derivatives can influence the risk of failure of any institution, and particularly those institutions whose failure might threaten the solvency of other institutions or negatively affect liquidity in the nation's financial system.

The OCC believes that the best defense against sizeable individual losses or significant systemic disruptions is the implementation and use by individual banks of sound and efficient risk management systems. Such systems for managing credit, market, liquidity, operational, and legal risks should prevent significant losses due to counterparty failure or adverse changes in market conditions. No systems, however, can substitute for open and timely communications between trading, operating, and risk management units.

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: **Banking Circular**

Subject: **Risk Management of Financial Derivatives**

GUIDANCE**A. Senior Management and Board Oversight**

National banks that engage in derivatives activities should have effective senior management supervision and oversight by the Board of Directors to ensure that such activities are conducted in a safe and sound manner and are consistent with the Board of Directors' overall risk management philosophy and the bank's business strategies.

Before engaging in derivatives activities, bank management should ensure that all appropriate regulatory approvals are obtained and that adequate operational procedures and risk control systems are in place.

Any derivatives activities also should be approved by the Board of Directors; by a committee thereof; or by appropriate senior management, as designated by the Board of Directors. Proposals to undertake derivatives activities should include, as applicable:

- A description of the relevant financial products, markets, and business strategies;
- The costs of establishing sound and effective risk management systems and of attracting and retaining professionals with specific expertise in derivatives transactions;
- An analysis of the reasonableness of the proposed activities in relation to the bank's overall financial condition and capital levels;
- An analysis of the risks that may arise from the activities;
- The procedures the bank will use to measure, monitor and control risks;
- The relevant accounting guidelines; and
- An analysis of any legal restrictions and whether the activities are permissible.

A bank's Board of Directors and senior management should carefully consider the resources required to enter into the derivatives business. At a minimum, senior management and the Board of Directors should ensure that the financial condition of the institution and the professional expertise of designated personnel are adequate to support the bank's proposed activity.

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: **Banking Circular**

Subject: **Risk Management of Financial Derivatives**

After the bank's initial entry into derivatives activities has been properly approved, any significant changes in such activities or any new derivatives activities should be approved by the Board of Directors or by an appropriate level of senior management, as designated by the Board of Directors. What constitutes a new activity will vary among institutions. Examples include entry into different product lines or markets; the use of derivatives instruments with different risk characteristics, the use of derivative instruments to implement different business strategies and goals, and the use of derivative instruments with cash flow performance dependent upon markets in different geographic regions.

Banks that propose to enter the derivatives markets as end-users should ensure that the Board of Directors and senior management understand and agree that the risk management techniques and reporting procedures that will be used are appropriate. Banks entering into derivatives transactions as dealers should ensure that their Boards of Directors and senior management understand the potential risk exposure, and the appropriateness of the proposed business in light of the strategies and objectives approved by the Board of Directors.

Senior management of national banks that act as dealers of financial derivatives should establish procedures necessary to ensure that individuals involved in the sales and trading units sufficiently understand derivatives instruments to identify instances in which a bank customer may not fully understand the risks associated with a particular transaction.

1. Written Policies and Procedures

A bank should have comprehensive written policies and procedures to govern its use of derivatives. Senior management should review the adequacy of these policies and procedures, in light of the bank's activities and market conditions, at least annually. Appropriate governance by the Board of Directors should include an initial endorsement of significant policies (and changes, as applicable) and periodic approval thereafter, as appropriate, considering the scope, size and complexity of the bank's derivatives activities.

A bank's policies and procedures governing the use of derivatives may be part of a broader set of policies and procedures, such as those addressing financial risk management, customer-related business activities, and/or proprietary trading activities. Written policies and

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

procedures should address risk management (market, credit, liquidity, and operations), legal issues, capital requirements and accounting standards. At a minimum, such policies and procedures should identify:

- Managerial oversight and responsibilities;
- Scope of activities;
- Risk limits;
- Risk measurement and reporting processes; and
- Operational controls.

2. General Risk Monitoring and Control

Senior management of each national bank engaging in derivatives transactions should establish an independent unit or individual responsible for measuring and reporting risk exposures. That responsibility should include monitoring compliance with policies and risk exposure limits.

The individuals or units responsible for risk monitoring and control functions should be independent of the units that create risk exposures. Such individuals or units are responsible for developing and supporting risk measurement systems, establishing market and credit risk approval processes, developing appropriate risk control policies, reporting risk exposures, and monitoring the bank's risk position against approved limits. These individuals or units should have sufficient experience and authority to make and direct critical position and transaction decisions if circumstances require. The individual or unit may be part of a more general operations, compliance, or risk management unit.

Regardless of how the risk monitoring and control operation is structured, personnel should have appropriate experience and ability to understand and communicate the implications of the institution's exposure to senior management and the Board of Directors in a timely manner. This function should also be supported with the technical and financial resources and the corporate visibility and authority necessary to ensure effective oversight.

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

3. Risk Management Systems

National banks engaged in financial derivatives transactions should have comprehensive risk management systems that are commensurate with the scope, size, and complexity of their activities and the risks they assume. Such systems must ensure that market factors affecting risk exposures are adequately measured, monitored, and controlled. These factors include changes in interest and currency exchange rates, commodity and equity prices and their associated volatilities, changes in the credit quality of counterparties, changes in market liquidity, and the potential for major market disruptions. Risk management procedures also should adequately control potential losses arising from system deficiencies.

A comprehensive risk management system will incorporate:

- Effective management supervision and oversight by the Board of Directors;
- Procedures that identify and quantify the level(s) of risk on a timely basis;
- Limits and other controls on the level(s) of risk with respect to counterparty credit, concentrations, and other relevant market factors;
- Limits and other controls on inter-connected risk positions (i.e., two or more risk positions that are correlated and would be expected to change in value due to a change in the same market factors);
- Reports to senior management and the Board of Directors that accurately present the nature and level(s) of risk taken and compliance with approved policies and limits; and
- Auditing procedures to ensure the integrity of measurement, control, and reporting systems, and compliance with approved policies and procedures.

When determining risk exposure limits, senior management should consider the nature of the bank's strategies and past performance, the level of earnings and capital available to absorb potential losses, and the Board's tolerance for risk. This analysis should be available for bank examiners to review. The Board of Directors, or its designee(s), should review the appropriateness of established limits and controls whenever significant changes occur in the size and scope of the bank's activities or market conditions, or if the bank experiences



BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

significant reductions in earnings or capital that were not anticipated at the time the limits and controls were established.

4. Audit Coverage

National banks should have audit coverage of their financial derivatives activities adequate to ensure timely identification of internal control weaknesses and/or system deficiencies. Such audit coverage should be provided by competent professionals who are knowledgeable of the risks inherent in the financial derivatives transactions.

Audit coverage of derivatives activities should be commensurate with a bank's level of risk and volume of activity. For those banks with end-user activities, audit coverage is likely to be included within the scope of audits of the interest rate, foreign currency, and liquidity risk management functions. Banks that function as dealers need audit coverage sufficient to assess other risks associated with these businesses. For all financial derivatives users, the audit scope should include an appraisal of the soundness and adequacy of accounting, operating, legal, and risk controls. The audit scope also should include testing for irregularities and compliance with the bank's policies and procedures.

As with any effective audit program, the audit of financial derivatives activities should be conducted by competent auditors who are both independent of the business unit being audited and yet knowledgeable of the risks unique to that unit. The level of auditor expertise should be consistent with the level of activity and degree of risk assumed by the bank with respect to its derivatives activities.

B. Market Risk Management

1. Dealers and Active Position-Takers

National banks whose financial derivatives activities involve dealing or active position-taking should have risk measurement systems that can quantify risk exposures arising from changes in market factors. Those systems should be structured to enable management to initiate prompt remedial action. The systems also should facilitate stress



BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

testing and enable management to assess the potential impact of various changes in market factors on earnings and capital.

The bank should evaluate risk exposures under various scenarios that represent a broad range of potential market movements and corresponding price behaviors and that consider historical and recent market trends. Statistical analyses should be used to characterize market scenarios and price behaviors. Before they are used, and whenever market conditions change significantly, the analyses should be validated by a source independent of the trading desk or risk assumption unit. At a minimum, all risk measurement applications and models should be reviewed and validated annually, and management should maintain adequate documentation to support the reliability of the validation process.

The frequency with which exposures should be evaluated varies by the nature and size of a bank's financial derivatives activities. For dealing and trading units, such evaluations should be available on a daily, and even intra-day, basis. For banks actively using derivatives as part of their overall risk management, less frequent evaluations may be sufficient.

At some national banks, financial derivatives activities span numerous products, markets, currencies, and geographic regions. These activities may be conducted in numerous profit centers or branches and may be managed on a decentralized basis. At a minimum, such banks should be able to measure their derivatives-related risks for each major portfolio, branch, and profit center. In addition, bank management should develop the ability to aggregate such risks across various profit centers and branches to determine the aggregate risk profile of the institution. The OCC recognizes that developing such consolidated risk measurement systems may require significant time and resources. However, given the complexity, potential volatility, and size of risk exposures in derivatives positions, the OCC believes that such capabilities are necessary for banks that are dealers and/or active position-takers in derivatives transactions.

2. Limited End-Users

A bank whose derivatives activities are limited in volume and confined to risk management activities may need less sophisticated risk measurement systems than those required by a dealer or active position-taker. Senior management at such a bank should

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

ensure that all significant risks arising from their derivatives transactions can be quantified, monitored, and controlled. At a minimum, risk management systems should evaluate the possible impact on the bank's earnings and capital which may result from adverse changes in interest rates and other market conditions that are relevant to the bank's risk exposure and the effectiveness of financial derivatives transactions in the bank's overall risk management.

Each financial derivatives transaction should have a clear objective that is consistent with the bank's overall risk management objectives and strategies. Further, the bank's risk measurement systems should be capable of demonstrating the effectiveness of derivatives transactions in achieving such objectives.

C. Credit Risk Management

Credit risk management should parallel the prudent controls expected in traditional lending activities. Policies and procedures should be formalized to address concerns such as significant counterparty exposures, concentrations, credit exceptions, risk ratings, nonperforming contracts, and allowance allocations. Timely, meaningful reports should be generated and distributed consistent with policy and procedure requirements.

Credit exposures to an individual counterparty, which are significant in size relative to capital, should be addressed in the bank's credit risk policy. Bank management should establish internal limits that are prudent in light of the bank's financial condition and management's expertise. The Board of Directors' risk tolerance for concentrations and credit exceptions should be reflected in policies and procedures. Policies addressing credit management functions, such as risk ratings, nonperforming contracts, and allowance allocations, should be consistent throughout the bank.

Senior management should receive reports that document line usage by significant counterparties and new credit relationships. Such reports should consolidate derivatives credit exposure with all other lending exposure the bank might have to a particular customer.



BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

1. Credit Approval Function

To ensure safe and sound management of derivatives credit risk exposure, bank management should make sure that credit authorizations are provided by personnel independent of the trading unit. Credit officers should be qualified to identify and assess the level of credit risk inherent in a proposed derivatives transaction. Approving officers also should be able to identify if a proposed derivatives transaction is consistent with a counterparty's policies and procedures with respect to derivatives activities, as they are known to the bank.

Derivative credit lines should be approved using the same credit discipline as credit exposures arising from traditional lending products. Credit should be approved by a level of senior management sufficient to ensure consistency with corporate objectives. Banks that function as dealers should ensure that personnel approving credit lines for financial derivatives transactions do not have any trading authority or any reporting responsibility to trading unit management. Credit analysis supporting credit lines and sub-limits should be performed before financial derivatives transactions are executed. This analysis should parallel analysis conducted in connection with traditional extensions of credit.

Credit officers should be able to effectively analyze the impact of proposed derivatives activities on the financial condition of the customer. The availability and impact of credit exposure reduction techniques, such as netting arrangements and collateral agreements, also should be considered. Consistent with good practice in traditional lending, the creditworthiness of the counterparty should be assessed periodically throughout the life of the derivatives transaction.

The credit officers responsible for establishing and changing financial derivatives credit lines should understand the applicability of financial derivatives instruments to the risks the bank customer is attempting to manage. When the bank believes a particular transaction may not be appropriate for a particular customer, but the customer wishes to proceed, bank management should document its own analysis and the information provided to the customer.

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

2. Pre-Settlement Risk

The system a bank uses to quantify pre-settlement credit risk exposure should take into account current exposure ("mark-to-market") as well as potential credit risk due to possible future changes in applicable market rates or prices ("add-on"). That system should use a reliable source for determining the credit risk factor used to calculate the credit risk add-on.

This methodology should produce a number representing a reasonable approximation of loan equivalency, that is, the amount of credit exposure inherent in a comparable extension of credit. The mark-to-market calculation should incorporate the same controls as the mark-to-market calculation used to identify profits and losses. Prices should be obtained independently from qualified sources on a periodic basis, the frequency of which should be determined by the extent and type of a bank's financial derivatives activities. The bank's traders should not be used as the source of market valuations unless an independent unit (risk management and/or operations) verifies the traders' input against published quotes.

The credit risk add-on should determine the potential for future increases in credit exposure based on the likelihood that market rates or prices will change over the life of a contract. Although the methodology used to calculate this exposure should be consistent with that used for calculating market risk, the credit risk add-on calculation differs in at least one significant aspect. Specifically, the time horizon for market risk is the time it would take to offset or close-out a position, whereas the time horizon for credit risk appropriately is the remaining life of the contract because default could occur at any time during the remaining life.

Correlations among off-setting or matched positions with a single counterparty can reduce the overall potential for future credit exposure to that counterparty, but determining the extent of such reductions generally requires sophisticated simulation analysis. Consequently, if a bank adjusts for such correlations when summing and evaluating counterparty credit exposures, the simulation analysis supporting any such adjustment should be available to bank examiners.

The sophistication of a bank's credit risk measurement system should be consistent with the level of activity and degree of risk assumed by the bank in its derivatives activities. Banks active in derivatives transactions should have internal systems to determine potential credit

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: **Banking Circular**

Subject: **Risk Management of Financial Derivatives**

risk. Limited end-users may rely on estimates from dealers or other third party sources, provided the sources are independent of the bank's counterparty.

3. Settlement Risk

A bank's system for managing counterparty credit risk should address settlement risk.

Settlement risk can be defined as the risk a bank faces when it has performed its obligations under a contract, but has not yet received value from its counterparty. The time horizon for settlement risk is typically very short (less than 24 hours). Bank management should establish limits and monitoring procedures for settlement risk exposures. Settlement risk limits should be established separately from pre-settlement credit limits and should consider the bank's capital adequacy, operations efficiency, and credit analysis expertise. Because settlement risk becomes credit risk if the counterparty defaults during the settlement cycle, the ability of bank management to limit this exposure should be the key determining factor in establishing settlement limits. Monitoring reports should provide sufficient detail to identify credit risk arising from settlement versus pre-settlement exposure.

4. Credit Risk Monitoring

Credit risk monitoring should be independent of the units that create financial derivatives exposures. This risk monitoring unit should be responsible for producing and distributing timely, accurate information about credit exposures such as line usage, concentrations, credit quality, limit exceptions, and significant counterparty exposures. Credit exposure reports should provide aggregate information about the bank's credit risk to a given counterparty (including products such as loans, securities underwritings and other traded products). The risk monitoring unit should ensure that appropriate levels of senior management and the Board of Directors receive relevant information about credit exposure arising from derivatives activities on a periodic and timely basis.

The methodology the bank adopts to measure and monitor credit risk should be controlled by personnel independent of the trading unit. As with the methodologies used to measure mark-to-market value and potential market risk exposure, it is important that the assumptions and



BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

variables used in such models be kept current. Periodic validation should be an integral part of this process.

D. Liquidity Risk Management

Bank management should establish effective controls over the liquidity exposure arising from financial derivatives activities. Key principles in the governance and management of this risk are diversification and communication.

With respect to financial derivatives products, liquidity risk takes two forms: market/product liquidity and cash flow. If there is insufficient market activity or prices are not available, a bank risks loss due to its inability to exit or unwind a position. The inability to meet cash flow obligations at an acceptable price as they become due may also present a risk of loss.

Management of the liquidity exposure resulting from financial derivatives activities should be an integral part of day-to-day operations, as well as contingency and liquidity planning processes. The depth and formality of management systems governing this risk should reflect the volume and complexity of activities undertaken and the overall liquidity of the bank.

1. Market/Product Liquidity Risk

Exposure to market/product liquidity risk should be formally addressed within market risk limits. Diversification policies specifically addressing known or potential liquidity problems also should be implemented. Limits should be designed to trigger management action and control loss. Quality and timely communication also should be an integral part of a bank's risk management culture.

Effective market risk exposure limits should incorporate orderly liquidation periods based on the length of time required to hedge or liquidate a position under normal market conditions. When markets or products are illiquid and there is little variety or depth to hedging alternatives, market and credit exposure measures should be based on longer time frames.



BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

Communication and management/trader action are important during periods of illiquidity. A policy in which traders communicate early warning signs to risk control units is critical. At a minimum, traders should routinely report instances of unusually wide spreads and the absence of regular market participants.

Operating procedures should require traders to alert line and risk control units to early market indicators of resistance to the bank or to significant counterparties, as well as resistance with respect to particular products or maturities, or by particular markets or geographic regions.

2. Cash Flow/Funding Liquidity Risk

A bank should have liquidity policies to formally govern its exposure to cash flow gaps (from intermediate payments or settlements) arising from financial derivatives activities.

Controls over a bank's current and projected liquidity positions should include limits on cash flow gaps, in the aggregate and by currency. Based on the bank's organizational structure, it also may be appropriate to establish such limits according to legal or geographic entities, as well as on a firm-wide basis.

Banks engaged in significant financial derivatives trading activities should consider having an internal transfer pricing system that incorporates an appropriate "charge" for liquidity usage. Such a charge could help provide financial derivatives users with the appropriate economic incentive to manage their cash flow gaps and funding requirements according to overall organizational needs and strategies.

The limits previously discussed for controlling market/product liquidity risk also should assist in diversifying cash flows and avoiding concentrations around specific dates, within specific time periods, and by currency, product, or customer.

3. Early Termination Arrangements and Credit Enhancements

Policies should control the bank's exposure arising from early termination arrangements, as well as collateralization or other credit enhancements.

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

Banks should carefully evaluate the risks of entering into agreements governing their financial derivatives transactions that include provisions allowing a counterparty to terminate the agreement or liquidate outstanding transactions upon a deterioration in the bank's financial condition. Even absent such provisions, counterparties may request a bank that is experiencing real or perceived problems to unwind financial derivatives transactions before they mature. Bank policy should formally address how such requests will be handled, because in either situation, the early termination of trades may result in an undesired cash outflow and an increase in market risk at the least opportune time.

Banks' policies also should limit the amount of assets that may be encumbered by collateral arrangements or other credit enhancements triggered by a deterioration in the bank's financial condition. In developing such limits, a bank should consider potential exposures and alternative financing sources to meet liquidity requirements under a series of successive declines in its credit standing.

4. Monitoring

Banks should have management information systems that permit daily monitoring of liquidity positions relative to limits. These reports should be prepared by an area or employee(s) independent of the trading unit.

Information reflecting current and prospective cash flows from financial derivatives activities should be included in bank-wide liquidity management processes and contingency funding plans. Reports showing actual positions relative to diversification limits also should be readily available for management's review.

The frequency with which reports are prepared should be based on the relative risk exposures of a bank's activities, as well as its liquidity needs. Such information should be provided to trading, risk control, and funding units.



BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

E. Operations and Systems Risk Management

The Board of Directors and senior management should ensure the proper dedication of resources (financial and personnel) to support operations and systems development and maintenance. The operations unit for financial derivatives activities, consistent with other trading and investment activities, should report to an independent unit, and should be managed independently of the business unit. The sophistication of the systems support and operational capacity should be commensurate with the size and complexity of the derivatives business activity.

To ensure effective transaction processing, exposure and profit and loss reporting, valuation of positions and documentation, the operations unit should be independent of the business unit.

Systems support and operational capacity should be able to adequately accommodate the types of financial derivatives activities in which the bank engages. This includes the ability to efficiently process and settle the volume of business transacted through the business unit, to provide support for the complexity of the transactions booked, and to provide accurate and timely input. Support systems and the systems developed to interface with the official databases should generate accurate information sufficient to allow business unit management and senior management to monitor risk exposures in a timely manner.

Systems needs and adequacy for financial derivatives activities should be evaluated during the strategic planning process. Current and projected volume should be considered together with the nature of the derivatives activity and the user's expectations. Consistent with other systems plans, a written contingency plan for financial derivatives products should be in place.

1. Quality of Personnel

Senior management should recognize the need for, and devote appropriate resources to, employing knowledgeable and experienced personnel in the operations area.

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

Although organizational structures may vary from one bank to another, trading operations should report to high-level management. This assures that senior management is aware of significant operational risks. With the complexity of financial derivatives products and the size and rapidity of transactions, it is essential that operational units be able to capture all relevant details of trades, identify errors, and process payments or move assets quickly and accurately. This requires a staff of sufficient size, knowledge and experience to support the volume and type of transactions generated by the business unit.

Management should develop appropriate hiring practices and compensation plans to recruit and retain high caliber staff.

2. Systems

Systems design and needs may vary according to the size and complexity of a bank's financial derivatives business. However, each system should provide for accurate and timely processing and allow for proper risk exposure monitoring.

Operational systems should be tailored to each bank's needs. Limited end-users of financial derivatives may not require the same degree of automation needed by more active trading and position-taking banks. However, all operational systems and units should adequately provide for basic processing, settlement, and control of derivatives transactions.

The more sophisticated the bank's activity, the more need there is to establish automated systems to accommodate the complexity of the deals transacted, to accommodate the volume of trades conducted, and to reconcile more efficiently and report position information accurately.

It is appropriate for front and back office systems to become more highly integrated as the bank's financial derivatives activities expand.

3. Segregation of Duties

Segregation of operational duties, exposure reporting, and risk monitoring from the business unit is critical to proper internal control.



BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type: **Banking Circular**

Subject: **Risk Management of Financial Derivatives**

To provide proper control over the recordation, settlement, and monitoring of the financial derivatives business activities, operational duties should be segregated and managed independently from the business unit. Proper internal control should be provided over the entry of deals into the database, transaction numbering, date and time notation, and the confirmation and settlement processes. Operational controls also should be in place to resolve disputes over contract specifications. In this regard, banks which act as dealers of derivatives transactions should consider employing recorded telephone lines for both dealing and operational units.

The operations department, or another unit or entity independent of the business unit, should be responsible for ensuring proper reconciliation of front and back office databases on a regular basis. This includes the verification of position data, profit and loss figures, and transaction-by-transaction details.

4. Valuation Issues

Banks that engage in financial derivatives activities should ensure that the methods they use to value their derivatives positions are appropriate and that the assumptions underlying those methods are reasonable.

Dealers and active position-takers should have systems that accurately measure the value of their financial derivatives portfolios. The pricing procedures and models the bank chooses should be consistently applied and well-documented. Models and supporting statistical analyses should be validated prior to use and as market conditions warrant.

The best approach is to value derivatives portfolios based on mid-market levels less adjustments. Adjustments should reflect expected future costs such as unearned credit spreads, close-out costs, investing and funding costs, and administrative costs. Most limited end-users (and some traders) may find it too costly to establish systems that accurately measure the necessary adjustments for mid-market pricing. In such cases, banks may price derivatives based on bid and offer levels, provided they use the bid side for long positions and the offer side for short positions. This procedure will ensure that financial derivatives positions are not overvalued.

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

Banks adopting mid-market pricing should recognize that mid-market prices are not observable for many instruments. In those cases, banks should derive unbiased estimates of market prices from prices in similar markets or from sources that are independent of the bank's traders. The bank's operations staff should develop procedures to verify the reasonableness of all pricing variables or, if that is not possible, should limit the bank's exposure through position or concentration limits and develop appropriate reporting mechanisms.

Traders may review and comment on prices. When material discrepancies occur, senior management should review them. If, in an extenuating circumstance, senior management overrides a back office estimate, it should prepare a written explanation of the decision.

5. Documentation

Bank management should ensure a mechanism exists whereby financial derivatives contract documentation is confirmed, maintained, and safeguarded. Documentation exceptions should be properly monitored and resolved.

Controls must be in place to ensure that the appropriate contract documentation is timely and properly executed and maintained. The bank should establish a process through which documentation exceptions are monitored and appropriately reviewed by senior management and legal counsel. Banks with more active derivatives businesses should consider establishing a separate documentation unit to control financial derivatives contracts and supporting documents. Such a unit may be part of a broader documentation unit or the legal department.

F. Legal Issues

Prior to engaging in derivatives transactions, a national bank should reasonably satisfy itself that its counterparties have the legal, and any necessary regulatory, authority to engage in those transactions. In addition to determining the authority of a counterparty to enter into a derivatives transaction, a national bank also should reasonably satisfy itself that the terms of any contract governing its derivatives activities with a counterparty are legally sound.



BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type: **Banking Circular**

Subject: **Risk Management of Financial Derivatives**

Participants in the financial derivatives markets have experienced significant losses because they were unable to recover losses from a defaulting counterparty when a court held the counterparty had acted outside of its authority in entering into such transactions. National banks, especially dealers, should ensure that their counterparties have the power and authority to enter into derivatives transactions, and that the counterparties' obligations arising therefrom are enforceable. Similarly, a national bank also should ensure that its rights with respect to any margin or collateral received from a counterparty are enforceable and exercisable. The bank should be able to be use such margin or collateral to offset actual losses upon the default of the counterparty.

A national bank also should reasonably satisfy itself that the terms of any contract governing its derivatives transactions with a counterparty are legally sound. This is especially important with respect to provisions governing (i) the timing of the termination of outstanding transactions and (ii) the calculation of settlement amounts payable to or between parties upon the termination of a transaction or an agreement.

1. **Bilateral Netting**

In order to reduce counterparty credit exposure, a national bank should use master close-out netting agreements with its counterparties to the broadest extent *legally enforceable*, including in any possible insolvency proceedings of such counterparties. However, the reliance upon such agreements where the enforceability of such agreements against a particular counterparty has not been legally established should be considered carefully and will be scrutinized closely by the OCC.

In the United States the enforceability of bilateral close-out netting arrangements for various derivatives transactions in the insolvency proceedings of U.S. counterparties is almost certain. The advantages of such netting arrangements include a reduction in credit and liquidity exposures, the potential to do more business with existing counterparties within existing credit lines, and a reduced need for collateral to support counterparty obligations. National banks, therefore, gain substantial potential benefits by documenting their relationships in master agreements that contain close-out netting provisions.

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

The enforceability of such provisions against many foreign counterparties or U.S. branches or offices of some foreign counterparties, however, is less certain. National banks that rely on netting arrangements with such counterparties may understate credit and liquidity exposures. As a result, they may improperly monitor and control that exposure, assume unintended credit risk, and increase systemic risk.

Only when the enforceability of close-out netting arrangements with counterparties has a high degree of certainty should national banks monitor their credit and liquidity risks, and account for financial derivatives transactions with such counterparties, on a net basis.

2. Multilateral Netting

A national bank should determine credit and liquidity exposure and account for financial derivatives transactions on a multilaterally-netted basis only if cleared through a clearinghouse, organization, or facility that meets the conditions set forth in the *Report of the Committee on Interbank Netting Schemes of the Central Banks of the Group of 10 Countries*, Bank for International Settlements, Nov. 1990 ("Lamfalussy Report").

Under a multilateral netting facility, a central counterparty or clearinghouse is designated as the common legal counterparty for each participant in the facility. The reductions in credit risk resulting from a well-designed facility can be substantial and, generally, the OCC encourages the development of such arrangements.

In order to provide the highest level of certainty with respect to (i) the enforceability of the obligations of the participants, (ii) the ability of the system to freely and promptly exercise the right of set-off with respect to any property deposited with the system by a defaulting participant as security for its obligations, (iii) limitations on the obligations of non-defaulting participants to cover the losses arising out of defaulted transactions, and (iv) the financial integrity of the system as a whole, national banks should only participate in multilateral netting facilities that meet the conditions set forth in the Lamfalussy Report.



BANKING ISSUANCE

Comptroller of the Currency
Administrator of National Banks

Type: **Banking Circular**

Subject: **Risk Management of Financial Derivatives**

3. Physical Commodity Transactions

National banks may engage in physical commodity transactions in order to manage the risks arising out of physical commodity financial derivatives transactions if they meet the following conditions:

- Any physical transactions supplement the bank's existing risk management activities, constitute a nominal percentage of a bank's risk management activities, are used only to manage risk arising from otherwise permissible (customer-driven) banking activities, and are not entered into for speculative purposes; and
- Before entering into any such physical transactions, the bank has submitted a detailed plan for the activity to the OCC and the plan has been approved.

The OCC has concluded that a national bank may engage in physical commodity transactions in order to manage the risks arising out of physical commodity financial derivatives transactions. However, given the potential additional risks associated with physical hedging activities, a national bank must first develop a detailed plan, which should be approved by the bank's Board of Directors and the supervisory staff of the OCC, before the bank begins engaging in such activities. Requests for plan approval must be submitted to: Senior Deputy Comptroller for Bank Supervision-Operations, Office of the Comptroller of the Currency, Washington, D.C. 20219.

Upon OCC approval, a national bank may engage in such activities only under the conditions specified above and in accordance with safe and sound banking practices.

Financial derivatives transactions with respect to bank-eligible precious metals (gold, silver and platinum) are not subject to this guideline.

G. Capital Adequacy

The Board of Directors should ensure that the bank maintains sufficient capital to support the risk exposures (e.g., market risk, credit risk, liquidity risk, operation and systems risk, etc.) that may arise from its derivatives activities. Significant changes in

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

the size or scope of a bank's activities should prompt an analysis of the adequacy of the amount of capital supporting those various activities by senior management and/or the Board of Directors. This analysis should be approved by the Board of Directors and be available for bank examiner review. In addition to internal reviews of capital adequacy, senior management should ensure that the bank meets all regulatory capital standards for financial derivatives activities.

Under current risk-based capital requirements national banks must hold capital for counterparty credit risk exposures in financial derivatives contracts. These requirements are specified in 12 CFR 3 Appendix A. The OCC is developing additional capital requirements for banks' interest rate exposures which would include requiring capital to cover interest rate risk exposures arising from financial derivatives positions. As these and any other modifications or additions to capital requirements are adopted, bank management must ensure that all financial derivatives activities are properly incorporated into their minimum capital levels.

H. Accounting

Accounting guidance for financial derivatives instruments is not comprehensive. Generally accepted accounting principles (GAAP) include definitive accounting standards only for futures contracts. Regulatory accounting principles (RAP), set forth in the *Instructions to Consolidated Reports of Condition and Income*, address only futures, forwards, and options. Due to the lack of comprehensive GAAP or RAP guidance for all derivatives, inconsistent accounting practices have developed for some products.

The OCC is currently studying the issue of accounting for financial derivative instruments. A consistent regulatory accounting policy will be developed for all derivative products. That policy will consider the impact of accounting rules on business decisions, with a view to minimizing regulatory burden, and will be a cooperative effort with the other U.S. banking agencies. In the interim, each bank should review its accounting practices and documentation to ensure consistency with the strategies and objectives approved by its Board of Directors.

**BANKING ISSUANCE**

Comptroller of the Currency
Administrator of National Banks

Type: Banking Circular

Subject: Risk Management of Financial Derivatives

RESPONSIBLE OFFICE

Questions or concerns regarding this banking circular or the information it contains should be directed to: Capital Markets Division, Office of the Chief National Bank Examiner, (202) 874-5070.

Douglas E. Harris
Senior Policy Advisor to the Comptroller

BOARD OF GOVERNORS
OF THE
FEDERAL RESERVE SYSTEM

WASHINGTON, D. C. 20551

SR 93-69 (FIS)

DIVISION OF BANKING
SUPERVISION AND REGULATION

December 20, 1993



TO THE OFFICER IN CHARGE OF SUPERVISION
AT EACH FEDERAL RESERVE BANK

SUBJECT: Examining Risk Management and Internal Controls for
Trading Activities of Banking Organizations

The review of risk management and internal controls is an essential element of our examination of trading activities. In view of the increasing importance of these activities to the overall risk profile and profitability of certain banking organizations, the following guidance is being issued to highlight key considerations in examining the risk management and internal controls of trading activities in both cash and derivative instruments.¹

This guidance specifically targets trading, market making, and customer accommodation activities in cash and derivative instruments at State member banks, branches and agencies of foreign banks, and Edge corporations. The principles set forth in this guidance also apply to the risk management of bank holding companies, which should manage and control aggregate risk exposures on a consolidated basis, while recognizing legal distinctions among subsidiaries. Many of the principles advanced can also be applied to banks' use of derivatives as end-users. Examiners should assess management's application of this guidance to the holding company and to a bank's end-user derivative activities where appropriate, given the nature of the institution's activities and current accounting standards.

The following guidance both reiterates and supplements earlier directives provided in various supervisory letters and examination manuals on these topics. It is also incorporated and addressed in significant detail in the draft Capital Markets and Trading Activities Manual that is currently being field tested. Specifically, this letter provides examiner guidance for evaluating the following elements of an institution's risk management process for trading and derivatives activities:

¹ In general terms, derivative instruments are bilateral contracts or agreements whose value derives from the value of one or more underlying assets, interest rates, exchange rates, commodities, or financial or commodity indexes.

- I. Board of directors and management oversight;
- II. The measurement procedures, limit systems, and monitoring and review functions of the risk management process; and,
- III. Internal controls and audit procedures.

In assessing the adequacy of these elements at individual institutions, examiners should consider the nature and volume of a bank's activities and the bank's overall approach toward managing the various types of risks involved. As with the examination of other banking activities, examiner judgment plays a key role in assessing the adequacy and necessary sophistication of a bank's risk management system for cash and derivative instrument trading and hedging activities.

Many of the managerial and examiner practices contained in this guidance are fundamental and are generally accepted as sound banking practices for both trading and non-trading activities. However, other elements may be subject to change, as both supervisory and bank operating standards evolve in response to new technologies, financial innovations, and developments in market and business practices. Future experience, including that gained from implementing the Capital Markets and Trading Activities Manual, may also identify useful changes to these examiner guidelines.

I. Oversight of the Risk Management Process

As is standard practice for most banking activities, banks should maintain written policies and procedures that clearly outline the institution's risk management guidance for trading and derivative activities. At a minimum these policies should identify the risk tolerances of the board of directors and should clearly delineate lines of authority and responsibility for managing the risk of these activities. Individuals throughout the trading and derivatives areas should be fully aware of all policies and procedures that relate to their specific duties.

The board of directors, senior-level management, and members of independent risk management functions are all important participants in the risk management process. Examiners should ensure that these participants are aware of their responsibilities and that they adequately perform their appropriate role in managing the risk of trading and derivative activities.

Board of Directors. The board of directors should approve all significant policies relating to the management of risks throughout the institution. These policies, which should include those related to trading activities, should be consistent with the organization's broader business strategies, capital adequacy, expertise, and overall willingness to take risk. Accordingly, the board should be informed regularly of the risk exposure of the institution and should regularly re-evaluate significant risk management policies and procedures with special emphasis placed on those defining the institution's risk tolerance regarding these activities. The board of directors should also conduct and encourage discussions between its members and senior management, as well as between senior management and others in the institution, regarding the institution's risk management process and risk exposure.

Senior Management. Senior management is responsible for ensuring that there are adequate policies and procedures for conducting trading operations on both a long-range and day-to-day basis. This responsibility includes ensuring that there are clear delineations of lines of responsibility for managing risk, adequate systems for measuring risk, appropriately structured limits on risk taking, effective internal controls, and a comprehensive risk-reporting process.

Senior management should evaluate regularly the procedures in place to manage risk to ensure that those procedures are appropriate and sound. Senior management should also foster and participate in active discussions with the board, with staff of risk management functions, and with traders regarding procedures for measuring and managing risk. Management must also ensure that trading and derivative activities are allocated sufficient resources and staff to manage and control risks.

Independent Risk Management Functions. The process of measuring, monitoring, and controlling risk consistent with the established policies and procedures should be managed independently of individuals conducting trading activities, up through senior levels of the institution. An independent system for reporting exposures to both senior-level management and to the board of directors is an important element of this process.

Banking organizations should have highly qualified personnel throughout their trading and derivatives areas, including their risk management and internal control functions. The personnel staffing independent risk management functions should have a complete understanding of the risks associated with all traded on- and off-balance sheet instruments. Accordingly, compensation policies for these individuals should be adequate to

attract and retain personnel qualified to judge these risks. As a matter of general policy, compensation policies, especially in the risk management, control, and senior management functions, should be structured in a way that avoids the potential incentives for excessive risk taking that can occur if, for example, salaries are tied too closely to the profitability of trading or derivatives activities.

II. The Risk Management Process

The primary components of a sound risk management process are: a comprehensive risk measurement approach; a detailed structure of limits, guidelines, and other parameters used to govern risk taking; and a strong management information system for monitoring and reporting risks. These components are fundamental to both trading and non-trading activities, alike. Moreover, the underlying risks associated with these activities, such as credit, market, liquidity, and operating risk, are not new to banking, although their measurement and management can be somewhat more complex. Accordingly, the process of risk management for trading activities should be integrated into the institution's overall risk management system to the fullest extent possible using a conceptual framework common to the bank's other activities. Such a common framework enables the institution to manage its consolidated risk exposure more effectively, especially since the various individual risks involved in trading activities can, at times, be interconnected and can often transcend specific markets.

As is the case with all risk-bearing activities, the risk exposures a banking organization assumes in its trading and derivatives activities should be fully supported by an adequate capital position. Banking organizations should ensure that their capital positions are sufficiently strong to support all trading and derivatives risks on a fully consolidated basis and that adequate capital is maintained in all affiliated entities engaged in these activities.

Risk Measurement. An institution's system for measuring the various risks of trading and derivatives activities should be both comprehensive and accurate. Risks should be measured and aggregated across trading and non-trading activities on an institution-wide basis to the fullest extent possible.

While examiners should not require the use of a single prescribed risk measurement approach for management purposes, they should evaluate the extent to which a bank's procedures enable management to assess exposures on a consolidated basis. Examiners should also evaluate whether the risk measures and the risk measurement process are sufficiently robust to reflect

accurately the multiple types of risks facing the institution. Risk measurement standards should be understood by relevant personnel at all levels of the institution--from individual traders to the board of directors--and should provide a common framework for limiting and monitoring risk taking activities.

The process of marking trading and derivatives positions to market is fundamental to measuring and reporting exposures accurately and on a timely basis. Institutions active in dealing foreign exchange, derivatives, and other traded instruments should have the ability to monitor credit exposures, trading positions, and market movements at least daily. Some institutions should also have the capacity, or at least the goal, of monitoring their more actively traded products on a real-time basis.

Analyzing stress situations, including combinations of market events that could affect the banking organization, is also an important aspect of risk measurement. Sound risk measurement practices include identifying possible events or changes in market behavior that could have unfavorable effects on the bank and assessing the ability of the bank to withstand them. These analyses should consider not only the likelihood of adverse events, reflecting their probability, but also plausible "worst case" scenarios. Ideally, such worst case analysis should be conducted on an institution-wide basis by taking into account the effect of unusual price changes or the default of a large counterparty across both the derivatives and cash trading portfolios and the loan and funding portfolios.

Such stress tests should not be limited to quantitative exercises that compute potential losses or gains. They should also include more qualitative analyses of the actions management might take under particular scenarios. Contingency plans outlining operating procedures and lines of communication, both formal and informal, are important products of such qualitative analyses.

Limiting Risks. A sound system of integrated institution-wide limits and risk taking guidelines is an essential component of the risk management process. Such a system should set boundaries for organizational risk-taking and should also ensure that positions that exceed certain predetermined levels receive prompt management attention, so that they can be either reduced or prudently addressed. The limit system should be consistent with the effectiveness of the organization's overall risk management process and with the adequacy of its capital position. An appropriate limit system should permit management to control exposures, to initiate discussion about opportunities and risks, and to monitor actual

risk taking against predetermined tolerances, as determined by the board of directors and senior management.

Global limits should be set for each major type of risk involved. These limits should be consistent with the bank's overall risk measurement approach and should be integrated to the fullest extent possible with institution-wide limits on those risks as they arise in all other activities of the firm. The limit system should provide the capability to allocate limits down to individual business units.

At times, especially when markets are volatile, traders may exceed their limits. While such exceptions may occur, they should be made known to senior management and approved only by authorized personnel. These positions should also prompt discussions between traders and management about the consolidated risk-taking activities of the firm or the trading unit. The seriousness of individual or continued limit exceptions depends in large part upon management's approach toward setting limits and on the actual size of individual and organizational limits relative to the institution's capacity to take risk. Banks with relatively conservative limits may encounter more exceptions to those limits than do institutions where limits may be less restrictive. Ultimately, examiners should ensure that stated policies are enforced and that the level of exposure is managed prudently.

Reporting. An accurate, informative, and timely management information system is essential to the prudent operation of a trading or derivatives activity. Accordingly, the examiner's assessment of the quality of the management information system is an important factor in the overall evaluation of the risk management process. Examiners should determine the extent to which the risk management function monitors and reports its measures of trading risks to appropriate levels of senior management and to the board of directors. Exposures and profit and loss statements should be reported at least daily to managers who supervise but do not, themselves, conduct trading activities. More frequent reports should be made as market conditions dictate. Reports to other levels of senior management and the board may occur less frequently, but examiners should determine whether the frequency of reporting provides these individuals with adequate information to judge the changing nature of the institution's risk profile.

Examiners should ensure that the management information systems translate the measured risk from a technical and quantitative format to one that can be easily read and understood by senior managers and directors, who may not have specialized and technical knowledge of trading activities and derivative

products. Risk exposures arising from various products within the trading function should be reported to senior managers and directors using a common conceptual framework for measuring and limiting risks.

Management Evaluation and Review. Management should ensure that the various components of a bank's risk management process are regularly reviewed and evaluated. This review should take into account changes in the activities of the institution and in the market environment, since the changes may have created exposures that require additional management and examiner attention. Any material changes to the risk management system should also be reviewed.

The independent risk management functions should regularly assess the methodologies, models, and assumptions used to measure risk and to limit exposures. Proper documentation of these elements of the risk measurement system is essential for conducting meaningful reviews. The review of limit structures should compare limits to actual exposures and should also consider whether existing measures of exposure and limits are appropriate in view of the bank's past performance and current capital position.

The frequency and extent to which banks should re-evaluate their risk measurement methodologies and models depends, in part, on the specific risk exposures created by their trading activities, on the pace and nature of market changes, and on the pace of innovation with respect to measuring and managing risks. At a minimum, banks with significant trading and derivative activities should review the underlying methodologies of their models at least annually--and more often as market conditions dictate--to ensure they are appropriate and consistent. Such internal evaluations may, in many cases, be supplemented by reviews by external auditors or other qualified outside parties, such as consultants who have expertise with highly technical models and risk management techniques. Assumptions should be evaluated on a continual basis.

Banks should also have an effective process to evaluate and review the risks involved in products that are either new to the firm or new to the marketplace and of potential interest to the firm. In general, a bank should not trade a product until senior management and all relevant personnel (including those in risk management, internal control, legal, accounting, and auditing) understand the product and are able to integrate the product into the bank's risk measurement and control systems. Examiners should determine whether the banking organization has a formal process for reviewing new products and whether it

introduces new products in a manner that adequately limits potential losses.

Managing Specific Risks. The following discussions present examiner guidance for evaluating the specific components of a firm's risk management process in the context of each of the risks involved in trading cash and derivatives instruments.

Credit Risk. Broadly defined, credit risk is the risk that a counterparty will fail to perform on an obligation to the banking institution. Banks should evaluate both settlement and pre-settlement credit risk at the customer level across all traded derivative and non-derivative products. On settlement day, the exposure to counterparty default may equal the full value of any cash flows or securities the bank is to receive. Prior to settlement, credit risk is measured as the sum of the replacement cost of the position, plus an estimate of the bank's potential future exposure from the instrument as a result of market changes. Replacement cost should be determined using current market prices or generally accepted approaches for estimating the present value of future payments required under each contract, given current market conditions.

Potential credit risk exposure is measured more subjectively than current exposure and is primarily a function of the time remaining to maturity and the expected volatility of the price, rate, or index underlying the contract. It is often assessed through simulation analysis and option valuation models, but can also be addressed by using "add-ons," such as those included in the risk-based capital standard. In either case, examiners should evaluate the reasonableness of the assumptions underlying the bank's risk measure and should also ensure that banks that measure exposures using a portfolio approach do so in a prudent manner.

Master netting agreements and various credit enhancements, such as collateral or third-party guarantees, can be used by banks to reduce their counterparty credit risk. In such cases, a bank's credit exposures should reflect these risk reducing features only to the extent that the agreements and recourse provisions are legally enforceable in all relevant jurisdictions. This legal enforceability should extend to any insolvency proceedings of the counterparty. Banks should be able to demonstrate that they have exercised due diligence in evaluating the enforceability of these contracts and that individual transactions have been executed in a manner that provides adequate protection to the bank.

Credit limits that consider both settlement and pre-settlement exposures should be established for all counterparties

with whom the bank trades. As a matter of general policy, trading with a counterparty should not commence until a credit line has been approved. The structure of the credit-approval process may differ among institutions, reflecting the organizational and geographic structure of the institution and the specific needs of its trading activities. Nevertheless, in all cases, it is important that credit limits be determined by personnel who are independent of the trading function, that these personnel use standards that are consistent with those used for nontrading activities, and that counterparty credit lines are consistent with the organization's policies and consolidated exposures.

Examiners should consider the extent to which credit limits are exceeded and whether exceptions were resolved according to the bank's adopted policies and procedures. Examiners should also evaluate whether the institution's reports adequately provide traders and credit officers with relevant, accurate, and timely information about the credit exposures and approved credit lines.

Trading activities that involve cash instruments often involve short-term exposures that are eliminated at settlement. However, in the case of derivative products traded in over-the-counter markets, the exposure can often exist for a period similar to that commonly associated with a bank loan. Given this potentially longer term exposure and the complexity associated with some derivative instruments, banks should consider not only the overall financial strength of the counterparty and its ability to perform on its obligation, but should also consider the counterparty's ability to understand and manage the risks inherent in the derivative product.

Market Risk. Market risk is the risk to a bank's financial condition resulting from adverse movements in market prices. Accurately measuring a bank's market risk requires timely information about the current market values of its assets, liabilities, and off-balance sheet positions. Although there are many types of market risks that can affect a portfolio's value, they can generally be described as those involving forward risk and those involving options. Forward risks arise from factors such as changing interest rates and currency exchange rates, the liquidity of markets for specific commodities or financial instruments, and local or world political and economic events. Market risks related to options include these factors as well as evolving perceptions of the volatility of price changes, the passage of time, and the interactive effect of other market risks. All of these sources of potential market risk can affect the value of the institution and should be considered in the risk measurement process.

Market risk is increasingly measured by market participants using a value-at-risk approach, which measures the potential gain or loss in a position, portfolio, or institution that is associated with a price movement of a given probability over a specified time horizon. Banks should revalue all trading portfolios and calculate their exposures at least daily. Although banks may use risk measures other than value at risk, examiners should consider whether the measure used is sufficiently accurate and rigorous and whether it is adequately incorporated into the bank's risk management process.

Examiners should also ensure that the institution compares its estimated market risk exposures with actual market price behavior. In particular, the output of any market risk models that require simulations or forecasts of future prices should be compared with actual prices. If the projected and actual results differ materially, the models should be modified, as appropriate.

Banks should establish limits for market risk that relate to their risk measures and that are consistent with maximum exposures authorized by their senior management and board of directors. These limits should be allocated to business units and individual traders and be clearly understood by all relevant parties. Examiners should ensure that exceptions to limits are detected and adequately addressed by management. In practice, some limit systems may include additional elements such as stop-loss limits and trading guidelines that may play an important role in controlling risk at the trader and business unit level; examiners should include them in their review of the limit system.

Liquidity Risk. Banks face two types of liquidity risk in their trading activities: those related to specific products or markets and those related to the general funding of the bank's trading activities. The former is the risk that a banking institution cannot easily unwind or offset a particular position at or near the previous market price because of inadequate market depth or because of disruptions in the marketplace. Funding liquidity risk is the risk that the bank will be unable to meet its payment obligations on settlement dates. Since neither type of liquidity risk is unique to trading activities, management should evaluate these risks in the broader context of the institution's overall liquidity. When establishing limits, institutions should be aware of the size, depth and liquidity of the particular market and establish trading guidelines accordingly. Management should also give consideration to the potential problems associated with replacing contracts that terminate early in volatile or illiquid markets.

In developing guidelines for controlling the liquidity risks in trading activities, banks should consider the possibility that they could lose access to one or more markets, either because of concerns about the bank's own creditworthiness, the creditworthiness of a major counterparty, or because of generally stressful market conditions. At such times, the bank may have less flexibility in managing its market, credit, and liquidity risk exposures. Banks that make markets in over-the-counter derivatives or that dynamically hedge their positions require constant access to financial markets, and that need may increase in times of market stress. The bank's liquidity plan should reflect the institution's ability to turn to alternative markets, such as futures or cash markets, or to provide sufficient collateral or other credit enhancements in order to continue trading under a broad range of scenarios.

Examiners should ensure that banking institutions that participate in over-the-counter derivative markets adequately consider the potential liquidity risks associated with the early termination of derivative contracts. Many forms of standardized contracts for derivative transactions allow counterparties to request collateral or to terminate their contracts early if the banking institution experiences an adverse credit event or a deterioration in its financial condition. In addition, under conditions of market stress, customers may ask for the early termination of some contracts within the context of the dealer's market making activities. In such situations, a bank that owes money on derivative transactions may be required to deliver collateral or settle a contract early and possibly at a time when the bank may face other funding and liquidity pressures. Early terminations may also open up additional, unintended, market positions. Management and directors should be aware of these potential liquidity risks and should address them in the bank's liquidity plan and in the broader context of the bank's liquidity management process. In their reviews, examiners should consider the extent to which such potential obligations could present liquidity risks to the bank.

Operational Risk, Legal Risk and Business Practices. Operating risk is the risk that deficiencies in information systems or internal controls will result in unexpected loss. Legal risk is the risk that contracts are not legally enforceable or documented correctly. Although operating and legal risks are difficult to quantify, they can often be evaluated by examining a series of plausible "worst-case" or "what if" scenarios, such as a power loss, a doubling of transaction volume, a mistake found in the pricing software for collateral management, or an unenforceable contract. They can also be assessed through periodic reviews of procedures, documentation requirements, data processing systems, contingency plans, and other operating

practices. Such reviews may help to reduce the likelihood of errors and breakdowns in controls, improve the control of risk and the effectiveness of the limit system, and prevent unsound marketing practices and the premature adoption of new products or lines of business. Considering the heavy reliance of trading activities on computerized systems, banks should have plans that take into account potential problems with their normal processing procedures.

Banks should also ensure that trades that are consummated orally are confirmed as soon as possible. Oral transactions conducted via telephone should be recorded on tape and subsequently supported by written documents. Examiners should ensure that the institution monitors the consistency between the terms of a transaction as they were orally agreed-upon and the terms as they were subsequently confirmed.

Examiners should also consider the extent to which banks evaluate and control operating risks through the use of internal audits, stress testing, contingency planning, and other managerial and analytical techniques. Banks should also have approved policies that specify documentation requirements for trading activities and formal procedures for saving and safeguarding important documents that are consistent with legal requirements and internal policies. Relevant personnel should fully understand the requirements.

Legal risks should be limited and managed through policies developed by the institution's legal counsel (typically in consultation with officers in the risk management process) that have been approved by the bank's senior management and board of directors. At a minimum, there should be guidelines and processes in place to ensure the enforceability of counterparty agreements. Examiners should determine whether a bank is adequately evaluating the enforceability of its agreements before individual transactions are consummated. Banks should also ensure that the counterparty has sufficient authority to enter into the transaction and that the terms of the agreement are legally sound. Banks should further ascertain that their netting agreements are adequately documented, that they have been executed properly, and that they are enforceable in all relevant jurisdictions. Banks should have knowledge of relevant tax laws and interpretations governing the use of these instruments. Knowledge of these laws is necessary not only for the bank's marketing activities, but also for its own use of derivative products.

Sound business practices provide that banking organizations take steps to ascertain the character and financial sophistication of counterparties. This includes efforts to

ensure that the counterparties understand the nature of and the risks inherent in the agreed transactions. Where the counterparties are unsophisticated, either generally or with respect to a particular type of transaction, banks should take additional steps to ensure that counterparties are made aware of the risks attendant in the specific type of transaction. While counterparties are ultimately responsible for the transactions into which they choose to enter, where a bank recommends specific transactions for an unsophisticated counterparty, the bank should ensure that it has adequate information regarding its counterparty on which to base its recommendation.

III. Internal Controls and Audits

A review of internal controls has long been central to the Federal Reserve's examination of trading and derivatives activities. Policies and related procedures for the operation of these activities should be an extension of the institution's overall structure of internal controls and should be fully integrated into routine work-flows. Properly structured, a system of internal controls should promote effective and efficient operations, reliable financial and regulatory reporting, and compliance with relevant laws, regulations, and bank policies. In determining whether internal controls meet those objectives, examiners should consider: the overall control environment of the organization; the process for identifying, analyzing and managing risk; the adequacy of management information systems; and adherence to control activities such as approvals, confirmations and reconciliations.

Assessing the adequacy of internal controls involves a process of understanding, documenting, evaluating and testing an institution's internal control system. This assessment should include product or business line reviews which, in turn, should start with an assessment of the line's organizational structure. Examiners should check for adequate separation of duties, especially between trading desk personnel and internal control and risk management functions, adequate oversight by a knowledgeable manager without day-to-day trading responsibilities, and the presence of separate reporting lines for risk management and internal control personnel on one side and for trading personnel on the other. Product-by-product reviews of management structure should supplement the overall assessment of the organizational structure of the trading and derivatives areas.

Examiners are expected to conduct in-depth reviews of the internal controls of key activities. For example, for transaction recording and processing, examiners should evaluate written policies and procedures for recording trades, assess the

trading area's adherence to policy, and analyze the transaction processing cycle, including settlement, to ensure the integrity and accuracy of the bank's records and management reports. Examiners should review the revaluation process in order to assess the adequacy of written policies and procedures for revaluing positions and for creating any associated revaluation reserves. Examiners should review compliance with revaluation policies and procedures, the frequency of revaluation, and the independence and quality of the sources of revaluation prices, especially for instruments traded in illiquid markets. All significant internal controls associated with the management of market risk, such as position versus limit reports and limit coverage approval policies and procedures, should also be reviewed. Examiners should also review the credit approval process to ensure that the risks of specific products are adequately captured and that credit approval procedures are followed for all transactions.

An important step in the process of reviewing internal controls is the examiner's appraisal of the frequency, scope, and findings of independent internal and external auditors and the ability of those auditors to review the bank's trading and derivatives activities. Internal auditors should audit and test the risk management process and internal controls on a periodic basis, with the frequency based on a careful risk assessment. The depth and frequency of internal audits should be increased if weaknesses and significant issues are discovered or if significant changes have been made to product lines, modelling methodologies, the risk oversight process, internal controls, or the overall risk profile of the institution.

In reviewing the risk management functions in particular, internal auditors should thoroughly evaluate the effectiveness of internal controls relevant to measuring, reporting and limiting risks. Internal auditors should also evaluate compliance with risk limits and the reliability and timeliness of information reported to the bank's senior management and board of directors. Internal auditors are also expected to evaluate the independence and overall effectiveness of the bank's risk management functions.

The level of confidence that examiners place in the banking organization's audit programs, the nature of the audit findings and management's response to those findings will influence the scope of the current examination of trading and derivatives activities. Even when the audit process and findings are satisfactory, examiners should document, evaluate and test critical internal controls.

Similar to the focus of internal auditors, examiners should pay special attention to significant changes in product lines, risk measurement methodologies, limits, and internal controls that have occurred since the last examination. Meaningful changes in earnings from trading or derivatives activities, or in the size of positions or the value at risk associated with these activities, should also receive emphasis during the examination.

For additional areas of testing and evaluation, examiners should consult the Capital Markets and Trading Activities Manual. If you have any questions regarding these practices, please call Roger Cole, (202/452-2618), Jim Hought (202/452-3358), or Jim Embersit (202/452-5249).

A handwritten signature in black ink, appearing to read 'Richard Spillenkothen', with a stylized flourish extending to the right.

Richard Spillenkothen
Director



**Supplementary Material
Table of Contents**

	<u>Item</u>
Capital Adequacy Guidelines	1
Notice of Proposed Rule Making on Interest Rate Risk	2
Basle Committee on Bank Supervision: Consultive Papers on Netting, Market Risks, and Interest Rate Risk	3
Federal Reserve Trading Activities Examination Manual	4



Supplementary Material

	<u>Item</u>
Capital Adequacy Guidelines	1
Notice of Proposed Rule Making on Interest Rate Risk	2
Basle Committee on Bank Supervision: Consultive Papers on Netting, Market Risks, and Interest Rate Risk	3



Supplementary Material

	<u>Item</u>
Risk Based Capital Guidelines	
Capital Adequacy Guidelines	1

Board of Governors of the Federal Reserve System

Capital Adequacy Guidelines

12 CFR 208, appendix A; 12 CFR 225 appendixes A and B; effective March 15, 1989



Any inquiry relating to these guidelines should be addressed to the Federal Reserve Bank of the Federal Reserve District in which the inquiry arises.

March 1989

Contents

	<i>Page</i>		<i>Page</i>
Capital Adequacy Guidelines for State Member Banks: Risk-Based Measure (Regulation H, Appendix A)	1	Capital Adequacy Guidelines for Bank Holding Companies and State Member Banks: Leverage Measure (Regulation Y, Appendix B)	55
Capital Adequacy Guidelines for Bank Holding Companies: Risk-Based Measure (Regulation Y, Appendix A) .	27		

Capital Adequacy Guidelines for State Member Banks: Risk-Based Measure

Regulation H (12 CFR 208), Appendix A

I. Overview

The Board of Governors of the Federal Reserve System has adopted a risk-based capital measure to assist in the assessment of the capital adequacy of state member banks.¹ The principal objectives of this measure are to (i) make regulatory capital requirements more sensitive to differences in risk profiles among banks; (ii) factor off-balance-sheet exposures into the assessment of capital adequacy; (iii) minimize disincentives to holding liquid, low-risk assets; and (iv) achieve greater consistency in the evaluation of the capital adequacy of major banks throughout the world.²

The risk-based capital guidelines include both a definition of capital and a framework for calculating weighted-risk assets by assigning assets and off-balance-sheet items to broad risk categories. A bank's risk-based capital ratio is calculated by dividing its qualifying capital (the numerator of the ratio) by its weighted-risk assets (the denominator).³ The definition of "qualifying capital" is outlined below in section II, and the procedures for calculating weighted-risk assets are discussed in section III. Attachment I illustrates a sample calculation of weighted-risk assets and the risk-based capital ratio.

The risk-based capital guidelines also establish a schedule for achieving a minimum supervisory standard for the ratio of qualifying

capital to weighted-risk assets and provide for transitional arrangements during a phase-in period to facilitate adoption and implementation of the measure at the end of 1992. These interim standards and transitional arrangements are set forth in section IV.

The risk-based guidelines apply to all state member banks on a consolidated basis. They are to be used in the examination and supervisory process as well as in the analysis of applications acted upon by the Federal Reserve. Thus, in considering an application filed by a state member bank, the Federal Reserve will take into account the bank's risk-based capital ratio, the reasonableness of its capital plans, and the degree of progress it has demonstrated toward meeting the interim and final risk-based capital standards.

The risk-based capital ratio focuses principally on broad categories of credit risk, although the framework for assigning assets and off-balance-sheet items to risk categories does incorporate elements of transfer risk, as well as limited instances of interest-rate and market risk. The risk-based ratio does not, however, incorporate other factors that can affect a bank's financial condition. These factors include overall interest-rate exposure; liquidity, funding and market risks; the quality and level of earnings; investment or loan-portfolio concentrations; the quality of loans and investments; the effectiveness of loan and investment policies; and management's ability to monitor and control financial and operating risks.

In addition to evaluating capital ratios, an overall assessment of capital adequacy must take account of these other factors, including, in particular, the level and severity of problem and classified assets. For this reason, the final supervisory judgment on a bank's capital adequacy may differ significantly from conclusions that might be drawn solely from the level of its risk-based capital ratio.

The risk-based capital guidelines establish *minimum* ratios of capital to weighted-risk assets. In light of the considerations just dis-

¹ Supervisory ratios that relate capital to total assets for state member banks are outlined in appendix B to part 225 of the Federal Reserve's Regulation Y, 12 CFR 225 (page 55).

² The risk-based capital measure is based upon a framework developed jointly by supervisory authorities from the countries represented on the Basle Committee on Banking Regulations and Supervisory Practices (Basle Supervisors' Committee) and endorsed by the Group of Ten Central Bank Governors. The framework is described in a paper prepared by the BSC entitled "International Convergence of Capital Measurement," July 1988.

³ Banks will initially be expected to utilize period-end amounts in calculating their risk-based capital ratios. When necessary and appropriate, ratios based on average balances may also be calculated on a case-by-case basis. Moreover, to the extent banks have data on average balances that can be used to calculate risk-based ratios, the Federal Reserve will take such data into account.

cussed, banks generally are expected to operate well above the minimum risk-based ratios. In particular, banks contemplating significant expansion proposals are expected to maintain strong capital levels substantially above the minimum ratios and should not allow significant diminution of financial strength below these strong levels to fund their expansion plans. Institutions with high or inordinate levels of risk are also expected to operate well above minimum capital standards. In all cases, institutions should hold capital commensurate with the level and nature of the risks to which they are exposed. Banks that do not meet the minimum risk-based standard, or that are otherwise considered to be inadequately capitalized, are expected to develop and implement plans acceptable to the Federal Reserve for achieving adequate levels of capital within a reasonable period of time.

The Board will monitor the implementation and effect of these guidelines in relation to domestic and international developments in the banking industry. When necessary and appropriate, the Board will consider the need to modify the guidelines in light of any significant changes in the economy, financial markets, banking practices, or other relevant factors.

II. Definition of Qualifying Capital for the Risk-Based Capital Ratio

A bank's qualifying total capital consists of two types of capital components: "core capital elements" (comprising tier 1 capital) and "supplementary capital elements" (comprising tier 2 capital). These capital elements and the various limits, restrictions, and deductions to which they are subject, are discussed below and are set forth in attachment II.

To qualify as an element of tier 1 or tier 2 capital, a capital instrument may not contain or be covered by any covenants, terms, or restrictions that are inconsistent with safe and sound banking practices.

Redemptions of permanent equity or other capital instruments before stated maturity could have a significant impact on a bank's overall capital structure. Consequently, a bank considering such a step should consult

with the Federal Reserve before redeeming any equity or debt capital instrument (prior to maturity) if such redemption could have a material effect on the level or composition of the institution's capital base.⁴

A. The Components of Qualifying Capital

1. *Core capital elements (tier 1 capital).* The tier 1 component of a bank's qualifying capital must represent at least 50 percent of qualifying total capital and may consist of the following items that are defined as core capital elements:

- i. common stockholders' equity
- ii. qualifying noncumulative perpetual preferred stock (including related surplus)
- iii. minority interest in the equity accounts of consolidated subsidiaries

Tier 1 capital is generally defined as the sum of the core capital elements less goodwill.⁵ (See section II(B) below for a more detailed discussion of the treatment of goodwill, including an explanation of certain limited grandfathering arrangements.)

a. *Common stockholders' equity.* Common stockholders' equity includes common stock; related surplus; and retained earnings, including capital reserves and adjustments for the cumulative effect of foreign currency translation, net of any treasury stock.

b. *Perpetual preferred stock.* Perpetual preferred stock is defined as preferred stock that does not have a maturity date, that cannot be redeemed at the option of the holder of the instrument, and that has no other provisions that will require future redemption of the issue. In general, preferred stock will qualify for inclusion in capital only if it can absorb losses while the issuer operates as a going concern (a fundamental characteristic of equity capital) and only if

⁴ Consultation would not ordinarily be necessary if an instrument were redeemed with the proceeds of, or replaced by, a like amount of a similar or higher-quality capital instrument and the organization's capital position is considered fully adequate by the Federal Reserve.

⁵ During the transition period and subject to certain limitations set forth in section IV below, tier 1 capital may also include items defined as supplementary capital elements.

the issuer has the ability and legal right to defer or eliminate preferred dividends.

The only form of perpetual preferred stock that state member banks may consider as an element of tier 1 capital is noncumulative perpetual preferred. While the guidelines allow for the inclusion of noncumulative perpetual preferred stock in tier 1, it is desirable from a supervisory standpoint that voting common stockholders' equity remain the dominant form of tier 1 capital. Thus, state member banks should avoid overreliance on preferred stock or nonvoting equity elements within tier 1.⁶

Perpetual preferred stock in which the dividend is reset periodically based, in whole or in part, upon the bank's current credit standing (that is, auction rate perpetual preferred stock, including so-called Dutch auction, money market, and remarkable preferred) will not qualify for inclusion in tier 1 capital.⁷ Such instruments, however, qualify for inclusion in tier 2 capital.

c. Minority interest in equity accounts of consolidated subsidiaries. This element is included in tier 1 because, as a general rule, it represents equity that is freely available to absorb losses in operating subsidiaries. While not subject to an explicit sublimit within tier 1, banks are expected to avoid using minority interest in the equity accounts of consolidated subsidiaries as an avenue for introducing into their capital structures elements that might not otherwise qualify as tier 1 capital or that would, in effect, result in an excessive reliance on preferred stock within tier 1.

2. *Supplementary capital elements (tier 2 capital).* The tier 2 component of a bank's qualifying total capital may consist of the following items that are defined as supplementary capital elements:

- i. allowance for loan and lease losses (subject to limitations discussed below)
- ii. perpetual preferred stock and related surplus (subject to conditions discussed below)
- iii. hybrid capital instruments (as defined below) and mandatory convertible debt securities
- iv. term subordinated debt and intermediate-term preferred stock, including related surplus (subject to limitations discussed below)

The maximum amount of tier 2 capital that may be included in a bank's qualifying total capital is limited to 100 percent of tier 1 capital (net of goodwill).

The elements of supplementary capital are discussed in greater detail below.⁸

a. *Allowance for loan and lease losses.* Allowances for loan and lease losses are reserves that have been established through a charge against earnings to absorb future losses on loans or lease financing receivables. Allowances for loan and lease losses exclude "allocated transfer risk reserves,"⁹ and reserves created against identified losses.

During the transition period, the risk-based capital guidelines provide for reducing the amount of this allowance that may be included in an institution's total capital. Initially, it is unlimited. However, by year-end 1990, the amount of the allowance for loan and lease losses that will qualify as capital will be limited to 1.5 percent of an institution's weighted risk assets. By the

⁶ The Federal Reserve's capital guidelines for bank holding companies limit the amount of perpetual preferred stock that may be included in tier 1 to 25 percent of tier 1. (See 12 CFR 225, appendix A, page 27.)

⁷ Adjustable-rate noncumulative perpetual preferred stock (that is, perpetual preferred stock in which the dividend rate is not affected by the issuer's credit standing or financial condition but is adjusted periodically according to a formula based solely on general market interest rates) may be included in tier 1.

⁸ The Basle capital framework also provides for the inclusion of "undisclosed reserves" in tier 2. As defined in the framework, undisclosed reserves represent accumulated after-tax retained earnings that are not disclosed on the balance sheet of a bank. Apart from the fact that these reserves are not disclosed publicly, they are essentially of the same quality and character as retained earnings, and, to be included in capital, such reserves must be accepted by the bank's home supervisor. Although such undisclosed reserves are common in some countries, under generally accepted accounting principles (GAAP) and long-standing supervisory practice, these types of reserves are not recognized for state member banks.

⁹ Allocated transfer risk reserves are reserves that have been established in accordance with section 905(a) of the International Lending Supervision Act of 1983, 12 USC 3904(a), against certain assets whose value U.S. supervisory authorities have found to be significantly impaired by protracted transfer risk problems.

end of the transition period, the amount of the allowance qualifying for inclusion in tier 2 capital may not exceed 1.25 percent of weighted risk assets.¹⁰

b. *Perpetual preferred stock.* Perpetual preferred stock, as noted above, is defined as preferred stock that has no maturity date, that cannot be redeemed at the option of the holder, and that has no other provisions that will require future redemption of the issue. Such instruments are eligible for inclusion in tier 2 capital without limit.¹¹

c. *Hybrid capital instruments and mandatory convertible debt securities.* Hybrid capital instruments include instruments that are essentially permanent in nature and that have certain characteristics of both equity and debt. Such instruments may be included in tier 2 without limit. The general criteria hybrid capital instruments must meet in order to qualify for inclusion in tier 2 capital are listed below:

1. The instrument must be unsecured; fully paid up; and subordinated to general creditors and must also be subordinated to claims of depositors.
2. The instrument must not be redeemable at the option of the holder prior to maturity, except with the prior approval of the Federal Reserve. (Consistent with the Board's criteria for perpetual debt and mandatory convertible securities, this requirement implies that holders of such instruments may not accelerate the payment of principal except in the event of bankruptcy, insolvency, or reorganization.)

¹⁰ The amount of the allowance for loan and lease losses that may be included in tier 2 capital is based on a percentage of gross weighted-risk assets. A bank may deduct reserves for loan and lease losses in excess of the amount permitted to be included in tier 2 capital, as well as allocated transfer risk reserves, from the sum of gross weighted-risk assets and use the resulting net sum of weighted-risk assets in computing the denominator of the risk-based capital ratio.

¹¹ Long-term preferred stock with an original maturity of 20 years or more (including related surplus) will also qualify in this category as an element of tier 2. If the holder of such an instrument has a right to require the issuer to redeem, repay, or repurchase the instrument prior to the original stated maturity, maturity would be defined, for risk-based capital purposes, as the earliest possible date on which the holder can put the instrument back to the issuing bank.

3. The instrument must be available to participate in losses while the issuer is operating as a going concern. (Term subordinated debt would not meet this requirement.) To satisfy this requirement, the instrument must convert to common or perpetual preferred stock in the event that the accumulated losses exceed the sum of the retained earnings and capital surplus accounts of the issuer.
4. The instrument must provide the option for the issuer to defer interest payments if (a) the issuer does not report a profit in the preceding annual period (defined as combined profits for the most recent four quarters) and (b) the issuer eliminates cash dividends on common and preferred stock.

Mandatory convertible debt securities in the form of equity contract notes that meet the criteria set forth in 12 CFR 225, appendix B (page 55) also qualify as unlimited elements of tier 2 capital. In accordance with that appendix, equity commitment notes issued prior to May 15, 1985, also qualify for inclusion in tier 2.

d. *Subordinated debt and intermediate-term preferred stock.* The aggregate amount of term subordinated debt (excluding mandatory convertible debt) and intermediate-term preferred stock that may be treated as supplementary capital is limited to 50 percent of tier 1 capital (net of goodwill). Amounts in excess of these limits may be issued and, while not included in the ratio calculation, will be taken into account in the overall assessment of a bank's funding and financial condition.

Subordinated debt and intermediate-term preferred stock must have an original weighted average maturity of at least five years to qualify as supplementary capital. (If the holder has the option to require the issuer to redeem, repay, or repurchase the instrument prior to the original stated maturity, maturity would be defined, for risk-based capital purposes, as the earliest possible date on which the holder can put the instrument back to the issuing bank.)

In the case of subordinated debt, the instrument must be unsecured and must

clearly state on its face that it is not a deposit and is not insured by a federal agency. To qualify as capital in banks, debt must be subordinated to general creditors and claims of depositors. Consistent with current regulatory requirements, if a state member bank wishes to redeem subordinated debt before the stated maturity, it must receive prior approval of the Federal Reserve.

e. *Discount of supplementary capital instruments.* As a limited-life capital instrument approaches maturity it begins to take on characteristics of a short-term obligation. For this reason, the outstanding amount of term subordinated debt and any long- or intermediate-life, or term, preferred stock eligible for inclusion in tier 2 is reduced, or discounted, as these instruments approach maturity: one-fifth of the original amount, less any redemptions, is excluded each year during the instrument's last five years before maturity.¹²

f. *Revaluation reserves.* Such reserves reflect the formal balance sheet restatement or revaluation for capital purposes of asset carrying values to reflect current market values. In the United States, banks, for the most part, follow GAAP when preparing their financial statements, and GAAP generally does not permit the use of market-value accounting. For this and other reasons, the federal banking agencies generally have not included unrealized asset values in capital ratio calculations, although they have long taken such values into account as a separate factor in assessing the overall financial strength of a bank.

Consistent with long-standing supervisory practice, the excess of market values over book values for assets held by state member

banks will generally not be recognized in supplementary capital or in the calculation of the risk-based capital ratio. However, all banks are encouraged to disclose their equivalent of premises (building) and equity revaluation reserves. Such values will be taken into account as additional considerations in assessing overall capital strength and financial condition.

B. Deductions from Capital and Other Adjustments

Certain assets are deducted from a bank's capital for the purpose of calculating the risk-based capital ratio.¹³ These assets include—

- i. goodwill—deducted from the sum of core capital elements
- ii. investments in banking and finance subsidiaries that are not consolidated for accounting or supervisory purposes and, on a case-by-case basis, investments in other designated subsidiaries or associated companies at the discretion of the Federal Reserve—deducted from total capital components
- iii. reciprocal holdings of capital instruments of banking organizations—deducted from total capital components

1. Goodwill and other intangible assets

a. *Goodwill.* Goodwill is an intangible asset that represents the excess of the purchase price over the fair market value of identifiable assets acquired less liabilities assumed in acquisitions accounted for under the purchase method of accounting. State member banks generally have not been allowed to include goodwill in regulatory capital under current supervisory policies. Consistent with this policy, all goodwill in state member banks will be deducted from tier 1 capital.¹⁴

¹² For example, outstanding amounts of these instruments that count as supplementary capital include 100 percent of the outstanding amounts with remaining maturities of more than five years; 80 percent of outstanding amounts with remaining maturities of four to five years; 60 percent of outstanding amounts with remaining maturities of three to four years; 40 percent of outstanding amounts with remaining maturities of two to three years; 20 percent of outstanding amounts with remaining maturities of one to two years; and 0 percent of outstanding amounts with remaining maturities of less than one year. Such instruments with a remaining maturity of less than one year are excluded from tier 2 capital.

¹³ Any assets deducted from capital in computing the numerator of the ratio are not included in weighted-risk assets in computing the denominator of the ratio.

¹⁴ An exception is made for those state member banks that have acquired goodwill in connection with supervisory mergers with troubled or failed depository institutions and that were given explicit authority to include such goodwill in capital under the then-existing capital policy. Consistent with this approach, state member banks will be allowed to include such goodwill in tier 1 capital for risk-based capital purposes.

b. *Other intangible assets.* The Federal Reserve is not proposing, as a matter of general policy, to deduct automatically any other intangible assets from the capital of state member banks. The Federal Reserve, however, will continue to monitor closely the level and quality of other intangible assets—including purchased mortgage-servicing rights, leaseholds, and core deposit value—and take them into account in assessing the capital adequacy and overall asset quality of banks.

Generally, banks should review all intangible assets at least quarterly and, if necessary, make appropriate reductions in their carrying values. In addition, in order to conform with prudent banking practice, an institution should reassess such values during its annual audit. Banks should use appropriate amortization methods and assign prudent amortization periods for intangible assets. Examiners will review the carrying value of these assets, together with supporting documentation, as well as the appropriateness of including particular intangible assets in a bank's capital calculation. In making such evaluations, examiners will consider a number of factors, including—

1. the reliability and predictability of any cash flows associated with the asset and the degree of certainty that can be achieved in periodically determining the asset's useful life and value;
2. the existence of an active and liquid market for the asset; and
3. the feasibility of selling the asset apart from the bank or from the bulk of its assets.

While all intangible assets will be monitored, intangible assets (other than goodwill) in excess of 25 percent of tier 1 capital (which is defined net of goodwill) will be subject to particularly close scrutiny, both through the examination process and by other appropriate means. Whenever necessary—in particular, when assessing applications to expand or to engage in other activities that could entail unusual or higher-than-normal risks—the Board will, on a case-by-case basis, continue to consider the level of an individual bank's tangible

capital ratios (after deducting all intangible assets), together with the quality and value of the bank's tangible and intangible assets, in making an overall assessment of capital adequacy.

Consistent with long-standing Board policy, banks experiencing substantial growth, whether internally or by acquisition, are expected to maintain strong capital positions substantially above minimum supervisory levels, without significant reliance on intangible assets.

2. *Investments in certain subsidiaries.* The aggregate amount of investments in banking or finance subsidiaries¹⁵ whose financial statements are not consolidated for accounting or bank regulatory reporting purposes will be deducted from a bank's total capital components.¹⁶ Generally, investments for this purpose are defined as equity and debt capital investments and any other instruments that are deemed to be capital in the particular subsidiary.

Advances (that is, loans, extensions of credit, guarantees, commitments, or any other forms of credit exposure) to the subsidiary that are not deemed to be capital will generally not be deducted from a bank's capital. Rather, such advances generally will be included in the bank's consolidated assets and be assigned to the 100 percent risk category, unless such obligations are backed by recognized collateral or guarantees, in which case they will be assigned to the risk category appropriate to such collateral or guarantees. These advances may, however, also be deducted from the bank's capital if, in the judgment of the Federal Reserve, the risks stemming from such advances are comparable to the risks associated with capital investments or if the advances involve other risk factors that warrant such an adjustment to capital for su-

¹⁵ For this purpose, a banking and finance subsidiary generally is defined as any company engaged in banking or finance in which the parent institution holds directly or indirectly more than 50 percent of the outstanding voting stock, or which is otherwise controlled or capable of being controlled by the parent institution.

¹⁶ An exception to this deduction would be made in the case of shares acquired in the regular course of securing or collecting a debt previously contracted in good faith. The requirements for consolidation are spelled out in the instructions to the commercial bank Consolidated Reports of Condition and Income (call report).

pervisory purposes. These other factors could include, for example, the absence of collateral support.

Inasmuch as the assets of unconsolidated banking and finance subsidiaries are not fully reflected in a bank's consolidated total assets, such assets may be viewed as the equivalent of off-balance-sheet exposures since the operations of an unconsolidated subsidiary could expose the bank to considerable risk. For this reason, it is generally appropriate to view the capital resources invested in these unconsolidated entities as primarily supporting the risks inherent in these off-balance-sheet assets, and not generally available to support risks or absorb losses elsewhere in the bank.

The Federal Reserve may, on a case-by-case basis, also deduct from a bank's capital, investments in certain other subsidiaries in order to determine if the consolidated bank meets minimum supervisory capital requirements without reliance on the resources invested in such subsidiaries.

The Federal Reserve will not automatically deduct investments in other unconsolidated subsidiaries or investments in joint ventures and associated companies.¹⁷ Nonetheless, the resources invested in these entities, like investments in unconsolidated banking and finance subsidiaries, support assets not consolidated with the rest of the bank's activities and, therefore, may not be generally available to support additional leverage or absorb losses elsewhere in the bank. Moreover, experience has shown that banks stand behind the losses of affiliated institutions, such as joint ventures and associated companies, in order to protect the reputation of the organization as a whole. In some cases, this has led to losses that have exceeded the investments in such organizations.

For this reason, the Federal Reserve will monitor the level and nature of such investments for individual banks and on a case-by-case basis may, for risk-based capital purposes, deduct such investments from total capital components, apply an appropriate risk-

weighted capital charge against the bank's proportionate share of the assets of its associated companies, require a line-by-line consolidation of the entity (in the event that the bank's control over the entity makes it the functional equivalent of a subsidiary), or otherwise require the bank to operate with a risk-based capital ratio above the minimum.

In considering the appropriateness of such adjustments or actions, the Federal Reserve will generally take into account whether—

1. the bank has significant influence over the financial or managerial policies or operations of the subsidiary, joint venture, or associated company;
2. the bank is the largest investor in the affiliated company; or
3. other circumstances prevail that appear to closely tie the activities of the affiliated company to the bank.

3. *Reciprocal holdings of banking organizations' capital instruments.* Reciprocal holdings of banking organizations' capital instruments (that is, instruments that qualify as tier 1 or tier 2 capital)¹⁸ will be deducted from a bank's total capital components for the purpose of determining the numerator of the risk-based capital ratio.

Reciprocal holdings are cross-holdings resulting from formal or informal arrangements in which two or more banking organizations swap, exchange, or otherwise agree to hold each other's capital instruments. Generally, deductions will be limited to intentional cross-holdings. At present, the Board does not intend to require banks to deduct nonreciprocal holdings of such capital instruments.^{19, 20}

¹⁸ See 12 CFR 225, appendix A (page 27) for instruments that qualify as tier 1 and tier 2 capital for bank holding companies.

¹⁹ Deductions of holdings of capital securities also would not be made in the case of interstate "stake out" investments that comply with the Board's policy statement on nonvoting equity investments, 12 CFR 225.143 (*Federal Reserve Regulatory Service* 4-172.1; 1982 *Federal Reserve Bulletin* 413.). In addition, holdings of capital instruments issued by other banking organizations but taken in satisfaction of debts previously contracted would be exempt from any deduction from capital.

²⁰ The Board intends to monitor nonreciprocal holdings of other banking organizations' capital instruments and to provide information on such holdings to the Basle Supervisors' Committee as called for under the Basle capital framework.

¹⁷ The definition of such entities is contained in the instructions to the commercial bank call report. Under regulatory reporting procedures, associated companies and joint ventures generally are defined as companies in which the bank owns 20 to 50 percent of the voting stock.

III. Procedures for Computing Weighted-Risk Assets and Off-Balance-Sheet Items

A. Procedures

Assets and credit-equivalent amounts of off-balance-sheet items of state member banks are assigned to one of several broad risk categories, according to the obligor, or, if relevant, the guarantor or the nature of the collateral. The aggregate dollar value of the amount in each category is then multiplied by the risk weight associated with that category. The resulting weighted values from each of the risk categories are added together, and this sum is the bank's total weighted-risk assets that comprise the denominator of the risk-based capital ratio. Attachment I provides a sample calculation.

Risk weights for all off-balance-sheet items are determined by a two-step process. First, the "credit-equivalent amount" of off-balance-sheet items is determined, in most cases by multiplying the off-balance-sheet item by a credit conversion factor. Second, the credit-equivalent amount is treated like any balance-sheet asset and generally is assigned to the appropriate risk category according to the obligor, or, if relevant, the guarantor or the nature of the collateral.

In general, if a particular item qualifies for placement in more than one risk category, it is assigned to the category that has the lowest risk weight. A holding of a U.S. municipal revenue bond that is fully guaranteed by a U.S. bank, for example, would be assigned the 20 percent risk weight appropriate to claims guaranteed by U.S. banks, rather than the 50 percent risk weight appropriate to U.S. municipal revenue bonds.²¹

²¹ An investment in shares of a fund whose portfolio consists solely of various securities or money market instruments that, if held separately, would be assigned to different risk categories, is generally assigned to the risk category appropriate to the highest risk-weighted security or instrument that the fund is permitted to hold in accordance with its stated investment objectives. However, in no case will indirect holdings through shares in such funds be assigned to the zero percent risk category. For example, if a fund is permitted to hold U.S. Treasuries and commercial paper, shares in that fund would generally be assigned the 100 percent risk weight appropriate to commercial paper, regardless of the actual composition of the fund's investments

The terms "claims" and "securities" used in the context of the discussion of risk weights, unless otherwise specified, refer to loans or debt obligations of the entity on whom the claim is held. Assets in the form of stock or equity holdings in commercial or financial firms are assigned to the 100 percent risk category, unless some other treatment is explicitly permitted.

B. Collateral, Guarantees, and Other Considerations

1. *Collateral.* The only forms of collateral that are formally recognized by the risk-based capital framework are cash on deposit in the bank; securities issued or guaranteed by the central governments of the OECD-based group of countries,²² U.S. government agencies, or U.S. government-sponsored agencies; and securities issued by multilateral lending institutions or regional development banks. Claims fully secured by such collateral are assigned to the 20 percent risk-weight category.

The extent to which qualifying securities are recognized as collateral is determined by

at any particular time. Shares in a fund that may invest only in U.S. Treasury securities would generally be assigned to the 20 percent risk category. If, in order to maintain a necessary degree of short-term liquidity, a fund is permitted to hold an insignificant amount of its assets in short-term, highly liquid securities of superior credit quality that do not qualify for a preferential risk weight, such securities will generally not be taken into account in determining the risk category into which the bank's holding in the overall fund should be assigned. Regardless of the composition of the fund's securities, if the fund engages in any activities that appear speculative in nature (for example, use of futures, forwards, or option contracts for purposes other than to reduce interest-rate risk) or has any other characteristics that are inconsistent with the preferential risk weighting assigned to the fund's investments, holdings in the fund will be assigned to the 100 percent risk category. During the examination process, the treatment of shares in such funds that are assigned to a lower risk weight will be subject to examiner review to ensure that they have been assigned an appropriate risk weight.

²² The OECD-based group of countries comprises all full members of the Organization for Economic Cooperation and Development (OECD), as well as countries that have concluded special lending arrangements with the International Monetary Fund (IMF) associated with the Fund's General Arrangements to Borrow. The OECD includes the following countries: Australia, Austria, Belgium, Canada, Denmark, the Federal Republic of Germany, Finland, France, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. Saudi Arabia has concluded special lending arrangements with the IMF associated with the Fund's General Arrangements to Borrow.

their current market value. If a claim is only partially secured, that is, the market value of the pledged securities is less than the face amount of a balance-sheet asset or an off-balance-sheet item, the portion that is covered by the market value of the qualifying collateral is assigned to the 20 percent risk category, and the portion of the claim that is not covered by collateral in the form of cash or a qualifying security is assigned to the risk category appropriate to the obligor or, if relevant, the guarantor. For example, to the extent that a claim on a private-sector obligor is collateralized by the current market value of U.S. government securities, it would be placed in the 20 percent risk category, and the balance would be assigned to the 100 percent risk category.

2. *Guarantees.* Guarantees of the OECD and non-OECD central governments, U.S. government agencies, U.S. government-sponsored agencies, state and local governments of the OECD-based group of countries, multilateral lending institutions and regional development banks, U.S. depository institutions, and foreign banks are also recognized. If a claim is partially guaranteed, that is, coverage of the guarantee is less than the face amount of a balance-sheet asset or an off-balance-sheet item, the portion that is not fully covered by the guarantee is assigned to the risk category appropriate to the obligor or, if relevant, to any collateral. The face amount of a claim covered by two types of guarantees that have different risk weights, such as a U.S. government guarantee and a state guarantee, is to be apportioned between the two risk categories appropriate to the guarantors.

The existence of other forms of collateral or guarantees that the risk-based capital framework does not formally recognize may be taken into consideration in evaluating the risks inherent in a bank's loan portfolio—which, in turn, would affect the overall supervisory assessment of the bank's capital adequacy.

3. *Mortgage-backed securities.* Mortgage-backed securities, including pass-throughs and collateralized mortgage obligations (but not stripped mortgage-backed securities), that are *issued* or *guaranteed* by a U.S. government agency or U.S. government-sponsored agency

are assigned to the risk-weight category appropriate to the issuer or guarantor. Generally, a privately issued mortgage-backed security meeting certain criteria set forth in the accompanying footnote²³ is treated as essentially an indirect holding of the underlying assets, and assigned to the same risk category as the underlying assets, but in no case to the zero percent risk category. Privately issued mortgage-backed securities whose structures do not qualify them to be regarded as indirect holdings of the underlying assets are assigned to the 100 percent risk category. During the examination process, privately issued mortgage-backed securities that are assigned to a lower risk-weight category will be subject to examiner review to ensure that they meet the appropriate criteria.

While the risk category to which mortgage-backed securities are assigned will generally be based upon the issuer or guarantor or, in the case of privately issued mortgage-backed securities, the assets underlying the security, any class of a mortgage-backed security that can absorb more than its pro rata share of loss without the whole issue being in default (for example, a so-called subordinated class or residual interest), is assigned to the 100 percent risk category. Furthermore, all stripped mortgage-backed securities, including interest-only strips (IOs), principal-only strips (POs), and similar instruments are also assigned to the

²³ A privately issued mortgage-backed security may be treated as an indirect holding of the underlying assets provided that (1) the underlying assets are held by an independent trustee and the trustee has a first priority, perfected security interest in the underlying assets on behalf of the holders of the security; (2) either the holder of the security has an undivided pro rata ownership interest in the underlying mortgage assets or the trust or single-purpose entity (or conduit) that issues the security has no liabilities unrelated to the issued securities; (3) the security is structured such that the cash flow from the underlying assets in all cases fully meets the cash flow requirements of the security without undue reliance on any reinvestment income; and (4) there is no material reinvestment risk associated with any funds awaiting distribution to the holders of the security. In addition, if the underlying assets of a mortgage-backed security are composed of more than one type of asset, for example, U.S. government-sponsored agency securities and privately issued pass-through securities that qualify for the 50 percent risk category, the entire mortgage-backed security is generally assigned to the category appropriate to the highest risk-weighted asset underlying the issue. Thus, in this example, the security would receive the 50 percent risk weight appropriate to the privately issued pass-through securities.

100 percent risk-weight category, regardless of the issuer or guarantor.

4. *Maturity.* Maturity is generally not a factor in assigning items to risk categories with the exception of claims on non-OECD banks, commitments, and interest-rate and foreign-exchange-rate contracts. Except for commitments, short-term is defined as one year or less *remaining* maturity and long-term is defined as over one year *remaining* maturity. In the case of commitments, short-term is defined as one year or less *original* maturity and long-term is defined as over one year *original* maturity.²⁴

C. Risk Weights

Attachment III contains a listing of the risk categories, a summary of the types of assets assigned to each category and the weight associated with each category, that is, 0 percent, 20 percent, 50 percent, and 100 percent. A brief explanation of the components of each category follows.

1. *Category 1: zero percent.* This category includes cash (domestic and foreign) owned and held in all offices of the bank or in transit and gold bullion held in the bank's own vaults or in another bank's vaults on an allocated basis, to the extent it is offset by gold bullion liabilities.²⁵ The category also includes all direct claims (including securities, loans, and leases) on, and the portions of claims that are directly and unconditionally guaranteed by, the central governments²⁶ of the OECD coun-

tries and U.S. government agencies,²⁷ as well as all direct local currency claims on, and the portions of local currency claims that are directly and unconditionally guaranteed by, the central governments of non-OECD countries, to the extent that the bank has liabilities booked in that currency. A claim is not considered to be unconditionally guaranteed by a central government if the validity of the guarantee is dependent upon some affirmative action by the holder or a third party. Generally, securities guaranteed by the U.S. government or its agencies that are actively traded in financial markets, such as GNMA securities, are considered to be unconditionally guaranteed.

2. *Category 2: 20 percent.* This category includes cash items in the process of collection, both foreign and domestic; short-term claims (including demand deposits) on, and the portions of short-term claims that are guaranteed²⁸ by, U.S. depository institutions²⁹ and foreign banks;³⁰ and long-term

as central governments of countries that do not belong to the OECD-based group of countries.

²⁴ A U.S. government agency is defined as an instrumentality of the U.S. government whose obligations are fully and explicitly guaranteed as to the timely payment of principal and interest by the full faith and credit of the U.S. government. Such agencies include the Government National Mortgage Association (GNMA), the Veterans Administration (VA), the Federal Housing Administration (FHA), the Export-Import Bank (Exim Bank), the Overseas Private Investment Corporation (OPIC), the Commodity Credit Corporation (CCC), and the Small Business Administration (SBA).

²⁵ Claims guaranteed by U.S. depository institutions and foreign banks include risk participations in both banker's acceptances and standby letters of credit, as well as participations in commitments, that are conveyed to other U.S. depository institutions or foreign banks.

²⁶ U.S. depository institutions are defined to include branches (foreign and domestic) of federally insured banks and depository institutions chartered and headquartered in the 50 states of the United States, the District of Columbia, Puerto Rico, and U.S. territories and possessions. The definition encompasses banks, mutual or stock savings banks, savings or building and loan associations, cooperative banks, credit unions, and international banking facilities of domestic banks. U.S.-chartered depository institutions owned by foreigners are also included in the definition. However, branches and agencies of foreign banks located in the U.S., as well as all bank holding companies, are excluded.

²⁷ Foreign banks are distinguished as either OECD banks or non-OECD banks. OECD banks include banks and their branches (foreign and domestic) organized under the laws of countries (other than the U.S.) that belong to the OECD-based group of countries. Non-OECD banks in-

Continued

²⁴ Through year-end 1992, remaining, rather than original, maturity may be used for determining the maturity of commitments.

²⁵ All other holdings of bullion are assigned to the 100 percent risk category.

²⁶ A central government is defined to include departments and ministries, including the central bank, of the central government. The U.S. central bank includes the 12 Federal Reserve Banks, and the stock held in these banks as a condition of membership is assigned to the zero percent risk category. The definition of central government does not include state, provincial, or local governments; or commercial enterprises owned by the central government. In addition, it does not include local government entities or commercial enterprises whose obligations are guaranteed by the central government, although any claims on such entities guaranteed by central governments are placed in the same general risk category as other claims guaranteed by central governments. OECD central governments are defined as central governments of the OECD-based group of countries; non-OECD central governments are defined

claims on, and the portions of long-term claims that are guaranteed by, U.S. depository institutions and OECD banks.³¹

This category also includes the portions of claims that are conditionally guaranteed by OECD central governments and U.S. government agencies, as well as the portions of local currency claims that are conditionally guaranteed by non-OECD central governments, to the extent that the bank has liabilities booked in that currency. In addition, this category also includes claims on, and the portions of claims that are guaranteed by, U.S. government-sponsored³² agencies and claims on, and the portions of claims guaranteed by, the International Bank for Reconstruction and Development (World Bank), the Inter-American Development Bank, the Asian Development Bank, the African Development Bank, the European Investment Bank, and other multilateral lending institutions or regional development banks in which the U.S. government is a shareholder or contributing member. General obligation claims on, or portions of claims guaranteed by the full faith and credit of, states or other political subdivi-

sions of the United States or other countries of the OECD-based group are also assigned to this category.³³

This category also includes the portions of claims (including repurchase agreements) collateralized by cash on deposit in the bank; by securities issued or guaranteed by OECD central governments, U.S. government agencies, or U.S. government-sponsored agencies; or by securities issued by multilateral lending institutions or regional development banks in which the U.S. government is a shareholder or contributing member.

3. *Category 3: 50 percent.* This category includes loans fully secured by first liens³⁴ on one- to four-family residential properties,³⁵ either owner-occupied or rented, provided that such loans have been made in accordance with prudent underwriting standards, including a conservative loan-to-value ratio,³⁶ are performing in accordance with their original terms; and are not 90 days or more past due or carried in nonaccrual status.³⁷ Also included in this category are privately issued mortgage-backed securities provided that (1) the structure of the security meets the criteria described in section III(B)(3) above; (2) if the security is backed by a pool of conventional mortgages, *each* underlying mortgage meets the criteria described above in this section for eligibility for the 50 percent risk-weight category at the time the pool is originated; and (3) if the security is backed by privately issued mortgage-backed securities, *each* underlying security qualifies for the 50 percent risk

Continued

clude banks and their branches (foreign and domestic) organized under the laws of countries that do not belong to the OECD-based group of countries. For this purpose, a bank is defined as an institution that engages in the business of banking; is recognized as a bank by the bank supervisory or monetary authorities of the country of its organization or principal banking operations; receives deposits to a substantial extent in the regular course of business; and has the power to accept demand deposits. Claims on, and the portions of claims that are guaranteed by, a non-OECD central bank are treated as claims on, or guaranteed by, a non-OECD bank, except for local-currency claims on, and the portions of local-currency claims that are guaranteed by, a non-OECD central bank that are funded in local-currency liabilities. The latter claims are assigned to the zero percent risk category.

³¹ Long-term claims on, or guaranteed by, non-OECD banks and all claims on bank holding companies are assigned to the 100 percent risk category, as are holdings of bank-issued securities that qualify as capital of the issuing banks.

³² For this purpose, U.S. government-sponsored agencies are defined as agencies originally established or chartered by the federal government to serve public purposes specified by the U.S. Congress but whose obligations are *not explicitly* guaranteed by the full faith and credit of the U.S. government. These agencies include the Federal Home Loan Mortgage Corporation (FHLMC), the Federal National Mortgage Association (FNMA), the Farm Credit System, the Federal Home Loan Bank System, and the Student Loan Marketing Association (SLMA). Claims on U.S. government-sponsored agencies include capital stock in a Federal Home Loan Bank that is held as a condition of membership in that Bank.

³³ Claims on, or guaranteed by, states or other political subdivisions of countries that do not belong to the OECD-based group of countries are placed in the 100 percent risk category.

³⁴ If a bank holds the first and junior lien(s) on a residential property and no other party holds an intervening lien, the transaction is treated as a single loan secured by a first lien for the purpose of determining the loan-to-value ratio.

³⁵ The types of properties that qualify as one- to four-family residences are listed in the instructions to the commercial bank call report.

³⁶ The loan-to-value ratio is based upon the most current appraised value of the property. All appraisals must be made in a manner consistent with the federal banking agencies' real estate appraisal guidelines and with the bank's own appraisal guidelines.

³⁷ Residential property loans that do not meet all the specified criteria or that are made for the purpose of speculative property development are placed in the 100 percent risk category.

category. Privately issued mortgage-backed securities that do not meet these criteria or that do not qualify for a lower risk weight are generally assigned to the 100 percent risk-weight category.

Also assigned to this category are *revenue* (nongeneral obligation) bonds or similar obligations, including loans and leases, that are obligations of states or other political subdivisions of the U.S. (for example, municipal revenue bonds) or other countries of the OECD-based group, but for which the government entity is committed to repay the debt with revenues from the specific projects financed, rather than from general tax funds.

Credit-equivalent amounts of interest-rate and foreign-exchange-rate contracts involving standard risk obligors (that is, obligors whose loans or debt securities would be assigned to the 100 percent risk category) are included in the 50 percent category, unless they are backed by collateral or guarantees that allow them to be placed in a lower risk category.

4. Category 4: 100 percent. All assets not included in the categories above are assigned to this category, which comprises standard risk assets. The bulk of the assets typically found in a loan portfolio would be assigned to the 100 percent category.

This category includes long-term claims on, or guaranteed by, non-OECD banks, and all claims on non-OECD central governments that entail some degree of transfer risk.³⁸ This category also includes all claims on foreign and domestic private-sector obligors not included in the categories above (including loans to nondepository financial institutions and bank holding companies); claims on commercial firms owned by the public sector; customer liabilities to the bank on acceptances outstanding involving standard risk claims;³⁹

³⁸ Such assets include all nonlocal currency claims on, or guaranteed by, non-OECD central governments and those portions of local currency claims on, or guaranteed by, non-OECD central governments that exceed the local currency liabilities held by the bank.

³⁹ Customer liabilities on acceptances outstanding involving nonstandard risk claims, such as claims on U.S. depository institutions, are assigned to the risk category appropriate to the identity of the obligor or, if relevant, the nature of the collateral or guarantees backing the claims. Portions of acceptances conveyed as risk participations to U.S. depository institutions or foreign banks are assigned to the 20 percent risk category appropriate to short-term

investments in fixed assets, premises, and other real estate owned; common and preferred stock of corporations, including stock acquired for debts previously contracted; commercial and consumer loans (except those assigned to lower risk categories due to recognized guarantees or collateral and loans for residential property that qualify for a lower risk weight); mortgage-backed securities that do not meet criteria for assignment to a lower risk weight (including any classes of mortgage-backed securities that can absorb more than their pro rata share of loss without the whole issue being in default); and all stripped mortgage-backed and similar securities.

Also included in this category are industrial development bonds and similar obligations issued under the auspices of states or political subdivisions of the OECD-based group of countries for the benefit of a private party or enterprise where that party or enterprise, not the government entity, is obligated to pay the principal and interest, and all obligations of states or political subdivisions of countries that do not belong to the OECD-based group.

The following assets also are assigned a risk weight of 100 percent if they have not been deducted from capital: investments in unconsolidated companies, joint ventures, or associated companies; instruments that qualify as capital issued by other banking organizations; and any intangibles, including grandfathered goodwill.

D. Off-Balance-Sheet Items

The face amount of an off-balance-sheet item is incorporated into the risk-based capital ratio by multiplying it by a credit conversion factor. The resultant credit-equivalent amount is assigned to the appropriate risk category according to the obligor, or, if relevant, the guarantor or the nature of the collateral.⁴⁰ At-

claims guaranteed by U.S. depository institutions and foreign banks.

⁴⁰ The sufficiency of collateral and guarantees for off-balance-sheet items is determined by the market value of the collateral or the amount of the guarantee in relation to the face amount of the item, except for interest- and foreign-exchange-rate contracts, for which this determination is made in relation to the credit equivalent amount. Collateral and guarantees are subject to the same provisions noted under section III(B).

tachment IV sets forth the conversion factors for various types of off-balance-sheet items.

1. *Items with a 100 percent conversion factor.* A 100 percent conversion factor applies to direct credit substitutes, which include guarantees, or equivalent instruments, backing financial claims, such as outstanding securities, loans, and other financial liabilities, or that back off-balance-sheet items that require capital under the risk-based capital framework. Direct credit substitutes include, for example, financial standby letters of credit, or other equivalent irrevocable undertakings or surety arrangements, that guarantee repayment of financial obligations such as commercial paper, tax-exempt securities, commercial or individual loans or debt obligations, or standby or commercial letters of credit. Direct credit substitutes also include the acquisition of risk participations in banker's acceptances and standby letters of credit, since both of these transactions, in effect, constitute a guarantee by the acquiring bank that the underlying account party (obligor) will repay its obligation to the originating, or issuing, institution.⁴¹ (Standby letters of credit that are performance-related are discussed below and have a credit conversion factor of 50 percent.)

The full amount of a direct credit substitute is converted at 100 percent and the resulting credit-equivalent amount is assigned to the risk category appropriate to the obligor or, if relevant, the guarantor or the nature of the collateral. In the case of a direct credit substitute in which a risk participation⁴² has been conveyed, the full amount is still converted at 100 percent. However, the credit-equivalent amount that has been conveyed is assigned to whichever risk category is lower: the risk category appropriate to the obligor, after giving effect to any relevant guarantees or collateral, or the risk category appropriate to the institution acquiring the participation. Any remain-

der is assigned to the risk category appropriate to the obligor, guarantor, or collateral. For example, the portion of a direct credit substitute conveyed as a risk participation to a U.S. domestic depository institution or foreign bank is assigned to the risk category appropriate to claims guaranteed by those institutions, that is, the 20 percent risk category.⁴³ This approach recognizes that such conveyances replace the originating bank's exposure to the obligor with an exposure to the institutions acquiring the risk participations.⁴⁴

In the case of direct credit substitutes that take the form of a syndication as defined in the instructions to the commercial bank call report, that is, where each bank is obligated only for its pro rata share of the risk and there is no recourse to the originating bank, each bank will only include its pro rata share of the direct credit substitute in its risk-based capital calculation.

Financial standby letters of credit are distinguished from loan commitments (discussed below) in that standbys are irrevocable obligations of the bank to pay a third-party beneficiary when a customer (account party) *fails to repay* an outstanding loan or debt instrument (direct credit substitute). Performance standby letters of credit (performance bonds) are irrevocable obligations of the bank to pay a third-party beneficiary when a customer (account party) *fails to perform* some other contractual nonfinancial obligation.

The distinguishing characteristic of a standby letter of credit for risk-based capital purposes is the combination of irrevocability with the fact that funding is triggered by some failure to repay or perform an obligation. Thus, any commitment (by whatever name) that involves an *irrevocable* obligation to make a payment to the customer or to a third party in the event the customer *fails to repay* an outstanding debt obligation or *fails to perform* a contractual obligation is treated, for risk-

⁴¹ Credit-equivalent amounts of acquisitions of risk participations are assigned to the risk category appropriate to the account-party obligor, or, if relevant, the nature of the collateral or guarantees.

⁴² That is, a participation in which the originating bank remains liable to the beneficiary for the full amount of the direct credit substitute if the party that has acquired the participation fails to pay when the instrument is drawn.

⁴³ Risk participations with a remaining maturity of over one year that are conveyed to non-OECD banks are to be assigned to the 100 percent risk category, unless a lower risk category is appropriate to the obligor, guarantor, or collateral.

⁴⁴ A risk participation in banker's acceptances conveyed to other institutions is also assigned to the risk category appropriate to the institution acquiring the participation or, if relevant, the guarantor or nature of the collateral.

based capital purposes, as respectively, a financial guarantee standby letter of credit or a performance standby.

A loan commitment, on the other hand, involves an obligation (with or without a material adverse change or similar clause) of the bank to fund its customer *in the normal course* of business should the customer seek to draw down the commitment.

Sale and repurchase agreements and asset sales with recourse (to the extent not included on the balance sheet) and forward agreements also are converted at 100 percent. The risk-based capital definition of the sale of assets with recourse, including the sale of one- to four-family residential mortgages, is the same as the definition contained in the instructions to the commercial bank call report. So-called loan strips (that is, short-term advances sold under long-term commitments without direct recourse) are defined in the instructions to the commercial bank call report and for risk-based capital purposes as assets sold with recourse.

Forward agreements are legally binding contractual obligations to purchase assets with *certain* drawdown at a specified future date. Such obligations include forward purchases, forward deposits placed,⁴⁵ and partly paid shares and securities; they do not include commitments to make residential mortgage loans or forward foreign-exchange contracts.

Securities lent by a bank are treated in one of two ways, depending upon whether the lender is at risk of loss. If a bank, as agent for a customer, lends the customer's securities and does not indemnify the customer against loss, then the transaction is excluded from the risk-based capital calculation. If, alternatively, a bank lends its own securities or, acting as agent for a customer, lends the customer's securities and indemnifies the customer against loss, the transaction is converted at 100 percent and assigned to the risk-weight category appropriate to the obligor, to any collateral delivered to the lending bank, or, if applicable, to the independent custodian acting on the lender's behalf.

⁴⁵ Forward deposits accepted are treated as interest-rate contracts.

2. *Items with a 50 percent conversion factor.* Transaction-related contingencies are converted at 50 percent. Such contingencies include bid bonds, performance bonds, warranties, standby letters of credit related to particular transactions, and performance standby letters of credit, as well as acquisitions of risk participations in performance standby letters of credit. Performance standby letters of credit represent obligations backing the performance of nonfinancial or commercial contracts or undertakings. To the extent permitted by law or regulation, performance standby letters of credit include arrangements backing, among other things, subcontractors' and suppliers' performance, labor and materials contracts, and construction bids.

The unused portion of commitments with an *original* maturity exceeding one year,⁴⁶ including underwriting commitments, and commercial and consumer credit commitments also are converted at 50 percent. Original maturity is defined as the length of time between the date the commitment is issued and the earliest date on which (1) the bank can, at its option, unconditionally (without cause) cancel the commitment⁴⁷ and (2) the bank is scheduled to (and as a normal practice actually does) review the facility to determine whether or not it should be extended. Such reviews must continue to be conducted at least annually for such a facility to qualify as a short-term commitment.

Commitments are defined as any legally binding arrangements that obligate a bank to extend credit in the form of loans or leases; to purchase loans, securities, or other assets; or to participate in loans and leases. They also include overdraft facilities, revolving credit, home equity and mortgage lines of credit, and similar transactions. Normally, commitments involve a written contract or agreement and a commitment fee, or some other form of con-

⁴⁶ Through year-end 1992, remaining maturity may be used for determining the maturity of off-balance-sheet loan commitments; thereafter, original maturity must be used.

⁴⁷ In the case of consumer home equity or mortgage lines of credit secured by liens on one- to four-family residential properties, the bank is deemed able to unconditionally cancel the commitment for the purpose of this criterion if, at its option, it can prohibit additional extensions of credit, reduce the credit line, and terminate the commitment to the full extent permitted by relevant federal law.

sideration. Commitments are included in weighted-risk assets regardless of whether they contain "material adverse change" clauses or other provisions that are intended to relieve the issuer of its funding obligation under certain conditions. In the case of commitments structured as syndications, where the bank is obligated solely for its pro rata share, only the bank's proportional share of the syndicated commitment is taken into account in calculating the risk-based capital ratio.

Facilities that are unconditionally cancellable (without cause) at any time by the bank are not deemed to be commitments, provided the bank makes a separate credit decision before each drawing under the facility. Commitments with an original maturity of one year or less are deemed to involve low risk and, therefore, are not assessed a capital charge. Such short-term commitments are defined to include the unused portion of lines of credit on retail credit cards and related plans (as defined in the instructions to the commercial bank call report) if the bank has the unconditional right to cancel the line of credit at any time, in accordance with applicable law.

Once a commitment has been converted at 50 percent, any portion that has been conveyed to U.S. depository institutions or OECD banks as participations in which the originating bank retains the full obligation to the borrower if the participating bank fails to pay when the instrument is drawn, is assigned to the 20 percent risk category. This treatment is analogous to that accorded to conveyances of risk participations in standby letters of credit. The acquisition of a participation in a commitment by a bank is converted at 50 percent and assigned to the risk category appropriate to the account-party obligor or, if relevant, the nature of the collateral or guarantees.

Revolving underwriting facilities (RUFs), note issuance facilities (NIFs), and other similar arrangements also are converted at 50 percent regardless of maturity. These are facilities under which a borrower can issue on a revolving basis short-term paper in its own name, but for which the underwriting banks have a legally binding commitment either to purchase any notes the borrower is unable to

sell by the roll-over date or to advance funds to the borrower.

3. *Items with a 20 percent conversion factor.* Short-term, self-liquidating trade-related contingencies which arise from the movement of goods are converted at 20 percent. Such contingencies generally include commercial letters of credit and other documentary letters of credit collateralized by the underlying shipments.

4. *Items with a zero percent conversion factor.* These include unused portions of commitments with an original maturity of one year or less,⁴⁸ or which are unconditionally cancellable at any time, provided a separate credit decision is made before each drawing under the facility. Unused portions of lines of credit on retail credit cards and related plans are deemed to be short-term commitments if the bank has the unconditional right to cancel the line of credit at any time, in accordance with applicable law.

E. Interest-Rate and Foreign-Exchange-Rate Contracts

1. *Scope.* Credit equivalent amounts are computed for each of the following off-balance-sheet interest-rate and foreign-exchange-rate instruments:

I. Interest-Rate Contracts

- A. Single-currency interest-rate swaps
- B. Basis swaps
- C. Forward-rate agreements
- D. Interest-rate options purchased (including caps, collars, and floors purchased)
- E. Any other instrument that gives rise to similar credit risks (including when-issued securities and forward deposits accepted)

II. Exchange-Rate Contracts

- A. Cross-currency interest-rate swaps
- B. Forward foreign-exchange contracts
- C. Currency options purchased
- D. Any other instrument that gives rise to similar credit risks

⁴⁸ Through year-end 1992, remaining maturity may be used for determining term to maturity for off-balance-sheet loan commitments; thereafter, original maturity must be used.

Exchange-rate contracts with an original maturity of 14 calendar days or less and instruments traded on exchanges that require daily payment of variation margin are excluded from the risk-based ratio calculation. Over-the-counter options purchased, however, are included and treated in the same way as the other interest-rate and exchange-rate contracts.

2. Calculation of credit-equivalent amounts. Credit-equivalent amounts are calculated for each individual contract of the types listed above. To calculate the credit-equivalent amount of its off-balance-sheet interest-rate and exchange-rate instruments, a bank sums these amounts:

1. the mark-to-market value⁴⁹ (positive values only) of each contract (that is, the current exposure) and
2. an estimate of the potential future credit exposure over the remaining life of each contract.

The potential future credit exposure on a contract, including contracts with negative mark-to-market values, is estimated by multiplying the notional principal amount by one of the following credit conversion factors, as appropriate:

Remaining maturity	Interest-rate contracts	Exchange-rate contracts
One year or less	—0—	1.0%
Over one year	0.5%	5.0%

Examples of the calculation of credit-equivalent amounts for these instruments are contained in attachment V.

Because exchange-rate contracts involve an exchange of principal upon maturity, and exchange rates are generally more volatile than interest rates, higher conversion factors have been established for foreign-exchange contracts than for interest-rate contracts.

No potential future credit exposure is calculated for single-currency interest-rate swaps in which payments are made based upon two floating rate indices, so-called floating/float-

ing or basis swaps; the credit exposure on these contracts is evaluated solely on the basis of their mark-to-market values.

3. Risk weights. Once the credit-equivalent amount for interest-rate and exchange-rate instruments has been determined, that amount is assigned to the risk-weight category appropriate to the counterparty, or, if relevant, the nature of any collateral or guarantees.⁵⁰ However, the maximum weight that will be applied to the credit-equivalent amount of such instruments is 50 percent.

4. Avoidance of double-counting. In certain cases, credit exposures arising from the interest-rate and exchange instruments covered by these guidelines may already be reflected, in part, on the balance sheet. To avoid double-counting such exposures in the assessment of capital adequacy and, perhaps, assigning inappropriate risk weights, counterparty credit exposures arising from the types of instruments covered by these guidelines may need to be excluded from balance-sheet assets in calculating banks' risk-based capital ratios.

5. Netting. Netting of swaps and similar contracts is recognized for purposes of calculating the risk-based capital ratio *only* when accomplished through netting by novation.⁵¹ While the Federal Reserve encourages any reasonable arrangements designed to reduce the risks inherent in these transactions, other types of netting arrangements are not recognized for purposes of calculating the risk-based ratio at this time.

IV. Minimum Supervisory Ratios and Standards

The interim and final supervisory standards set forth below specify *minimum* supervisory

⁵⁰ For interest- and exchange-rate contracts, sufficiency of collateral or guarantees is determined by the market value of the collateral or the amount of the guarantee in relation to the credit-equivalent amount. Collateral and guarantees are subject to the same provisions noted under section III(B).

⁵¹ Netting by novation, for this purpose, is a written bilateral contract between two counterparties under which any obligation to each other to deliver a given currency on a given date is automatically amalgamated with all other obligations for the same currency and value date, *legally* substituting one single net amount for the previous *gross* obligations.

⁴⁹ Mark-to-market values are measured in dollars, regardless of the currency or currencies specified in the contract, and should reflect changes in both interest rates and counterparty credit quality.

ratios based primarily on broad credit-risk considerations. As noted above, the risk-based ratio does not take explicit account of the quality of individual asset portfolios or the range of other types of risks to which banks may be exposed, such as interest-rate, liquidity, market, or operational risks. For this reason, banks are generally expected to operate with capital positions above the minimum ratios. This is particularly true for institutions that are undertaking significant expansion or that are exposed to high or unusual levels of risk.

Upon adoption of the risk-based framework, any bank that does not meet the interim or final supervisory ratios, or whose capital is otherwise considered inadequate, is expected to develop and implement a plan acceptable to the Federal Reserve for achieving an adequate level of capital consistent with the provisions of these guidelines or with the special circumstances affecting the individual institution. In addition, such banks should avoid any actions, including increased risk-taking or unwarranted expansion, that would lower or further erode their capital positions.

A. Minimum Risk-Based Ratio After Transition Period

As reflected in attachment VI, by year-end 1992, all state member banks should meet a minimum ratio of qualifying total capital to weighted-risk assets of 8 percent, of which at least 4.0 percentage points should be in the form of tier 1 capital net of goodwill. (Section II above contains detailed definitions of capital and related terms used in this section.) The maximum amount of supplementary capital elements that qualifies as tier 2 capital is limited to 100 percent of tier 1 capital net of goodwill. In addition, the combined maximum amount of subordinated debt and intermediate-term preferred stock that qualifies as tier 2 capital is limited to 50 percent of tier 1 capital. The maximum amount of the allowance for loan and lease losses that qualifies as tier 2 capital is limited to 1.25 percent of gross weighted-risk assets. Allowances for loan and lease losses in excess of this limit may, of course, be maintained, but would not be included in a bank's total capital. The Federal

Reserve will continue to require banks to maintain reserves at levels fully sufficient to cover losses inherent in their loan portfolios.

Qualifying total capital is calculated by adding tier 1 capital and tier 2 capital (limited to 100 percent of tier 1 capital) and then deducting from this sum certain investments in banking or finance subsidiaries that are not consolidated for accounting or supervisory purposes, reciprocal holdings of banking organization capital securities, or other items at the direction of the Federal Reserve. These deductions are discussed above in section II(B).

B. Transition Arrangements

The transition period for implementing the risk-based capital standard ends on December 31, 1992.⁵² Initially, the risk-based capital guidelines do not establish a minimum level of capital. However, by year-end 1990, banks are expected to meet a minimum interim target ratio for qualifying total capital to weighted-risk assets of 7.25 percent, at least one-half of which should be in the form of tier 1 capital. For purposes of meeting the 1990 interim target, the amount of loan-loss reserves that may be included in capital is limited to 1.5 percent of weighted-risk assets and up to 10 percent of a bank's tier 1 capital may consist of supple-

⁵² The Basle capital framework does not establish an initial minimum standard for the risk-based capital ratio before the end of 1990. However, for the purpose of calculating a risk-based capital ratio prior to year-end 1990, no sublimit is placed on the amount of the allowance for loan and lease losses includable in tier 2. In addition, this framework permits, under temporary transition arrangements, a certain percentage of a bank's tier 1 capital to be made up of supplementary capital elements. In particular, supplementary elements may constitute 25 percent of a bank's tier 1 capital (before the deduction of goodwill) up to the end of 1990; from year-end 1990 up to the end of 1992, this allowable percentage of supplementary elements in tier 1 declines to 10 percent of tier 1 (before the deduction of goodwill). Beginning on December 31, 1992, supplementary elements may not be included in tier 1. The amount of subordinated debt and intermediate-term preferred stock temporarily included in tier 1 under these arrangements will not be subject to the sublimit on the amount of such instruments includable in tier 2 capital. Goodwill must be deducted from the sum of a bank's permanent core capital elements (that is, common equity, noncumulative perpetual preferred stock, and minority interest in the equity of unconsolidated subsidiaries) plus supplementary items that may temporarily qualify as tier 1 elements for the purpose of calculating tier 1 (net of goodwill), tier 2, and total capital.

mentary capital elements. Thus, the 7.25 percent interim target ratio implies a minimum ratio of tier 1 capital to weighted-risk assets of 3.6 percent (one-half of 7.25) and a minimum ratio of core capital elements to weighted-risk assets ratio of 3.25 percent (nine-tenths of the tier 1 capital ratio).

Attachment I—Sample Calculation of Risk-Based Capital Ratio for State Member Banks

Example of a bank with \$6,000 in total capital and the following assets and off-balance-sheet items.

Balance-sheet assets

Cash	\$ 5,000
U.S. Treasuries	20,000
Balances at domestic banks	5,000
Loans secured by first liens on 1- to 4-family residential properties	5,000
Loans to private corporations	<u>65,000</u>
Total Balance-Sheet Assets	\$100,000

Off-balance-sheet items

Standby letters of credit (SLCs) backing general-obligation debt issues of U.S. municipalities (GOs)	\$ 10,000
Long-term legally binding commitments to private corporations	<u>20,000</u>
Total Off-Balance-Sheet Items	\$ 30,000

This bank's total capital to *total* assets (leverage) ratio would be:

$$(\$6,000/\$100,000) = 6.00\%$$

To compute the bank's weighted-risk assets—

1. Compute the credit-equivalent amount of each off-balance-sheet (OBS) item.

<i>OBS item</i>	<i>Face value</i>		<i>Conversion factor</i>		<i>Credit-equivalent amount</i>
SLCs backing municipal GOs	\$10,000	×	1.00	=	\$10,000
Long-term commitments to private corporations	\$20,000	×	0.50	=	\$10,000

Attachment I continued, next page

Attachment I continued

2. Multiply each balance-sheet asset and the credit-equivalent amount of each OBS item by the appropriate risk weight.

<i>OBS item</i>	<i>Face value</i>		<i>Conversion factor</i>		<i>Credit-equivalent amount</i>
<i>0% category</i>					
Cash	\$ 5,000				
U.S. Treasuries	<u>20,000</u>				
	\$25,000	×	0	=	0
<i>20% category</i>					
Balances at domestic banks	\$ 5,000				
Credit-equivalent amounts of SLCs backing GOs of U.S. municipalities	<u>10,000</u>				
	\$15,000	×	0.20	=	\$ 3,000
<i>50% category</i>					
Loans secured by first liens on 1- to 4-family residential properties	\$ 5,000	×	0.50	=	\$ 2,500
<i>100% category</i>					
Loans to private corporations	\$65,000				
Credit-equivalent amounts of long-term commitments to private corporations	<u>10,000</u>				
	\$75,000	×	1.00	=	\$75,000
Total Risk-Weighted Assets					\$80,500

This bank's ratio of total capital to weighted-risk assets (risk-based capital ratio) would be:

$$(\$6,000/\$80,500) = 7.45\%$$

**Attachment II—Summary Definition of Qualifying Capital for State Member Banks*
Using the Year-End 1992 Standards**

<i>Components</i>	<i>Minimum requirements after transition period</i>
CORE CAPITAL (tier 1)	Must equal or exceed 4% of weighted-risk assets
Common stockholders' equity	No limit
Qualifying noncumulative perpetual preferred stock	No limit; banks should avoid undue reliance on preferred stock in tier 1
Minority interest in equity accounts of consolidated subsidiaries	Banks should avoid using minority interests to introduce elements not otherwise qualifying for tier 1 capital
Less: Goodwill ¹	
SUPPLEMENTARY CAPITAL (tier 2)	Total of tier 2 is limited to 100% of tier 1 ²
Allowance for loan and lease losses	Limited to 1.25% of weighted-risk assets ²
Perpetual preferred stock	No limit within tier 2
Hybrid capital instruments and equity-contract notes	No limit within tier 2
Subordinated debt and intermediate-term preferred stock (original weighted average maturity of 5 years or more)	Subordinated debt and intermediate-term preferred stock are limited to 50% of tier 1; ³ amortized for capital purposes as they approach maturity
Revaluation reserves (equity and building)	Not included; banks encouraged to disclose; may be evaluated on a case-by-case basis for international comparisons; and taken into account in making an overall assessment of capital
DEDUCTIONS (from sum of tier 1 and tier 2)	
Investments in unconsolidated subsidiaries	
Reciprocal holdings of banking organizations' capital securities	
Other deductions (such as other subsidiaries or joint ventures) as determined by supervisory authority	On a case-by-case basis or as a matter of policy after formal rulemaking
TOTAL CAPITAL (tier 1 + tier 2 - Deductions)	Must equal or exceed 8% of weighted-risk assets

* See discussion in section II of the guidelines for a complete description of the requirements for, and the limitations on, the components of qualifying capital.

¹ All goodwill, except previously grandfathered goodwill approved in supervisory mergers, is deducted immediately.

² Amounts in excess of limitations are permitted but do not qualify as capital.

³ Amounts in excess of limitations are permitted but do not qualify as capital.

⁴ A proportionately greater amount may be deducted from tier 1 capital if the risks associated with the subsidiary so warrant.

Attachment III—Summary of Risk Weights and Risk Categories for State Member Banks

Category 1: Zero Percent

1. Cash (domestic and foreign) held in the bank or in transit
2. Balances due from Federal Reserve Banks (including Federal Reserve Bank stock) and central banks in other OECD countries
3. Direct claims on, and the portions of claims that are unconditionally guaranteed by, the U.S. Treasury and U.S. government agencies¹ and the central governments of other OECD countries, and local currency claims on, and the portions of local currency claims that are unconditionally guaranteed by, the central governments of non-OECD countries (including the central banks of non-OECD countries), to the extent that the bank has liabilities booked in that currency
4. Gold bullion held in the bank's vaults or in another's vaults on an allocated basis, to the extent offset by gold bullion liabilities

Category 2: 20 Percent

1. Cash items in the process of collection
2. All claims (long- or short-term) on, and the portions of claims (long- or short-term) that are guaranteed by, U.S. depository institutions and OECD banks
3. Short-term claims (remaining maturity of one year or less) on, and the portions of short-term claims that are guaranteed by, non-OECD banks
4. The portions of claims that are conditionally guaranteed by the central governments of OECD countries and U.S. government agencies, and the portions of local currency claims that are conditionally guaranteed by the central governments of non-OECD countries, to

the extent that the bank has liabilities booked in that currency

5. Claims on, and the portions of claims that are guaranteed by, U.S. government-sponsored agencies²
6. General obligation claims on, and the portions of claims that are guaranteed by the full faith and credit of, local governments and political subdivisions of the U.S. and other OECD local governments
7. Claims on, and the portions of claims that are guaranteed by, official multilateral lending institutions or regional development banks
8. The portions of claims that are collateralized³ by securities issued or guaranteed by the U.S. Treasury, the central governments of other OECD countries, U.S. government agencies, U.S. government-sponsored agencies, or by cash on deposit in the bank
9. The portions of claims that are collateralized³ by securities issued by official multilateral lending institutions or regional development banks
10. Certain privately issued securities representing indirect ownership of mortgage-backed U.S. government agency or U.S. government-sponsored agency securities
11. Investments in shares of a fund whose portfolio is permitted to hold only securities that would qualify for the zero or 20 percent risk categories

Category 3: 50 Percent

1. Loans fully secured by first liens on one- to four-family residential properties that have been made in accordance with prudent underwriting standards, that are performing in accordance with their original terms, and are not past due or in nonaccrual status, and certain privately issued mortgage-backed securities representing indirect ownership of such

¹ For the purpose of calculating the risk-based capital ratio, a U.S. government agency is defined as an instrumentality of the U.S. government whose obligations are fully and explicitly guaranteed as to the timely payment of principal and interest by the full faith and credit of the U.S. government.

² For the purpose of calculating the risk-based capital ratio, a U.S. government-sponsored agency is defined as an agency originally established or chartered to serve public purposes specified by the U.S. Congress but whose obligations are not *explicitly* guaranteed by the full faith and credit of the U.S. government.

³ The extent of collateralization is determined by current market value.

loans (Loans made for speculative purposes are excluded.)

2. Revenue bonds or similar claims that are obligations of U.S. state or local governments, or other OECD local governments, but for which the government entity is committed to repay the debt only out of revenues from the facilities financed

3. Credit-equivalent amounts of interest rate- and foreign exchange rate-related contracts, except for those assigned to a lower risk category

Category 4: 100 Percent

1. All other claims on private obligors

2. Claims on, or guaranteed by, non-OECD foreign banks with a remaining maturity exceeding one year

3. Claims on, or guaranteed by, non-OECD central governments that are not included in item 3 of category 1 or item 4 of category 2;

all claims on non-OECD state or local governments

4. Obligations issued by U.S. state or local governments, or other OECD local governments (including industrial-development authorities and similar entities), repayable solely by a private party or enterprise

5. Premises, plant, and equipment; other fixed assets; and other real estate owned

6. Investments in any unconsolidated subsidiaries, joint ventures, or associated companies—if not deducted from capital

7. Instruments issued by other banking organizations that qualify as capital—if not deducted from capital

8. Claims on commercial firms owned by a government

9. All other assets, including any intangible assets that are not deducted from capital

Attachment IV—Credit-Conversion Factors for Off-Balance-Sheet Items for State Member Banks

100 Percent Conversion Factor

1. Direct credit substitutes (These include general guarantees of indebtedness and all guarantee-type instruments, including standby letters of credit backing the financial obligations of other parties.)
2. Risk participations in banker's acceptances and direct credit substitutes, such as standby letters of credit
3. Sale and repurchase agreements and assets sold with recourse that are not included on the balance sheet
4. Forward agreements to purchase assets, including financing facilities, on which draw-down is *certain*
5. Securities lent for which the bank is at risk

50 Percent Conversion Factor

1. Transaction-related contingencies (These include bid bonds, performance bonds, warranties, and standby letters of credit backing the nonfinancial performance of other parties.)
2. Unused portions of commitments with an original maturity¹ exceeding one year, including underwriting commitments and commercial credit lines
3. Revolving underwriting facilities (RUFs), note-issuance facilities (NIFs), and similar arrangements

20 Percent Conversion Factor

1. Short-term, self-liquidating, trade-related contingencies, including commercial letters of credit

Zero Percent Conversion Factor

1. Unused portions of commitments with an original maturity¹ of one year or less, or which are unconditionally cancellable at any time, provided a separate credit decision is made before each drawing

Credit Conversion for Interest-Rate and Foreign-Exchange Contracts

The total replacement cost of contracts (obtained by summing the positive mark-to-market values of contracts) is added to a measure of future potential increases in credit exposure. This future potential exposure measure is calculated by multiplying the total notional value of contracts by one of the following credit-conversion factors, as appropriate:

<i>Remaining maturity</i>	<i>Interest-rate contracts</i>	<i>Exchange-rate contracts</i>
One year or less	0	1.0%
Over one year	0.5%	5.0%

No potential exposure is calculated for single-currency interest-rate swaps in which payments are made based upon two floating rate indices, that is, so-called floating/floating or basis swaps. The credit exposure on these contracts is evaluated solely on the basis of their mark-to-market value. Exchange-rate contracts with an original maturity of 14 days or less are excluded. Instruments traded on exchanges that require daily payment of variation margin are also excluded. The only form of netting recognized is netting by novation.

¹ Remaining maturity may be used until year-end 1992.

Attachment V—Calculation of Credit-Equivalent Amounts

Interest Rate- and Foreign Exchange Rate-Related Transactions for State Member Banks

<i>Type of contract (remaining maturity)</i>	<i>Potential Exposure</i>			<i>Current Exposure</i>		<i>Credit- Equivalent Amount (dollars)</i>
	<i>Notional principal (dollars)</i>	<i>Potential- exposure conversion × factor</i>	<i>Potential exposure = (dollars)</i>	<i>Replace- ment cost¹</i>	<i>Current exposure (dollars)²</i>	
(1) 120-day forward foreign exchange	5,000,000	.01	50,000	100,000	100,000	150,000
(2) 120-day forward foreign exchange	6,000,000	.01	60,000	-120,000	-0-	60,000
(3) 3-year single-currency fixed/floating interest-rate swap	10,000,000	.005	50,000	200,000	200,000	250,000
(4) 3-year single-currency fixed/floating interest-rate swap	10,000,000	.005	50,000	-250,000	-0-	50,000
(5) 7-year cross-currency floating/floating interest-rate swap	20,000,000	.05	1,000,000	-1,300,000	-0-	1,000,000
TOTAL	\$51,000,000					\$1,510,000

¹ These numbers are purely for illustration.

² The larger of zero or a positive mark-to-market value.

Attachment VI

SUMMARY OF:

	<i>Transitional Arrangements for State Member Banks</i>		<i>Final Arrangement</i>
	<i>Initial</i>	<i>Year-end 1990</i>	<i>Year-end 1992</i>
1. Minimum standard of total capital to weighted-risk assets	None	7.25%	8.0%
2. Definition of tier 1 capital	Common equity, qualifying noncumulative perpetual preferred stock, minority interests, <i>plus</i> supplementary elements ¹ less goodwill	Common equity, qualifying noncumulative perpetual preferred stock, minority interests, <i>plus</i> supplementary elements ² less goodwill	Common equity, qualifying noncumulative perpetual preferred stock, and minority interests less goodwill
3. Minimum standard of tier 1 capital to weighted-risk assets	None	3.625%	4.0%
4. Minimum standard of stockholders' equity to weighted-risk assets	None	3.25%	4.0%
5. Limitations on supplementary capital elements			
a. Allowance for loan and lease losses	No limit within tier 2	1.5% of weighted-risk assets	1.25% of weighted-risk assets
b. Qualifying perpetual preferred stock	No limit within tier 2	No limit within tier 2	No limit within tier 2
c. Hybrid capital instruments and equity contract notes	No limit within tier 2	No limit within tier 2	No limit within tier 2
d. Subordinated debt and intermediate-term preferred stock	Combined maximum of 50% of tier 1	Combined maximum of 50% of tier 1	Combined maximum of 50% of tier 1
e. Total qualifying tier 2 capital	May not exceed tier 1 capital	May not exceed tier 1 capital	May not exceed tier 1 capital
6. Definition of total capital	Tier 1 <i>plus</i> tier 2 less: • reciprocal holdings of banking organizations' capital instruments • investments in unconsolidated subsidiaries	Tier 1 <i>plus</i> tier 2 less: • reciprocal holdings of banking organizations' capital instruments • investments in unconsolidated subsidiaries	Tier 1 <i>plus</i> tier 2 less: • reciprocal holdings of banking organizations' capital instruments • investments in unconsolidated subsidiaries

¹ Supplementary elements may be included in tier 1 up to 25% of the sum of tier 1 plus goodwill.² Supplementary elements may be included in tier 1 up to 10% of the sum of tier 1 plus goodwill.

Capital Adequacy Guidelines for Bank Holding Companies: Risk-Based Measure

Regulation Y (12 CFR 225), Appendix A

I. Overview

The Board of Governors of the Federal Reserve System has adopted a risk-based capital measure to assist in the assessment of the capital adequacy of bank holding companies ("banking organizations").¹ The principal objectives of this measure are to (i) make regulatory capital requirements more sensitive to differences in risk profiles among banking organizations; (ii) factor off-balance-sheet exposures into the assessment of capital adequacy; (iii) minimize disincentives to holding liquid, low-risk assets; and (iv) achieve greater consistency in the evaluation of the capital adequacy of major banking organizations throughout the world.²

The risk-based capital guidelines include both a definition of capital and a framework for calculating weighted-risk assets by assigning assets and off-balance-sheet items to broad risk categories. An institution's risk-based capital ratio is calculated by dividing its qualifying capital (the numerator of the ratio) by its weighted-risk assets (the denominator).³ The definition of "qualifying capital" is outlined below in section II, and the procedures for calculating weighted-risk assets are discussed in section III. Attachment I illustrates a sample calculation of weighted-risk assets and the risk-based capital ratio.

The risk-based capital guidelines also establish a schedule for achieving a minimum supervisory standard for the ratio of qualifying

capital to weighted-risk assets and provide for transitional arrangements during a phase-in period to facilitate adoption and implementation of the measure at the end of 1992. These interim standards and transitional arrangements are set forth in section IV.

The risk-based guidelines apply on a consolidated basis to bank holding companies with consolidated assets of \$150 million or more. For bank holding companies with less than \$150 million in consolidated assets, the guidelines will be applied on a bank-only basis unless (a) the parent bank holding company is engaged in nonbank activity involving significant leverage;⁴ or (b) the parent company has a significant amount of outstanding debt that is held by the general public.

The risk-based guidelines are to be used in the inspection and supervisory process as well as in the analysis of applications acted upon by the Federal Reserve. Thus, in considering an application filed by a bank holding company, the Federal Reserve will take into account the organization's risk-based capital ratio, the reasonableness of its capital plans, and the degree of progress it has demonstrated toward meeting the interim and final risk-based capital standards.

The risk-based capital ratio focuses principally on broad categories of credit risk, although the framework for assigning assets and off-balance-sheet items to risk categories does incorporate elements of transfer risk, as well as limited instances of interest-rate and market risk. The risk-based ratio does not, however, incorporate other factors that can affect an organization's financial condition. These factors include overall interest-rate exposure; liquidity, funding, and market risks; the quality and level of earnings; investment or loan portfolio concentrations; the quality of loans and investments; the effectiveness of loan and investment policies; and management's ability to monitor and control financial and operating risks.

¹ Supervisory ratios that relate capital to total assets for bank holding companies are outlined in appendix B of Regulation Y (page 55).

² The risk-based capital measure is based upon a framework developed jointly by supervisory authorities from the countries represented on the Basle Committee on Banking Regulations and Supervisory Practices (Basle Supervisors' Committee) and endorsed by the Group of Ten Central Bank Governors. The framework is described in a paper prepared by the BSC entitled "International Convergence of Capital Measurement," July 1988.

³ Banking organizations will initially be expected to utilize period-end amounts in calculating their risk-based capital ratios. When necessary and appropriate, ratios based on average balances may also be calculated on a case-by-case basis. Moreover, to the extent banking organizations have data on average balances that can be used to calculate risk-based ratios, the Federal Reserve will take such data into account.

⁴ A parent company that is engaged in significant off-balance-sheet activities would generally be deemed to be engaged in activities that involve significant leverage.

In addition to evaluating capital ratios, an overall assessment of capital adequacy must take account of these other factors, including, in particular, the level and severity of problem and classified assets. For this reason, the final supervisory judgment on an organization's capital adequacy may differ significantly from conclusions that might be drawn solely from the level of the organization's risk-based capital ratio.

The risk-based capital guidelines establish *minimum* ratios of capital to weighted-risk assets. In light of the considerations just discussed, banking organizations generally are expected to operate well above the minimum risk-based ratios. In particular, banking organizations contemplating significant expansion proposals are expected to maintain strong capital levels substantially above the minimum ratios and should not allow significant diminution of financial strength below these strong levels to fund their expansion plans. Institutions with high or inordinate levels of risk are also expected to operate above minimum capital standards. In all cases, institutions should hold capital commensurate with the level and nature of the risks to which they are exposed. Banking organizations that do not meet the minimum risk-based standard, or that are otherwise considered to be inadequately capitalized, are expected to develop and implement plans acceptable to the Federal Reserve for achieving adequate levels of capital within a reasonable period of time.

The Board will monitor the implementation and effect of these guidelines in relation to domestic and international developments in the banking industry. When necessary and appropriate, the Board will consider the need to modify the guidelines in light of any significant changes in the economy, financial markets, banking practices, or other relevant factors.

II. Definition of Qualifying Capital for the Risk-Based Capital Ratio

An institution's qualifying total capital consists of two types of capital components: "core capital elements" (comprising tier 1 capital) and "supplementary capital elements" (com-

prising tier 2 capital). These capital elements and the various limits, restrictions, and deductions to which they are subject, are discussed below and are set forth in attachment II.

To qualify as an element of tier 1 or tier 2 capital, a capital instrument may not contain or be covered by any covenants, terms, or restrictions that are inconsistent with safe and sound banking practices.

Redemptions of permanent equity or other capital instruments before stated maturity could have a significant impact on an organization's overall capital structure. Consequently, an organization considering such a step should consult with the Federal Reserve before redeeming any equity or debt capital instrument (prior to maturity) if such redemption could have a material effect on the level or composition of the organization's capital base.⁵

A. The Components of Qualifying Capital

1. *Core capital elements (tier 1 capital)*. The tier 1 component of an institution's qualifying capital must represent at least 50 percent of qualifying total capital and may consist of the following items that are defined as core capital elements:

- i. common stockholders' equity
- ii. qualifying perpetual preferred stock (including related surplus), subject to certain limitations described below
- iii. minority interest in the equity accounts of consolidated subsidiaries

Tier 1 capital is generally defined as the sum of the core capital elements less goodwill.⁶ (See section II(B) below for a more detailed discussion of the treatment of goodwill, including an explanation of certain limited grandfathering arrangements.)

- a. *Common stockholders' equity*. Common stockholders' equity includes: common

⁵ Consultation would not ordinarily be necessary if an instrument were redeemed with the proceeds of, or replaced by, a like amount of a similar or higher-quality capital instrument and the organization's capital position is considered fully adequate by the Federal Reserve. In the case of limited-life tier 2 instruments, consultation would generally be obviated if the new security is of equal or greater maturity than the one it replaces.

⁶ During the transition period and subject to certain limitations set forth in section IV below, tier 1 capital may also include items defined as supplementary capital elements.

stock; related surplus; and retained earnings, including capital reserves and adjustments for the cumulative effect of foreign currency translation, net of any treasury stock.

b. *Perpetual preferred stock.* Perpetual preferred stock is defined as preferred stock that does not have a maturity date, that cannot be redeemed at the option of the holder of the instrument, and that has no other provisions that will require future redemption of the issue. In general, preferred stock will qualify for inclusion in capital only if it can absorb losses while the issuer operates as a going concern (a fundamental characteristic of equity capital) and only if the issuer has the ability and legal right to defer or eliminate preferred dividends.

Perpetual preferred stock in which the dividend is reset periodically based, in whole or in part, upon the banking organization's current credit standing (that is, auction rate perpetual preferred stock, including so-called Dutch auction, money market, and remarketable preferred) will not qualify for inclusion in tier 1 capital.⁷ Such instruments, however, qualify for inclusion in tier 2 capital.

For bank holding companies, both cumulative and noncumulative perpetual preferred stock qualify for inclusion in tier 1. However, the aggregate amount of such stock (whether cumulative or noncumulative) that may be included in a holding company's tier 1 is limited to one-third of the sum of core capital elements, excluding the perpetual preferred stock (that is, items i and iii above). Stated differently, the aggregate amount may not exceed 25 percent of the sum of all core capital elements, including perpetual preferred stock (that is, items i, ii and iii above). Any perpetual preferred stock outstanding in excess of this limit may be included in tier 2 capital without any sublimits within that tier (see discussion below).

The limits on preferred stock are consis-

tent with the Board's long-standing view that common equity should remain the dominant form of a banking organization's capital structure. In addition to these limits, the Board believes that, in general, banking organizations should avoid overreliance on other nonvoting equity instruments in their tier 1 capital.

c. *Minority interest in equity accounts of consolidated subsidiaries.* This element is included in tier 1 because, as a general rule, it represents equity that is freely available to absorb losses in operating subsidiaries. While not subject to an explicit sublimit within tier 1, banking organizations are expected to avoid using minority interest in the equity accounts of consolidated subsidiaries as an avenue for introducing into their capital structures elements that might not otherwise qualify as tier 1 capital or that would, in effect, result in an excessive reliance on preferred stock within tier 1.

2. *Supplementary capital elements (tier 2 capital).* The tier 2 component of an institution's qualifying total capital may consist of the following items that are defined as supplementary capital elements:

- i. Allowance for loan and lease losses (subject to limitations discussed below)
- ii. Perpetual preferred stock and related surplus (subject to conditions discussed below)
- iii. Hybrid capital instruments (as defined below), perpetual debt, and mandatory convertible debt securities
- iv. Term subordinated debt and intermediate-term preferred stock, including related surplus (subject to limitations discussed below)

The maximum amount of tier 2 capital that may be included in an organization's qualifying total capital is limited to 100 percent of tier 1 capital (net of goodwill).

The elements of supplementary capital are discussed in greater detail below.⁸

⁷ Adjustable-rate perpetual preferred stock (that is, perpetual preferred stock in which the dividend rate is not affected by the issuer's credit standing or financial condition but is adjusted periodically according to a formula based solely on general market interest rates) may be included in tier 1 up to the limits specified for perpetual preferred stock.

⁸ The Basle capital framework also provides for the inclusion of "undisclosed reserves" in tier 2. As defined in the framework, undisclosed reserves represent accumulated after-tax retained earnings that are not disclosed on the balance sheet of a banking organization. Apart from the fact that these reserves are not disclosed publicly, they are essentially of the same quality and character as retained earnings.

Continued

a. *Allowance for loan and lease losses.* Allowances for loan and lease losses are reserves that have been established through a charge against earnings to absorb future losses on loans or lease-financing receivables. Allowances for loan and lease losses exclude "allocated transfer risk reserves,"⁹ and reserves created against identified losses.

During the transition period, the risk-based capital guidelines provide for reducing the amount of this allowance that may be included in an institution's total capital. Initially, it is unlimited. However, by year-end 1990, the amount of the allowance for loan and lease losses that will qualify as capital will be limited to 1.5 percent of an institution's weighted-risk assets. By the end of the transition period, the amount of the allowance qualifying for inclusion in tier 2 capital may not exceed 1.25 percent of weighted-risk assets.¹⁰

b. *Perpetual preferred stock.* Perpetual preferred stock, as noted above, is defined as preferred stock that has no maturity date, that cannot be redeemed at the option of the holder, and that has no other provisions that will require future redemption of the issue. Such instruments are eligible for inclusion in tier 2 capital without limit.¹¹

c. *Hybrid capital instruments, perpetual debt, and mandatory convertible debt securities.* Hybrid capital instruments include instruments that are essentially permanent in nature and that have certain characteristics of both equity and debt. Such instruments may be included in tier 2 without limit. The general criteria hybrid capital instruments must meet in order to qualify for inclusion in tier 2 capital are listed below:

1. The instrument must be unsecured; fully paid up; and subordinated to general creditors. If issued by a bank, it must also be subordinated to claims of depositors.
2. The instrument must not be redeemable at the option of the holder prior to maturity, except with the prior approval of the Federal Reserve. (Consistent with the Board's criteria for perpetual debt and mandatory convertible securities, this requirement implies that holders of such instruments may not accelerate the payment of principal except in the event of bankruptcy, insolvency, or reorganization.)
3. The instrument must be available to participate in losses while the issuer is operating as a going concern. (Term subordinated debt would not meet this requirement.) To satisfy this requirement, the instrument must convert to common or perpetual preferred stock in the event that the accumulated losses exceed the sum of the retained earnings and capital surplus accounts of the issuer.
4. The instrument must provide the option for the issuer to defer interest payments if (a) the issuer does not report a profit in the preceding annual period (defined as combined profits for the most recent four quarters) and (b) the issuer eliminates cash dividends on common and preferred stock.

Perpetual debt and mandatory convertible debt securities that meet the criteria set

qualify in this category as an element of tier 2. If the holder of such an instrument has a right to require the issuer to redeem, repay, or repurchase the instrument prior to the original stated maturity, maturity would be defined, for risk-based capital purposes, as the earliest possible date on which the holder can put the instrument back to the issuing banking organization.

Continued

ings, and, to be included in capital, such reserves must be accepted by the banking organization's home supervisor. Although such undisclosed reserves are common in some countries, under generally accepted accounting principles (GAAP) and long-standing supervisory practice, these types of reserves are not recognized for banking organizations in the United States. Foreign banking organizations seeking to make acquisitions or conduct business in the United States would generally be expected to disclose publicly at least the degree of reliance on such reserves in meeting supervisory capital requirements.

⁹ Allocated transfer risk reserves are reserves that have been established in accordance with section 905(a) of the International Lending Supervision Act of 1983, 12 USC 3904(a), against certain assets whose value U.S. supervisory authorities have found to be significantly impaired by protracted transfer risk problems.

¹⁰ The amount of the allowance for loan and lease losses that may be included in tier 2 capital is based on a percentage of gross weighted-risk assets. A banking organization may deduct reserves for loan and lease losses in excess of the amount permitted to be included in tier 2 capital, as well as allocated transfer risk reserves, from the sum of gross weighted-risk assets and use the resulting net sum of weighted-risk assets in computing the denominator of the risk-based capital ratio.

¹¹ Long-term preferred stock with an original maturity of 20 years or more (including related surplus) will also

forth in 12 CFR 225, appendix B (page 55), also qualify as unlimited elements of tier 2 capital for bank holding companies.

d. *Subordinated debt and intermediate-term preferred stock.* The aggregate amount of term subordinated debt (excluding mandatory convertible debt) and intermediate-term preferred stock that may be treated as supplementary capital is limited to 50 percent of tier 1 capital (net of goodwill). Amounts in excess of these limits may be issued and, while not included in the ratio calculation, will be taken into account in the overall assessment of an organization's funding and financial condition.

Subordinated debt and intermediate-term preferred stock must have an original weighted average maturity of at least five years to qualify as supplementary capital.¹² (If the holder has the option to require the issuer to redeem, repay, or repurchase the instrument prior to the original stated maturity, maturity would be defined, for risk-based capital purposes, as the earliest possible date on which the holder can put the instrument back to the issuing banking organization.)

In the case of subordinated debt, the instrument must be unsecured and must clearly state on its face that it is not a deposit and is not insured by a federal agency. Bank holding company debt must be subordinated in right of payment to all senior indebtedness of the company.

e. *Discount of supplementary capital instruments.* As a limited-life capital instrument approaches maturity it begins to take on characteristics of a short-term obligation. For this reason, the outstanding amount of term subordinated debt and any long- or intermediate-life, or term, preferred stock eligible for inclusion in tier 2 is reduced, or discounted, as these instruments approach maturity: one-fifth of the original amount, less any redemptions, is excluded each year

during the instrument's last five years before maturity.¹³

f. *Revaluation reserves.* Such reserves reflect the formal balance-sheet restatement or revaluation for capital purposes of asset carrying values to reflect current market values. In the United States, banking organizations, for the most part, follow GAAP when preparing their financial statements, and GAAP generally does not permit the use of market-value accounting. For this and other reasons, the federal banking agencies generally have not included unrealized asset values in capital-ratio calculations, although they have long taken such values into account as a separate factor in assessing the overall financial strength of a banking organization.

Consistent with long-standing supervisory practice, the excess of market values over book values for assets held by bank holding companies will generally not be recognized in supplementary capital or in the calculation of the risk-based capital ratio. However, all banking organizations are encouraged to disclose their equivalent of premises (building) and equity revaluation reserves. Such values will be taken into account as additional considerations in assessing overall capital strength and financial condition.

B. *Deductions from Capital and Other Adjustments*

Certain assets are deducted from an organization's capital for the purpose of calculating the risk-based capital ratio.¹⁴ These assets include—

¹³ For example, outstanding amounts of these instruments that count as supplementary capital include 100 percent of the outstanding amounts with remaining maturities of more than five years; 80 percent of outstanding amounts with remaining maturities of four to five years; 60 percent of outstanding amounts with remaining maturities of three to four years; 40 percent of outstanding amounts with remaining maturities of two to three years; 20 percent of outstanding amounts with remaining maturities of one to two years; and 0 percent of outstanding amounts with remaining maturities of less than one year. Such instruments with a remaining maturity of less than one year are excluded from tier 2 capital.

¹⁴ Any assets deducted from capital in computing the numerator of the ratio are not included in weighted-risk assets in computing the denominator of the ratio.

¹² Unsecured term debt issued by bank holding companies prior to March 12, 1988, and qualifying as secondary capital at the time of issuance would continue to qualify as an element of supplementary capital under the risk-based framework, subject to the 50 percent of tier 1 capital limitation. Bank holding company term debt issued on or after March 12, 1988, must be subordinated in order to qualify as capital.

- i. goodwill—deducted from the sum of core capital elements (See discussion below of limited grandfathering of bank holding company goodwill during the transition period.)
- ii. investments in banking and finance subsidiaries that are not consolidated for accounting or supervisory purposes, and investments in other designated subsidiaries or associated companies at the discretion of the Federal Reserve—deducted from total capital components (as described in greater detail below)
- iii. reciprocal holdings of capital instruments of banking organizations—deducted from total capital components

1. *Goodwill and other intangible assets.*

a. *Goodwill.* Goodwill is an intangible asset that represents the excess of the purchase price over the fair market value of identifiable assets acquired less liabilities assumed in acquisitions accounted for under the purchase method of accounting. Any goodwill carried on the balance sheet of a bank holding company after December 31, 1992, will be deducted from the sum of core capital elements in determining tier 1 capital for ratio-calculation purposes. Any goodwill in existence before March 12, 1988, is grandfathered during the transition period and is not deducted from core capital elements until after December 31, 1992. However, bank holding company goodwill acquired as a result of a merger or acquisition that was consummated on or after March 12, 1988, is deducted immediately.¹⁵

b. *Other intangible assets.* The Federal Reserve is not proposing, as a matter of general policy, to deduct automatically any other intangible assets from the capital of bank holding companies. The Federal Reserve, however, will continue to monitor closely the level and quality of other intangible assets—including purchased mortgage-servicing rights, leaseholds, and core deposit value—and take them into account in as-

sessing the capital adequacy and overall asset quality of banking institutions.

Generally, banking organizations should review all intangible assets at least quarterly and, if necessary, make appropriate reductions in their carrying values. In addition, in order to conform with prudent banking practice, an organization should reassess such values during its annual audit. Banking organizations should use appropriate amortization methods and assign prudent amortization periods for intangible assets. Examiners will review the carrying value of these assets, together with supporting documentation, as well as the appropriateness of including particular intangible assets in a banking organization's capital calculation. In making such evaluations, examiners will consider a number of factors, including—

1. the reliability and predictability of any cash flows associated with the asset and the degree of certainty that can be achieved in periodically determining the asset's useful life and value;
2. the existence of an active and liquid market for the asset; and
3. the feasibility of selling the asset apart from the banking organization or from the bulk of its assets.

While all intangible assets will be monitored, intangible assets (other than goodwill) in excess of 25 percent of tier 1 capital (which is defined net of goodwill) will be subject to particularly close scrutiny, both through the inspection process and by other appropriate means. Whenever necessary—in particular, when assessing applications to expand or to engage in other activities that could entail unusual or higher-than-normal risks—the Board will, on a case-by-case basis, continue to consider the level of an individual organization's tangible capital ratios (after deducting all intangible assets), together with the quality and value of the organization's tangible and intangible assets, in making an overall assessment of capital adequacy.

Consistent with long-standing Board policy, banking organizations experiencing substantial growth, whether internally or by acquisition, are expected to maintain

¹⁵ Goodwill acquired by a subsidiary bank in connection with a merger with a troubled or failed depository institution that regulatory authorities have specifically allowed the bank to include in its capital will generally not be deducted from the core capital elements of its parent bank holding company.

strong capital positions substantially above minimum supervisory levels, without significant reliance on intangible assets.

2. *Investments in certain subsidiaries.*

a. *Unconsolidated banking or finance subsidiaries.* The aggregate amount of investments in banking or finance subsidiaries¹⁶ whose financial statements are not consolidated for accounting or regulatory-reporting purposes, regardless of whether the investment is made by the parent bank holding company or its direct or indirect subsidiaries, will be deducted from the consolidated parent banking organization's total capital components.¹⁷ Generally, investments for this purpose are defined as equity and debt capital investments and any other instruments that are deemed to be capital in the particular subsidiary.

Advances (that is, loans, extensions of credit, guarantees, commitments, or any other forms of credit exposure) to the subsidiary that are not deemed to be capital will generally not be deducted from an organization's capital. Rather, such advances generally will be included in the parent banking organization's consolidated assets and be assigned to the 100 percent risk category, unless such obligations are backed by recognized collateral or guarantees, in which case they will be assigned to the risk category appropriate to such collateral or guarantees. These advances may, however, also be deducted from the consolidated parent banking organization's capital if, in the judgment of the Federal Reserve, the risks stemming from such advances are comparable to the risks associated with capital investments or if the advances involve other risk factors that warrant such an adjustment to capital for supervisory purposes. These other factors could include, for example, the absence of collateral support.

Inasmuch as the assets of unconsolidated banking and finance subsidiaries are not fully reflected in a banking organization's consolidated total assets, such assets may be viewed as the equivalent of off-balance-sheet exposures since the operations of an unconsolidated subsidiary could expose the parent organization and its affiliates to considerable risk. For this reason, it is generally appropriate to view the capital resources invested in these unconsolidated entities as primarily supporting the risks inherent in these off-balance-sheet assets, and not generally available to support risks or absorb losses elsewhere in the organization.

b. *Other subsidiaries and investments.* The deduction of investments, regardless of whether they are made by the parent bank holding company or by its direct or indirect subsidiaries, from a consolidated banking organization's capital will also be applied in the case of any subsidiaries, that, while consolidated for accounting purposes, are not consolidated for certain specified supervisory or regulatory purposes, such as to facilitate functional regulation. For this purpose, aggregate capital investments (that is, the sum of any equity or debt instruments that are deemed to be capital) in these subsidiaries will be deducted from the consolidated parent banking organization's total capital components.¹⁸

Advances (that is, loans, extensions of credit, guarantees, commitments, or any other forms of credit exposure) to such subsidiaries that are not deemed to be capital will generally not be deducted from capital. Rather, such advances will normally be included in the parent banking organization's consolidated assets and assigned to the 100 percent risk category, unless such obligations are backed by recognized collateral or

¹⁶ For this purpose, a banking and finance subsidiary generally is defined as any company engaged in banking or finance in which the parent institution holds directly or indirectly more than 50 percent of the outstanding voting stock, or which is otherwise controlled or capable of being controlled by the parent institution.

¹⁷ An exception to this deduction would be made in the case of shares acquired in the regular course of securing or collecting a debt previously contracted in good faith. The requirements for consolidation are spelled out in the instructions to the Consolidated Financial Statements for Bank Holding Companies (FR Y-9C Report).

¹⁸ Investments in unconsolidated subsidiaries will be deducted from both tier 1 and tier 2 capital. As a general rule, one-half (50 percent) of the aggregate amount of capital investments will be deducted from the bank holding company's tier 1 capital and one-half (50 percent) from its tier 2 capital. However, the Federal Reserve may, on a case-by-case basis, deduct a proportionately greater amount from tier 1 if the risks associated with the subsidiary so warrant. If the amount deductible from tier 2 capital exceeds actual tier 2 capital, the excess would be deducted from tier 1 capital. Bank holding companies' risk-based capital ratios, net of these deductions, must exceed the minimum standards set forth in section IV.

guarantees, in which case they will be assigned to the risk category appropriate to such collateral or guarantees. These advances may, however, be deducted from the consolidated parent banking organization's capital if, in the judgment of the Federal Reserve, the risks stemming from such advances are comparable to the risks associated with capital investments or if such advances involve other risk factors that warrant such an adjustment to capital for supervisory purposes. These other factors could include, for example, the absence of collateral support.¹⁹

In general, when investments in a consolidated subsidiary are deducted from a consolidated parent banking organization's capital, the subsidiary's assets will also be excluded from the consolidated assets of the parent banking organization in order to assess the latter's capital adequacy.²⁰

The Federal Reserve may also deduct from a banking organization's capital, on a case-by-case basis, investments in certain other subsidiaries in order to determine if the consolidated banking organization meets minimum supervisory capital requirements without reliance on the resources invested in such subsidiaries.

The Federal Reserve will not automatically deduct investments in other unconsolidated subsidiaries or investments in joint ventures and associated companies.²¹ Nonetheless, the resources invested in these entities, like investments in unconsolidated banking and finance subsidiaries, support assets not consolidated with the rest of the banking organization's activities and, there-

fore, may not be generally available to support additional leverage or absorb losses elsewhere in the banking organization. Moreover, experience has shown that banking organizations stand behind the losses of affiliated institutions, such as joint ventures and associated companies, in order to protect the reputation of the organization as a whole. In some cases, this has led to losses that have exceeded the investments in such organizations.

For this reason, the Federal Reserve will monitor the level and nature of such investments for individual banking organizations and may, on a case-by-case basis, deduct such investments from total capital components, apply an appropriate risk-weighted capital charge against the organization's proportionate share of the assets of its associated companies, require a line-by-line consolidation of the entity (in the event that the parent's control over the entity makes it the functional equivalent of a subsidiary), or otherwise require the organization to operate with a risk-based capital ratio above the minimum.

In considering the appropriateness of such adjustments or actions, the Federal Reserve will generally take into account whether—

1. the parent banking organization has significant influence over the financial or managerial policies or operations of the subsidiary, joint venture, or associated company;
2. the banking organization is the largest investor in the affiliated company; or
3. other circumstances prevail that appear to closely tie the activities of the affiliated company to the parent banking organization.

3. *Reciprocal holdings of banking organizations' capital instruments.* Reciprocal holdings of banking organizations' capital instruments (that is, instruments that qualify as tier 1 or tier 2 capital) will be deducted from an organization's total capital components for the purpose of determining the numerator of the risk-based capital ratio.

Reciprocal holdings are cross-holdings resulting from formal or informal arrangements

¹⁹ In assessing the overall capital adequacy of a banking organization, the Federal Reserve may also consider the organization's fully consolidated capital position.

²⁰ If the subsidiary's assets are consolidated with the parent banking organization for financial-reporting purposes, this adjustment will involve excluding the subsidiary's assets on a line-by-line basis from the consolidated parent organization's assets. The parent banking organization's capital ratio will then be calculated on a consolidated basis with the exception that the assets of the excluded subsidiary will not be consolidated with the remainder of the parent banking organization.

²¹ The definition of such entities is contained in the instructions to the Consolidated Financial Statements for Bank Holding Companies. Under regulatory-reporting procedures, associated companies and joint ventures generally are defined as companies in which the banking organization owns 20 to 50 percent of the voting stock.

in which two or more banking organizations swap, exchange, or otherwise agree to hold each other's capital instruments. Generally, deductions will be limited to intentional cross-holdings. At present, the Board does not intend to require banking organizations to deduct nonreciprocal holdings of such capital instruments.^{22, 23}

III. Procedures for Computing Weighted-Risk Assets and Off-Balance-Sheet Items

A. Procedures

Assets and credit-equivalent amounts of off-balance-sheet items of bank holding companies are assigned to one of several broad risk categories, according to the obligor, or, if relevant, the guarantor or the nature of the collateral. The aggregate dollar value of the amount in each category is then multiplied by the risk weight associated with that category. The resulting weighted values from each of the risk categories are added together, and this sum is the banking organization's total weighted-risk assets that comprise the denominator of the risk-based capital ratio. Attachment I provides a sample calculation.

Risk weights for all off-balance-sheet items are determined by a two-step process. First, the "credit equivalent amount" of off-balance-sheet items is determined, in most cases, by multiplying the off-balance-sheet item by a credit conversion factor. Second, the credit-equivalent amount is treated like any balance-sheet asset and generally is assigned to the appropriate risk category according to the obligor, or, if relevant, the guarantor or the nature of the collateral.

²² Deductions of holdings of capital securities also would not be made in the case of interstate "stake out" investments that comply with the Board's policy statement on nonvoting equity investments, 12 CFR 225.143 (*Federal Reserve Regulatory Service* 4-172.1; 1982 *Federal Reserve Bulletin* 413). In addition, holdings of capital instruments issued by other banking organizations but taken in satisfaction of debts previously contracted would be exempt from any deduction from capital.

²³ The Board intends to monitor nonreciprocal holdings of other banking organizations' capital instruments and to provide information on such holdings to the Basle Supervisors' Committee as called for under the Basle capital framework.

In general, if a particular item qualifies for placement in more than one risk category, it is assigned to the category that has the lowest risk weight. A holding of a U.S. municipal revenue bond that is fully guaranteed by a U.S. bank, for example, would be assigned the 20 percent risk weight appropriate to claims guaranteed by U.S. banks, rather than the 50 percent risk weight appropriate to U.S. municipal revenue bonds.²⁴

The terms "claims" and "securities" used in the context of the discussion of risk weights, unless otherwise specified, refer to loans or debt obligations of the entity on whom the claim is held. Assets in the form of stock or equity holdings in commercial or financial firms are assigned to the 100 percent risk category, unless some other treatment is explicitly permitted.

B. Collateral, Guarantees, and Other Considerations

1. *Collateral.* The only forms of collateral that are formally recognized by the risk-based capital framework are cash on deposit in a

²⁴ An investment in shares of a fund whose portfolio consists solely of various securities or money market instruments that, if held separately, would be assigned to different risk categories, is generally assigned to the risk category appropriate to the highest risk-weighted security or instrument that the fund is permitted to hold in accordance with its stated investment objectives. However, in no case will indirect holdings through shares in such funds be assigned to the zero percent risk category. For example, if a fund is permitted to hold U.S. Treasuries and commercial paper, shares in that fund would generally be assigned the 100 percent risk weight appropriate to commercial paper, regardless of the actual composition of the fund's investments at any particular time. Shares in a fund that may invest only in U.S. Treasury securities would generally be assigned to the 20 percent risk category. If, in order to maintain a necessary degree of short-term liquidity, a fund is permitted to hold an insignificant amount of its assets in short-term, highly liquid securities of superior credit quality that do not qualify for a preferential risk weight, such securities will generally not be taken into account in determining the risk category into which the banking organization's holding in the overall fund should be assigned. Regardless of the composition of the fund's securities, if the fund engages in any activities that appear speculative in nature (for example, use of futures, forwards, or option contracts for purposes other than to reduce interest rate risk) or has any other characteristics that are inconsistent with the preferential risk weighting assigned to the fund's investments, holdings in the fund will be assigned to the 100 percent risk category. During the examination process, the treatment of shares in such funds that are assigned to a lower risk weight will be subject to examiner review to ensure that they have been assigned an appropriate risk weight.

subsidiary lending institution; securities issued or guaranteed by the central governments of the OECD-based group of countries,²⁵ U.S. government agencies, or U.S. government-sponsored agencies; and securities issued by multilateral lending institutions or regional development banks. Claims fully secured by such collateral are assigned to the 20 percent risk category.

The extent to which qualifying securities are recognized as collateral is determined by their current market value. If a claim is only partially secured, that is, the market value of the pledged securities is less than the face amount of a balance-sheet asset or an off-balance-sheet item, the portion that is covered by the market value of qualifying collateral is assigned to the 20 percent risk category, and the portion of the claim that is not covered by collateral in the form of cash or a qualifying security is assigned to the risk category appropriate to the obligor or, if relevant, the guarantor. For example, to the extent that a claim on a private-sector obligor is collateralized by the current market value of U.S. government securities, it would be placed in the 20 percent risk category and the balance would be assigned to the 100 percent risk category.

2. *Guarantees.* Guarantees of the OECD and non-OECD central governments, U.S. government agencies, U.S. government-sponsored agencies, state and local governments of the OECD-based group of countries, multilateral lending institutions and regional development banks, U.S. depository institutions, and foreign banks are also recognized. If a claim is partially guaranteed, that is, coverage of the guarantee is less than the face amount of a balance-sheet asset or an off-balance-sheet item, the portion that is not fully covered by

the guarantee is assigned to the risk category appropriate to the obligor or, if relevant, to any collateral. The face amount of a claim covered by two types of guarantees that have different risk weights, such as a U.S. government guarantee and a state guarantee, is to be apportioned between the two risk categories appropriate to the guarantors.

The existence of other forms of collateral or guarantees that the risk-based capital framework does not formally recognize may be taken into consideration in evaluating the risks inherent in an organization's loan portfolio—which, in turn, would affect the overall supervisory assessment of the organization's capital adequacy.

3. *Mortgage-backed securities.* Mortgage-backed securities, including pass-throughs and collateralized mortgage obligations (but not stripped mortgage-backed securities), that are *issued or guaranteed* by a U.S. government agency or U.S. government-sponsored agency are assigned to the risk-weight category appropriate to the issuer or guarantor. Generally, a privately issued mortgage-backed security meeting certain criteria set forth in the accompanying footnote²⁶ is treated as essentially an indirect holding of the underlying assets, and is assigned to the same risk category as the underlying assets, but in no case to the zero percent risk category. Privately issued mortgage-backed securities whose structures

²⁵ The OECD-based group of countries comprises all full members of the Organization for Economic Cooperation and Development (OECD), as well as countries that have concluded special lending arrangements with the International Monetary Fund (IMF) associated with the Fund's General Arrangements to Borrow. The OECD includes the following countries: Australia, Austria, Belgium, Canada, Denmark, the Federal Republic of Germany, Finland, France, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. Saudi Arabia has concluded special lending arrangements with the IMF associated with the Fund's General Arrangements to Borrow.

²⁶ A privately issued mortgage-backed security may be treated as an indirect holding of the underlying assets provided that (1) the underlying assets are held by an independent trustee and the trustee has a first priority, perfected security interest in the underlying assets on behalf of the holders of the security; (2) either the holder of the security has an undivided pro rata ownership interest in the underlying mortgage assets or the trust or single-purpose entity (or conduit) that issues the security has no liabilities unrelated to the issued securities; (3) the security is structured such that the cash flow from the underlying assets in all cases fully meets the cash-flow requirements of the security without undue reliance on any reinvestment income; and (4) there is no material reinvestment risk associated with any funds awaiting distribution to the holders of the security. In addition, if the underlying assets of a mortgage-backed security are composed of more than one type of asset, for example, U.S. government-sponsored agency securities and privately issued pass-through securities that qualify for the 50 percent risk weight category, the entire mortgage-backed security is generally assigned to the category appropriate to the highest risk-weighted asset underlying the issue, but in no case to the zero percent risk category. Thus, in this example, the security would receive the 50 percent risk weight appropriate to the privately issued pass-through securities.

do not qualify them to be regarded as indirect holdings of the underlying assets are assigned to the 100 percent risk category. During the inspection process, privately issued mortgage-backed securities that are assigned to a lower risk-weight category will be subject to examiner review to ensure that they meet the appropriate criteria.

While the risk category to which mortgage-backed securities are assigned will generally be based upon the issuer or guarantor or, in the case of privately issued mortgage-backed securities, the assets underlying the security, any class of a mortgage-backed security that can absorb more than its pro rata share of loss without the whole issue being in default (for example, a so-called subordinated class or residual interest), is assigned to the 100 percent risk category. Furthermore, all stripped mortgage-backed securities, including interest-only strips (IOs), principal-only strips (POs), and similar instruments, are also assigned to the 100 percent risk-weight category, regardless of the issuer or guarantor.

4. *Maturity.* Maturity is generally not a factor in assigning items to risk categories with the exception of claims on non-OECD banks, commitments, and interest-rate and foreign-exchange-rate contracts. Except for commitments, short-term is defined as one year or less *remaining* maturity and long-term is defined as over one year *remaining* maturity. In the case of commitments, short-term is defined as one year or less *original* maturity and long-term is defined as over one year *original* maturity.²⁷

C. Risk Weights

Attachment III contains a listing of the risk categories, a summary of the types of assets assigned to each category and the risk weight associated with each category, that is, 0 percent, 20 percent, 50 percent, and 100 percent. A brief explanation of the components of each category follows.

1. *Category 1: zero percent.* This category includes cash (domestic and foreign) owned and held in all offices of subsidiary depository

institutions or in transit and gold bullion held in either a subsidiary depository institution's own vaults or in another's vaults on an allocated basis, to the extent it is offset by gold bullion liabilities.²⁸ The category also includes all direct claims (including securities, loans, and leases) on, and the portions of claims that are directly and unconditionally guaranteed by, the central governments²⁹ of the OECD countries and U.S. government agencies,³⁰ as well as all direct local currency claims on, and the portions of local currency claims that are directly and unconditionally guaranteed by, the central governments of non-OECD countries, to the extent that subsidiary depository institutions have liabilities booked in that currency. A claim is not considered to be unconditionally guaranteed by a central government if the validity of the guarantee is dependent upon some affirmative action by the holder or a third party. Generally, securities guaranteed by the U.S. government or its agencies that are actively traded in financial markets, such as GNMA securities, are considered to be unconditionally guaranteed.

2. *Category 2: 20 percent.* This category includes cash items in the process of collection, both foreign and domestic; short-term claims (including demand deposits) on, and the por-

²⁸ All other holdings of bullion are assigned to the 100 percent risk category.

²⁹ A central government is defined to include departments and ministries, including the central bank, of the central government. The U.S. central bank includes the 12 Federal Reserve Banks, and stock held in these banks as a condition of membership is assigned to the zero percent risk category. The definition of central government does not include state, provincial, or local governments; or commercial enterprises owned by the central government. In addition, it does not include local government entities or commercial enterprises whose obligations are guaranteed by the central government, although any claims on such entities guaranteed by central governments are placed in the same general risk category as other claims guaranteed by central governments. OECD central governments are defined as central governments of the OECD-based group of countries; non-OECD central governments are defined as central governments of countries that do not belong to the OECD-based group of countries.

³⁰ A U.S. government agency is defined as an instrumentality of the U.S. government whose obligations are fully and explicitly guaranteed as to the timely payment of principal and interest by the full faith and credit of the U.S. government. Such agencies include the Government National Mortgage Association (GNMA), the Veterans Administration (VA), the Federal Housing Administration (FHA), the Export-Import Bank (Exim Bank), the Overseas Private Investment Corporation (OPIC), the Commodity Credit Corporation (CCC), and the Small Business Administration (SBA).

²⁷ Through year-end 1992, remaining, rather than original, maturity may be used for determining the maturity of commitments.

tions of short-term claims that are guaranteed by,³¹ U.S. depository institutions³² and foreign banks;³³ and long-term claims on, and the portions of long-term claims that are guaranteed by, U.S. depository institutions and OECD banks.³⁴

This category also includes the portions of claims that are conditionally guaranteed by OECD central governments and U.S. government agencies, as well as the portions of local currency claims that are conditionally guaranteed by non-OECD central governments, to the extent that subsidiary depository institutions have liabilities booked in that currency. In addition, this category also includes claims on, and the portions of claims that are guaranteed by, U.S. government-sponsored agencies³⁵ and claims on, and the portions of

claims guaranteed by, the International Bank for Reconstruction and Development (World Bank), the Interamerican Development Bank, the Asian Development Bank, the African Development Bank, the European Investment Bank, and other multilateral lending institutions or regional development banks in which the U.S. government is a shareholder or contributing member. General obligation claims on, or portions of claims guaranteed by the full faith and credit of, states or other political subdivisions of the United States or other countries of the OECD-based group are also assigned to this category.³⁶

This category also includes the portions of claims (including repurchase agreements) collateralized by cash on deposit in the subsidiary lending institution; by securities issued or guaranteed by OECD central governments, U.S. government agencies or U.S. government-sponsored agencies; or by securities issued by multilateral lending institutions or regional development banks in which the U.S. government is a shareholder or contributing member.

3. Category 3: 50 percent. This category includes loans fully secured by first liens³⁷ on one- to four-family residential properties,³⁸ either owner-occupied or rented, provided that such loans have been made in accordance with prudent underwriting standards, including a conservative loan-to-value ratio;³⁹ are

tered by the federal government to serve public purposes specified by the U.S. Congress but whose obligations are *not explicitly* guaranteed by the full faith and credit of the U.S. government. These agencies include the Federal Home Loan Mortgage Corporation (FHLMC), the Federal National Mortgage Association (FNMA), the Farm Credit System, the Federal Home Loan Bank System, and the Student Loan Marketing Association (SLMA). Claims on U.S. government-sponsored agencies include capital stock in a Federal Home Loan Bank that is held as a condition of membership in that Bank.

³⁶ Claims on, or guaranteed by, states or other political subdivisions of countries that do not belong to the OECD-based group of countries are placed in the 100 percent risk category.

³⁷ If a banking organization holds the first and junior lien(s) on a residential property and no other party holds an intervening lien, the transaction is treated as a single loan secured by a first lien for the purpose of determining the loan-to-value ratio.

³⁸ The types of properties that qualify as one- to four-family residences are listed in the instructions to the FR Y-9C Report.

³⁹ The loan-to-value ratio is based upon the most current appraised value of the property. All the appraisals must be made in a manner consistent with the federal banking agencies' real estate appraisal guidelines and with the banking organization's own appraisal guidelines.

³¹ Claims guaranteed by U.S. depository institutions and foreign banks include risk participations in both banker's acceptances and standby letters of credit, as well as participations in commitments, that are conveyed to U.S. depository institutions or foreign banks.

³² U.S. depository institutions are defined to include branches (foreign and domestic) of federally insured banks and depository institutions chartered and headquartered in the 50 states of the United States, the District of Columbia, Puerto Rico, and U.S. territories and possessions. The definition encompasses banks, mutual or stock savings banks, savings or building and loan associations, cooperative banks, credit unions, and international banking facilities of domestic banks. U.S.-chartered depository institutions owned by foreigners are also included in the definition. However, branches and agencies of foreign banks located in the U.S., as well as all bank holding companies, are excluded.

³³ Foreign banks are distinguished as either OECD banks or non-OECD banks. OECD banks include banks and their branches (foreign and domestic) organized under the laws of countries (other than the U.S.) that belong to the OECD-based group of countries. Non-OECD banks include banks and their branches (foreign and domestic) organized under the laws of countries that do not belong to the OECD-based group of countries. For this purpose, a bank is defined as an institution that engages in the business of banking; is recognized as a bank by the bank supervisory or monetary authorities of the country of its organization or principal banking operations; receives deposits to a substantial extent in the regular course of business; and has the power to accept demand deposits. Claims on, and the portions of claims that are guaranteed by, a non-OECD central bank are treated as claims on, or guaranteed by, a non-OECD bank, except for local currency claims on, and the portions of local currency claims that are guaranteed by, a non-OECD central bank that are funded in local-currency liabilities. The latter claims are assigned to the zero percent risk category.

³⁴ Long-term claims on, or guaranteed by, non-OECD banks and all claims on bank holding companies are assigned to the 100 percent risk category, as are holdings of bank-issued securities that qualify as capital of the issuing banks.

³⁵ For this purpose, U.S. government-sponsored agencies are defined as agencies originally established or char-

performing in accordance with their original terms; and are not 90 days or more past due or carried in nonaccrual status.⁴⁰ Also included in this category are privately issued mortgage-backed securities provided that (1) the structure of the security meets the criteria described in section III(B) (3) above; (2) if the security is backed by a pool of conventional mortgages, *each* underlying mortgage meets the criteria described above in this section for eligibility for the 50 percent risk-weight category at the time the pool is originated; and (3) if the security is backed by privately issued mortgage-backed securities, *each* underlying security qualifies for the 50 percent risk category. Privately issued mortgage-backed securities that do not meet these criteria or that do not qualify for a lower risk weight are generally assigned to the 100 percent risk-weight category.

Also assigned to this category are *revenue* (nongeneral obligation) bonds or similar obligations, including loans and leases, that are obligations of states or other political subdivisions of the United States (for example, municipal revenue bonds) or other countries of the OECD-based group, but for which the government entity is committed to repay the debt with revenues from the specific projects financed, rather than from general tax funds.

Credit-equivalent amounts of interest-rate and foreign-exchange-rate contracts involving standard risk obligors (that is, obligors whose loans or debt securities would be assigned to the 100 percent risk category) are included in the 50 percent category, unless they are backed by collateral or guarantees that allow them to be placed in a lower risk category.

4. *Category 4: 100 percent.* All assets not included in the categories above are assigned to this category, which comprises standard risk assets. The bulk of the assets typically found in a loan portfolio would be assigned to the 100 percent category.

This category includes long-term claims on, and the portions of long-term claims that are guaranteed by, non-OECD banks, and all

claims on non-OECD central governments that entail some degree of transfer risk.⁴¹ This category also includes all claims on foreign and domestic private-sector obligors not included in the categories above (including loans to nondepository financial institutions and bank holding companies); claims on commercial firms owned by the public sector; customer liabilities to the bank on acceptances outstanding involving standard risk claims;⁴² investments in fixed assets, premises, and other real estate owned; common and preferred stock of corporations, including stock acquired for debts previously contracted; commercial and consumer loans (except those assigned to lower risk categories due to recognized guarantees or collateral and loans for residential property that qualify for a lower risk weight); mortgage-backed securities that do not meet criteria for assignment to a lower risk weight (including any classes of mortgage-backed securities that can absorb more than their pro rata share of loss without the whole issue being in default); and all stripped mortgage-backed and similar securities.

Also included in this category are industrial-development bonds and similar obligations issued under the auspices of states or political subdivisions of the OECD-based group of countries for the benefit of a private party or enterprise where that party or enterprise, not the government entity, is obligated to pay the principal and interest, and all obligations of states or political subdivisions of countries that do not belong to the OECD-based group.

The following assets also are assigned a risk weight of 100 percent if they have not been deducted from capital: investments in unconsolidated companies, joint ventures, or associ-

⁴¹ Such assets include all nonlocal-currency claims on, and the portions of claims that are guaranteed by, non-OECD central governments and those portions of local-currency claims on, or guaranteed by, non-OECD central governments that exceed the local-currency liabilities held by subsidiary depository institutions.

⁴² Customer liabilities on acceptances outstanding involving nonstandard risk claims, such as claims on U.S. depository institutions, are assigned to the risk category appropriate to the identity of the obligor or, if relevant, the nature of the collateral or guarantees backing the claims. Portions of acceptances conveyed as risk participations to U.S. depository institutions or foreign banks are assigned to the 20 percent risk category appropriate to short-term claims guaranteed by U.S. depository institutions and foreign banks.

⁴⁰ Residential property loans that do not meet all the specified criteria or that are made for the purpose of speculative property development are placed in the 100 percent risk category.

ated companies; instruments that qualify as capital issued by other banking organizations; and any intangibles, including grandfathered goodwill.

D. Off-Balance-Sheet Items

The face amount of an off-balance-sheet item is incorporated into the risk-based capital ratio by multiplying it by a credit-conversion factor. The resultant credit-equivalent amount is assigned to the appropriate risk category according to the obligor, or, if relevant, the guarantor or the nature of the collateral.⁴³ Attachment IV sets forth the conversion factors for various types of off-balance-sheet items.

1. Items with a 100 percent conversion factor.

A 100 percent conversion factor applies to direct credit substitutes, which include guarantees, or equivalent instruments, backing financial claims, such as outstanding securities, loans, and other financial liabilities, or that back off-balance-sheet items that require capital under the risk-based capital framework. Direct credit substitutes include, for example, financial standby letters of credit, or other equivalent irrevocable undertakings or surety arrangements, that guarantee repayment of financial obligations such as commercial paper, tax-exempt securities, commercial or individual loans or debt obligations, or standby or commercial letters of credit. Direct credit substitutes also include the acquisition of risk participations in banker's acceptances and standby letters of credit, since both of these transactions, in effect, constitute a guarantee by the acquiring banking organization that the underlying account party (obligor) will repay its obligation to the originating, or issuing, institution.⁴⁴ (Standby letters of credit that are performance-related are discussed below and have a credit-conversion factor of 50 percent.)

⁴³ The sufficiency of collateral and guarantees for off-balance-sheet items is determined by the market value of the collateral or the amount of the guarantee in relation to the face amount of the item, except for interest- and foreign-exchange-rate contracts, for which this determination is made in relation to the credit-equivalent amount. Collateral and guarantees are subject to the same provisions noted under section III(B).

⁴⁴ Credit-equivalent amounts of acquisitions of risk participations are assigned to the risk category appropriate to the account-party obligor, or, if relevant, the nature of the collateral or guarantees.

The full amount of a direct credit substitute is converted at 100 percent and the resulting credit-equivalent amount is assigned to the risk category appropriate to the obligor or, if relevant, the guarantor or the nature of the collateral. In the case of a direct credit substitute in which a risk participation⁴⁵ has been conveyed, the full amount is still converted at 100 percent. However, the credit-equivalent amount that has been conveyed is assigned to whichever risk category is lower: the risk category appropriate to the obligor, after giving effect to any relevant guarantees or collateral, or the risk category appropriate to the institution acquiring the participation. Any remainder is assigned to the risk category appropriate to the obligor, guarantor, or collateral. For example, the portion of a direct credit substitute conveyed as a risk participation to a U.S. domestic depository institution or foreign bank is assigned to the risk category appropriate to claims guaranteed by those institutions, that is, the 20 percent risk category.⁴⁶ This approach recognizes that such conveyances replace the originating banking organization's exposure to the obligor with an exposure to the institutions acquiring the risk participations.⁴⁷

In the case of direct credit substitutes that take the form of a syndication, that is, where each banking organization is obligated only for its pro rata share of the risk and there is no recourse to the originating banking organization, each banking organization will only include its pro rata share of the direct credit substitute in its risk-based capital calculation.

Financial standby letters of credit are distinguished from loan commitments (discussed below) in that standbys are irrevocable obligations of the banking organization to pay a third-party beneficiary when a customer (ac-

⁴⁵ That is, a participation in which the originating banking organization remains liable to the beneficiary for the full amount of the direct credit substitute if the party that has acquired the participation fails to pay when the instrument is drawn.

⁴⁶ Risk participations with a remaining maturity of over one year that are conveyed to non-OECD banks are to be assigned to the 100 percent risk category, unless a lower risk category is appropriate to the obligor, guarantor, or collateral.

⁴⁷ A risk participation in banker's acceptances conveyed to other institutions is also assigned to the risk category appropriate to the institution acquiring the participation or, if relevant, the guarantor or nature of the collateral.

count party) *fails to repay* an outstanding loan or debt instrument (direct credit substitute). Performance standby letters of credit (performance bonds) are irrevocable obligations of the banking organization to pay a third-party beneficiary when a customer (account party) *fails to perform* some other contractual nonfinancial obligation.

The distinguishing characteristic of a standby letter of credit for risk-based capital purposes is the combination of irrevocability with the fact that funding is triggered by some failure to repay or perform an obligation. Thus, any commitment (by whatever name) that involves an *irrevocable* obligation to make a payment to the customer or to a third party in the event the customer *fails to repay* an outstanding debt obligation or *fails to perform* a contractual obligation is treated, for risk-based capital purposes, as respectively, a financial guarantee standby letter of credit or a performance standby.

A loan commitment, on the other hand, involves an obligation (with or without a material adverse change or similar clause) of the banking organization to fund its customer *in the normal course* of business should the customer seek to draw down the commitment.

Sale and repurchase agreements and asset sales with recourse (to the extent not included on the balance sheet) and forward agreements also are converted at 100 percent.⁴⁸ So-called "loan strips" (that is, short-term advances sold under long-term commitments without direct recourse) are treated for risk-based capital purposes as assets sold with recourse and, accordingly, are also converted at 100 percent.

Forward agreements are legally binding contractual obligations to purchase assets with *certain* drawdown at a specified future date. Such obligations include forward pur-

chases, forward forward deposits placed,⁴⁹ and partly paid shares and securities; they do not include commitments to make residential mortgage loans or forward foreign-exchange contracts.

Securities lent by a banking organization are treated in one of two ways, depending upon whether the lender is at risk of loss. If a banking organization, as agent for a customer, lends the customer's securities and does not indemnify the customer against loss, then the transaction is excluded from the risk-based capital calculation. If, alternatively, a banking organization lends its own securities or, acting as agent for a customer, lends the customer's securities and indemnifies the customer against loss, the transaction is converted at 100 percent and assigned to the risk-weight category appropriate to the obligor, to any collateral delivered to the lending banking organization, or, if applicable, to the independent custodian acting on the lender's behalf.

2. Items with a 50 percent conversion factor.

Transaction-related contingencies are converted at 50 percent. Such contingencies include bid bonds, performance bonds, warranties, standby letters of credit related to particular transactions, and performance standby letters of credit, as well as acquisitions of risk participations in performance standby letters of credit. Performance standby letters of credit represent obligations backing the performance of nonfinancial or commercial contracts or undertakings. To the extent permitted by law or regulation, performance standby letters of credit include arrangements backing, among other things, subcontractors' and suppliers' performance, labor and materials contracts, and construction bids.

The unused portion of commitments with an *original* maturity exceeding one year,⁵⁰ including underwriting commitments, and commercial and consumer credit commitments also are converted at 50 percent. Original maturity is defined as the length of time between the date the commitment is issued and the

⁴⁸ In regulatory reports and under GAAP, bank holding companies are permitted to treat some asset sales with recourse as "true" sales. For risk-based capital purposes, however, such assets sold with recourse and reported as "true" sales by bank holding companies are converted at 100 percent and assigned to the risk category appropriate to the underlying obligor, or, if relevant, the guarantor or nature of the collateral, provided that the transactions meet the definition of assets sold with recourse, including the sale of one- to four-family residential mortgages, that is contained in the instructions to the commercial bank Consolidated Reports of Condition and Income (call report).

⁴⁹ Forward forward deposits accepted are treated as interest-rate contracts.

⁵⁰ Through year-end 1992, remaining maturity may be used for determining the maturity of off-balance-sheet loan commitments; thereafter, original maturity must be used.

earliest date on which (1) the banking organization can, at its option, unconditionally (without cause) cancel the commitment⁵¹ and (2) the banking organization is scheduled to (and as a normal practice actually does) review the facility to determine whether or not it should be extended. Such reviews must continue to be conducted at least annually for such a facility to qualify as a short-term commitment.

Commitments are defined as any legally binding arrangements that obligate a banking organization to extend credit in the form of loans or leases; to purchase loans, securities, or other assets; or to participate in loans and leases. They also include overdraft facilities, revolving credit, home equity and mortgage lines of credit, and similar transactions. Normally, commitments involve a written contract or agreement and a commitment fee, or some other form of consideration. Commitments are included in weighted-risk assets regardless of whether they contain "material adverse change" clauses or other provisions that are intended to relieve the issuer of its funding obligation under certain conditions. In the case of commitments structured as syndications, where the banking organization is obligated solely for its pro rata share, only the banking organization's proportional share of the syndicated commitment is taken into account in calculating the risk-based capital ratio.

Facilities that are unconditionally cancellable (without cause) at any time by the banking organization are not deemed to be commitments, provided the banking organization makes a separate credit decision before each drawing under the facility. Commitments with an original maturity of one year or less are deemed to involve low risk and, therefore, are not assessed a capital charge. Such short-term commitments are defined to include the unused portion of lines of credit on retail credit cards and related plans (as defined in the instructions to the FR Y-9C Report) if

the banking organization has the unconditional right to cancel the line of credit at any time, in accordance with applicable law.

Once a commitment has been converted at 50 percent, any portion that has been conveyed to U.S. depository institutions or OECD banks as participations in which the originating banking organization retains the full obligation to the borrower if the participating bank fails to pay when the instrument is drawn, is assigned to the 20 percent risk category. This treatment is analogous to that accorded to conveyances of risk participations in standby letters of credit. The acquisition of a participation in a commitment by a banking organization is converted at 50 percent and assigned to the risk category appropriate to the account-party obligor or, if relevant, the nature of the collateral or guarantees.

Revolving underwriting facilities (RUFs), note-issuance facilities (NIFs), and other similar arrangements also are converted at 50 percent regardless of maturity. These are facilities under which a borrower can issue on a revolving basis short-term paper in its own name, but for which the underwriting organizations have a legally binding commitment either to purchase any notes the borrower is unable to sell by the roll-over date or to advance funds to the borrower.

3. *Items with a 20 percent conversion factor.* Short-term, self-liquidating, trade-related contingencies which arise from the movement of goods are converted at 20 percent. Such contingencies generally include commercial letters of credit and other documentary letters of credit collateralized by the underlying shipments.

4. *Items with a zero percent conversion factor.* These include unused portions of commitments with an original maturity of one year or less,⁵² or which are unconditionally cancellable at any time, provided a separate credit decision is made before each drawing under the facility. Unused portions of lines of credit on retail credit cards and related plans are deemed to be short-term commitments if the

⁵¹ In the case of consumer home equity or mortgage lines of credit secured by liens on one- to four-family residential properties, the bank is deemed able to unconditionally cancel the commitment for the purpose of this criterion if, at its option, it can prohibit additional extensions of credit, reduce the credit line, and terminate the commitment to the full extent permitted by relevant federal law.

⁵² Through year-end 1992, remaining maturity may be used for determining term to maturity for off-balance-sheet loan commitments; thereafter, original maturity must be used.

banking organization has the unconditional right to cancel the line of credit at any time, in accordance with applicable law.

E. Interest-Rate and Foreign-Exchange-Rate Contracts

1. *Scope.* Credit-equivalent amounts are computed for each of the following off-balance-sheet interest-rate and foreign-exchange-rate instruments:

- I. Interest-rate contracts
 - A. Single-currency interest-rate swaps
 - B. Basis swaps
 - C. Forward-rate agreements
 - D. Interest-rate options purchased (including caps, collars, and floors purchased)
 - E. Any other instrument that gives rise to similar credit risks (including when-issued securities and forward deposits accepted)
- II. Exchange-rate contracts
 - A. Cross-currency interest rate swaps
 - B. Forward foreign-exchange contracts
 - C. Currency options purchased
 - D. Any other instrument that gives rise to similar credit risks

Exchange-rate contracts with an original maturity of 14 calendar days or less and instruments traded on exchanges that require daily payment of variation margin are excluded from the risk-based ratio calculation. Over-the-counter options purchased, however, are included and treated in the same way as the other interest-rate and exchange-rate contracts.

2. *Calculation of credit-equivalent amounts.* Credit-equivalent amounts are calculated for each individual contract of the types listed above. To calculate the credit-equivalent amount of its off-balance-sheet interest-rate and exchange-rate instruments, a banking organization sums these amounts:

1. the mark-to-market value⁵³ (positive values only) of each contract (that is, the current exposure); and

⁵³ Mark-to-market values are measured in dollars, regardless of the currency or currencies specified in the contract, and should reflect changes in both interest rates and counterparty credit quality.

2. an estimate of the potential future credit exposure over the remaining life of each contract.

The potential future credit exposure on a contract, including contracts with negative mark-to-market values, is estimated by multiplying the notional principal amount by one of the following credit conversion factors, as appropriate:

<i>Remaining maturity</i>	<i>Interest-rate contracts</i>	<i>Exchange-rate contracts</i>
One year or less	—0—	1.0%
Over one year	0.5%	5.0%

Examples of the calculation of credit-equivalent amounts for these instruments are contained in attachment V.

Because exchange-rate contracts involve an exchange of principal upon maturity, and exchange rates are generally more volatile than interest rates, higher conversion factors have been established for foreign-exchange contracts than for interest-rate contracts.

No potential future credit exposure is calculated for single-currency interest-rate swaps in which payments are made based upon two floating rate indices, so-called floating/floating or basis swaps; the credit exposure on these contracts is evaluated solely on the basis of their mark-to-market values.

3. *Risk weights.* Once the credit-equivalent amount for interest-rate and exchange-rate instruments has been determined, that amount is assigned to the risk-weight category appropriate to the counterparty, or, if relevant, the nature of any collateral or guarantees.⁵⁴ However, the maximum weight that will be applied to the credit-equivalent amount of such instruments is 50 percent.

4. *Avoidance of double-counting.* In certain cases, credit exposures arising from the interest-rate and exchange instruments covered by these guidelines may already be reflected, in part, on the balance sheet. To avoid double-counting such exposures in the assessment of capital adequacy and, perhaps, assigning inap-

⁵⁴ For interest- and exchange-rate contracts, sufficiency of collateral or guarantees is determined by the market value of the collateral or the amount of the guarantee in relation to the credit-equivalent amount. Collateral and guarantees are subject to the same provisions noted under section III(B).

appropriate risk weights, counterparty credit exposures arising from the types of instruments covered by these guidelines may need to be excluded from balance-sheet assets in calculating banking organizations' risk-based capital ratios.

5. *Netting.* Netting of swaps and similar contracts is recognized for purposes of calculating the risk-based capital ratio *only* when accomplished through netting by novation.⁵⁵ While the Federal Reserve encourages any reasonable arrangements designed to reduce the risks inherent in these transactions, other types of netting arrangements are not recognized for purposes of calculating the risk-based ratio at this time.

IV. Minimum Supervisory Ratios and Standards

The interim and final supervisory standards set forth below specify *minimum* supervisory ratios based primarily on broad credit-risk considerations. As noted above, the risk-based ratio does not take explicit account of the quality of individual asset portfolios or the range of other types of risks to which banking organizations may be exposed, such as interest-rate, liquidity, market, or operational risks. For this reason, banking organizations are generally expected to operate with capital positions well above the minimum ratios. This is particularly true for institutions that are undertaking significant expansion or that are exposed to high or unusual levels of risk.

Upon adoption of the risk-based framework, any organization that does not meet the interim or final supervisory ratios, or whose capital is otherwise considered inadequate, is expected to develop and implement a plan acceptable to the Federal Reserve for achieving an adequate level of capital consistent with the provisions of these guidelines or with the special circumstances affecting the individual

organization. In addition, such organizations should avoid any actions, including increased risk-taking or unwarranted expansion, that would lower or further erode their capital positions.

A. *Minimum Risk-Based Ratio After Transition Period*

As reflected in attachment VI, by year-end 1992, all bank holding companies⁵⁶ should meet a minimum ratio of qualifying total capital to weighted-risk assets of 8 percent, of which at least 4.0 percentage points should be in the form of tier 1 capital. (Section II above contains detailed definitions of capital and related terms used in this section.) The maximum amount of supplementary capital elements that qualifies as tier 2 capital is limited to 100 percent of tier 1 capital net of goodwill. In addition, the combined maximum amount of subordinated debt and intermediate-term preferred stock that qualifies as tier 2 capital is limited to 50 percent of tier 1 capital net of goodwill. The maximum amount of the allowance for loan and lease losses that qualifies as tier 2 capital is limited to 1.25 percent of gross weighted-risk assets. Allowances for loan and lease losses in excess of this limit may, of course, be maintained, but would not be included in an organization's total capital. The Federal Reserve will continue to require bank holding companies to maintain reserves at levels fully sufficient to cover losses inherent in their loan portfolios.

Qualifying total capital is calculated by adding tier 1 capital and tier 2 capital (limited to 100 percent of tier 1 capital) and then deducting from this sum certain investments in banking or finance subsidiaries that are not consolidated for accounting or supervisory purposes, reciprocal holdings of banking organizations' capital securities, or other items at the direction of the Federal Reserve. The conditions under which these deductions are to be made and the procedures for making the deductions are discussed above in section II(B).

⁵⁵ Netting by novation, for this purpose, is a written bilateral contract between two counterparties under which any obligation to each other to deliver a given currency on a given date is automatically amalgamated with all other obligations for the same currency and value date, *legally* substituting one single net amount for the previous gross obligations.

⁵⁶ As noted in section I above, bank holding companies with less than \$150 million in consolidated assets would generally be exempt from the calculation and analysis of risk-based ratios on a consolidated holding company basis, subject to certain terms and conditions.

B. Transition Arrangements

The transition period for implementing the risk-based capital standard ends on December 31, 1992.⁵⁷ Initially, the risk-based capital guidelines do not establish a minimum level of capital. However, by year-end 1990, banking organizations are expected to meet a minimum interim target ratio for qualifying total capital to weighted-risk assets of 7.25 percent, at least one-half of which should be in the form of tier 1 capital. For purposes of meeting the 1990 interim target, the amount of loan-loss reserves that may be included in capital is limited to 1.5 percent of weighted-risk assets and up to 10 percent of an organization's tier 1 capital may consist of supplementary capital elements. Thus, the 7.25 percent interim target ratio implies a minimum ratio of tier 1 capital to weighted-risk assets of 3.6 percent (one-half of 7.25) and a minimum ratio of core capital elements to weighted-risk assets ratio of 3.25 percent (nine-tenths of the tier 1 capital ratio).

⁵⁷ The Basle capital framework does not establish an initial minimum standard for the risk-based capital ratio before the end of 1990. However, for the purpose of calculating a risk-based capital ratio prior to year-end 1990, no sublimit is placed on the amount of the allowance for loan and lease losses includable in tier 2. In addition, this framework permits, under temporary transition arrangements, a certain percentage of an organization's tier 1 capital to be made up of supplementary capital elements. In particular, supplementary elements may constitute 25 percent of an organization's tier 1 capital (before the deduction of goodwill) up to the end of 1990; from year-end 1990 up to the end of 1992, this allowable percentage of supplementary elements in tier 1 declines to 10 percent of tier 1 (before the deduction of goodwill). Beginning on December 31, 1992, supplementary elements may not be included in tier 1. The amount of subordinated debt and intermediate-term preferred stock temporarily included in tier 1 under these arrangements will not be subject to the sublimit on the amount of such instruments includable in tier 2 capital. While the transitional arrangements allow an organization to include supplementary elements in tier 1 on a temporary basis, the amount of perpetual preferred stock that may be included in a bank holding company's tier 1—both during and after the transition period—is, as described in section II(A), based solely upon a specified percentage of the organization's permanent core capital elements (that is, common equity, perpetual preferred stock, and minority interest in the equity of consolidated subsidiaries), not upon total tier 1 elements that temporarily include tier 2 items. Once the amount of supplementary items that may temporarily qualify as tier 1 elements is determined, goodwill must be deducted from the sum of this amount and the amount of the organization's permanent core capital elements for the purpose of calculating tier 1 (net of goodwill), tier 2, and total capital.

Attachment I—Sample Calculation of Risk-Based Capital Ratio for Bank Holding Companies

Example of a banking organization with \$6,000 in total capital and the following assets and off-balance-sheet items:

Balance-sheet assets

Cash	\$ 5,000
U.S. Treasuries	20,000
Balances at domestic banks	5,000
Loans secured by first liens on 1- to 4-family residential properties	5,000
Loans to private corporations	<u>65,000</u>
Total Balance-Sheet Assets	\$100,000

Off-balance-sheet items

Standby letters of credit (SLCs) backing general-obligation debt issues of U.S. municipalities (GOs)	\$ 10,000
Long-term legally binding commitments to private corporations	<u>20,000</u>
Total Off-Balance-Sheet Items	\$ 30,000

This bank holding company's total capital to *total* assets (leverage ratio would be:

$$(\$6,000/\$100,000) = 6.00\%.$$

To compute the bank holding company's weighted-risk assets:

1. Compute the credit-equivalent amount of each off-balance-sheet (OBS) item.

<i>OBS item</i>	<i>Face value</i>		<i>Conversion factor</i>		<i>Credit-equivalent amount</i>
SLCs backing municipal GOs	\$10,000	×	1.00	=	\$10,000
Long-term commitments to private corporations	\$20,000	×	0.50	=	\$10,000

Table continued

2. Multiply each balance-sheet asset and the credit-equivalent amount of each OBS item by the appropriate risk weight.

<i>OBS item</i>	<i>Face value</i>	<i>Conversion factor</i>			<i>Credit-equivalent amount</i>
<i>0% category</i>					
Cash	\$ 5,000				
U.S. Treasuries	<u>20,000</u>				
	\$25,000	×	0	=	0
<i>20% category</i>					
Balances at domestic banks	\$ 5,000				
Credit-equivalent amounts of SLCs backing GOs of U.S. municipalities	<u>10,000</u>				
	\$15,000	×	0.20	=	\$ 3,000
<i>50% category</i>					
Loans secured by first liens on 1- to 4-family residential properties	\$ 5,000	×	0.50	=	\$ 2,500
<i>100% category</i>					
Loans to private corporations	\$65,000				
Credit-equivalent amounts of long-term commitments to private corporations	<u>10,000</u>				
	\$75,000	×	1.00	=	<u>\$75,000</u>
Total Risk-Weighted Assets					\$80,500

This bank holding company's ratio of total capital to weighted-risk assets (risk-based capital ratio) would be:

$$(\$6,000/\$80,500) = 7.45\%$$

Attachment II—Summary Definition of Qualifying Capital for Bank Holding Companies*

Using the Year-End 1992 Standards

<i>Components</i>	<i>Minimum requirements after transition period</i>
CORE CAPITAL (tier 1)	Must equal or exceed 4% of weighted-risk assets
Common stockholders' equity	No limit
Qualifying cumulative and noncumulative perpetual preferred stock	Limited to 25% of the sum of common stock, minority interests, and qualifying perpetual preferred stock
Minority interest in equity accounts of consolidated subsidiaries	Organizations should avoid using minority interests to introduce elements not otherwise qualifying for tier 1 capital
Less: Goodwill ¹	
SUPPLEMENTARY CAPITAL (tier 2)	Total of tier 2 is limited to 100% of tier 1 ²
Allowance for loan and lease losses	Limited to 1.25% of weighted-risk assets ²
Perpetual preferred stock	No limit within tier 2
Hybrid capital instruments, perpetual debt, and mandatory convertible securities	No limit within tier 2
Subordinated debt and intermediate-term preferred stock (original weighted average maturity of 5 years or more)	Subordinated debt and intermediate-term preferred stock are limited to 50% of tier 1; ³ amortized for capital purposes as they approach maturity
Revaluation reserves (equity and building)	Not included; organizations encouraged to disclose; may be evaluated on a case-by-case basis for international comparisons; and taken into account in making an overall assessment of capital
DEDUCTIONS (from sum of tier 1 and tier 2)	
Investments in unconsolidated subsidiaries	As a general rule, one-half of the aggregate investments will be deducted from tier 1 capital and one-half from tier 2 capital ⁴
Reciprocal holdings of banking organizations' capital securities	
Other deductions (such as other subsidiaries or joint ventures) as determined by supervisory authority	On a case-by-case basis or as a matter of policy after formal rulemaking
TOTAL CAPITAL (tier 1 + tier 2 - Deductions)	Must equal or exceed 8% of weighted-risk assets

* See discussion in section II of the guidelines for a complete description of the requirements for, and the limitations on, the components of qualifying capital.

¹ Goodwill on books of bank holding companies before March 12, 1988, would be "grandfathered" for the transition period.

² Amounts in excess of limitations are permitted but do not qualify as capital.

³ Amounts in excess of limitations are permitted but do not qualify as capital.

⁴ A proportionately greater amount may be deducted from tier 1 capital if the risks associated with the subsidiary so warrant.

Attachment III—Summary of Risk Weights and Risk Categories for Bank Holding Companies

Category 1: Zero Percent

1. Cash (domestic and foreign) held in subsidiary depository institutions or in transit
2. Balances due from Federal Reserve Banks (including Federal Reserve Bank stock) and central banks in other OECD countries
3. Direct claims on, and the portions of claims that are unconditionally guaranteed by, the U.S. Treasury and U.S. government agencies¹ and the central governments of other OECD countries, and local currency claims on, and the portions of local currency claims that are unconditionally guaranteed by, the central governments of non-OECD countries (including the central banks of non-OECD countries), to the extent that subsidiary depository institutions have liabilities booked in that currency
4. Gold bullion held in the vaults of a subsidiary depository institution or in another's vaults on an allocated basis, to the extent offset by gold bullion liabilities

Category 2: 20 Percent

1. Cash items in the process of collection
2. All claims (long- or short-term) on, and the portions of claims (long- or short-term) that are guaranteed by, U.S. depository institutions and OECD banks
3. Short-term claims (remaining maturity of one year or less) on, and the portions of short-term claims that are guaranteed by, non-OECD banks
4. The portions of claims that are conditionally guaranteed by the central governments of OECD countries and U.S. government agencies, and the portions of local currency claims that are conditionally guaranteed by the central governments of non-OECD countries, to

¹ For the purpose of calculating the risk-based capital ratio, a U.S. government agency is defined as an instrumentality of the U.S. government whose obligations are fully and explicitly guaranteed as to the timely payment of principal and interest by the full faith and credit of the U.S. government.

the extent that subsidiary depository institutions have liabilities booked in that currency

5. Claims on, and the portions of claims that are guaranteed by, U.S. government-sponsored agencies²
 6. General obligation claims on, and the portions of claims that are guaranteed by the full faith and credit of, local governments and political subdivisions of the U.S. and other OECD local governments
 7. Claims on, and the portions of claims that are guaranteed by, official multilateral lending institutions or regional development banks
 8. The portions of claims that are collateralized³ by securities issued or guaranteed by the U.S. Treasury, the central governments of other OECD countries, U.S. government agencies, U.S. government-sponsored agencies, or by cash on deposit in the subsidiary depository institution
 9. The portions of claims that are collateralized³ by securities issued by official multilateral lending institutions or regional development banks
 10. Certain privately issued securities representing indirect ownership of mortgage-backed U.S. government agency or U.S. government-sponsored agency securities
 11. Investments in shares of a fund whose portfolio is permitted to hold only securities that would qualify for the zero or 20 percent risk categories
- Category 3: 50 Percent*
1. Loans fully secured by first liens on one- to four-family residential properties that have been made in accordance with prudent underwriting standards, that are performing in accordance with their original terms, and are

² For the purpose of calculating the risk-based capital ratio, a U.S. government-sponsored agency is defined as an agency originally established or chartered to serve public purposes specified by the U.S. Congress but whose obligations are not explicitly guaranteed by the full faith and credit of the U.S. government.

³ The extent of collateralization is determined by current market value.

not past due or in nonaccrual status, and certain privately issued mortgage-backed securities representing indirect ownership of such loans (Loans made for speculative purposes are excluded.)

2. Revenue bonds or similar claims that are obligations of U.S. state or local governments, or other OECD local governments, but for which the government entity is committed to repay the debt only out of revenues from the facilities financed

3. Credit-equivalent amounts of interest rate- and foreign exchange rate-related contracts, except for those assigned to a lower risk category

Category 4: 100 Percent

1. All other claims on private obligors

2. Claims on, or guaranteed by, non-OECD foreign banks with a remaining maturity exceeding one year

3. Claims on, or guaranteed by, non-OECD central governments that are not included in

item 3 of category 1 or item 4 of category 2; all claims on non-OECD state or local governments

4. Obligations issued by U.S. state or local governments, or other OECD local governments (including industrial-development authorities and similar entities), repayable solely by a private party or enterprise

5. Premises, plant, and equipment; other fixed assets; and other real estate owned

6. Investments in any unconsolidated subsidiaries, joint ventures, or associated companies—if not deducted from capital

7. Instruments issued by other banking organizations that qualify as capital—if not deducted from capital

8. Claims on commercial firms owned by a government

9. All other assets, including any intangible assets that are not deducted from capital

Attachment IV—Credit-Conversion Factors for Off-Balance-Sheet Items for Bank Holding Companies

100 Percent Conversion Factor

1. Direct credit substitutes (These include general guarantees of indebtedness and all guarantee-type instruments, including standby letters of credit backing the financial obligations of other parties.)
2. Risk participations in banker's acceptances and direct credit substitutes, such as standby letters of credit
3. Sale and repurchase agreements and assets sold with recourse that are not included on the balance sheet
4. Forward agreements to purchase assets, including financing facilities, on which draw-down is *certain*
5. Securities lent for which the banking organization is at risk

50 Percent Conversion Factor

1. Transaction-related contingencies (These include bid bonds, performance bonds, warranties, and standby letters of credit backing the nonfinancial performance of other parties.)
2. Unused portions of commitments with an original maturity¹ exceeding one year, including underwriting commitments and commercial credit lines
3. Revolving underwriting facilities (RUFs), note issuance facilities (NIFs), and similar arrangements

20 Percent Conversion Factor

1. Short-term, self-liquidating, trade-related contingences, including commercial letters of credit

Zero Percent Conversion Factor

1. Unused portions of commitments with an original maturity¹ of one year or less, or which are unconditionally cancellable at any time, provided a separate credit decision is made before each drawing

Credit Conversion for Interest-Rate and Foreign-Exchange Contracts

The total replacement cost of contracts (obtained by summing the positive mark-to-market values of contracts) is added to a measure of future potential increases in credit exposure. This future potential exposure measure is calculated by multiplying the total notional value of contracts by one of the following credit conversion factors, as appropriate:

Remaining maturity	Interest-rate contracts	Exchange-rate contracts
One year or less	0	1.0%
Over one year	0.5%	5.0%

No potential exposure is calculated for single-currency interest-rate swaps in which payments are made based upon two floating rate indices, that is, so-called floating/floating or basis swaps. The credit exposure on these contracts is evaluated solely on the basis of their mark-to-market value. Exchange-rate contracts with an original maturity of 14 days or less are excluded. Instruments traded on exchanges that require daily payment of variation margin are also excluded. The only form of netting recognized is netting by novation.

¹ Remaining maturity may be used until year-end 1992.

Attachment V—Calculation of Credit-Equivalent Amounts

Interest Rate- and Foreign Exchange Rate-Related Transactions for Bank Holding Companies

Type of contract (remaining maturity)	Potential Exposure		Potential exposure (dollars)	Current Exposure		Credit- Equivalent Amount (dollars)
	Notional principal (dollars) ×	Potential- exposure conversion factor =		Replace- ment cost ¹	Current exposure (dollars) ²	
(1) 120-day forward foreign exchange	5,000,000	.01	50,000	100,000	100,000	150,000
(2) 120-day forward foreign exchange	6,000,000	.01	60,000	- 120,000	-0-	60,000
(3) 3-year single-currency fixed/floating interest-rate swap	10,000,000	.005	50,000	200,000	200,000	250,000
(4) 3-year single-currency fixed/floating interest-rate swap	10,000,000	.005	50,000	- 250,000	-0-	50,000
(5) 7-year cross-currency floating/floating interest-rate swap	20,000,000	.05	1,000,000	- 1,300,000	-0-	1,000,000
TOTAL	\$51,000,000					\$1,510,000

¹ These numbers are purely for illustration.

² The larger of zero or a positive mark-to-market value.

Attachment VI

SUMMARY OF:

	<i>Transitional Arrangements for Bank Holding Companies</i>		<i>Final Arrangement</i>
	<i>Initial</i>	<i>Year-end 1990</i>	<i>Year-end 1992</i>
1. Minimum standard of total capital to weighted-risk assets	None	7.25%	8.0%
2. Definition of tier 1 capital	Common equity, qualifying cumulative and noncumulative perpetual preferred stock, ¹ and minority interests, <i>plus</i> supplementary elements, ² <i>less</i> goodwill ³	Common equity, qualifying cumulative and noncumulative perpetual preferred stock, ¹ and minority interests, <i>plus</i> supplementary elements, ⁴ <i>less</i> goodwill ³	Common equity, qualifying cumulative and noncumulative perpetual preferred stock, ¹ and minority interests, <i>less</i> goodwill ³
3. Minimum standards of tier 1 capital to weighted-risk assets	None	3.625%	4.0%
4. Minimum standard of stockholders' equity to weighted-risk assets	None	3.25%	4.0%
5. Limitations on supplementary capital elements			
a. Allowance for loan and lease losses	No limit within tier 2	1.5% of weighted-risk assets	1.25% of weighted-risk assets
b. Perpetual preferred stock	No limit within tier 2	No limit within tier 2	No limit within tier 2
c. Hybrid capital instruments, perpetual debt, and mandatory convertibles	No limit within tier 2	No limit within tier 2	No limit within tier 2
d. Subordinated debt and intermediate-term preferred stock	Combined maximum of 50% of tier 1	Combined maximum of 50% of tier 1	Combined maximum of 50% of tier 1
c. Total qualifying tier 2 capital	May not exceed tier 1 capital	May not exceed tier 1 capital	May not exceed tier 1 capital
6. Definition of total capital	Tier 1 <i>plus</i> tier 2 <i>less</i> : • reciprocal holdings of banking organizations' capital instruments • investments in unconsolidated subsidiaries ⁵	Tier 1 <i>plus</i> tier 2 <i>less</i> : • reciprocal holdings of banking organizations' capital instruments • investments in unconsolidated subsidiaries ⁵	Tier 1 <i>plus</i> tier 2 <i>less</i> : • reciprocal holdings of banking organizations' capital instruments • investments in unconsolidated subsidiaries ⁵

¹ Perpetual preferred stock is limited within tier 1 to 25% of the sum of common stockholders' equity, qualifying perpetual preferred stock, and minority interests.

² Supplementary elements may be included in tier 1 up to 25% of the sum of tier 1 plus goodwill.

³ See the guidelines for discussion of relevant definitions and grandfathering arrangements for goodwill.

⁴ Supplementary elements may be included in tier 1 up to 10% of the sum of tier 1 plus goodwill.

⁵ As a general rule, one-half (50%) of the aggregate amount of investments will be deducted from tier 1 capital and one-half (50%) from tier 2 capital. A proportionally greater amount may be deducted from tier 1 capital if the risks associated with the subsidiary so warrant.

Capital Adequacy Guidelines for Bank Holding Companies and State Member Banks: Leverage Measure

Regulation Y (12 CFR 225), Appendix B

The Board of Governors of the Federal Reserve System has adopted minimum capital ratios and guidelines to provide a framework for assessing the adequacy of the capital of bank holding companies and state member banks (collectively "banking organizations"). The guidelines generally apply to all state member banks and bank holding companies regardless of size and are to be used in the examination and supervisory process as well as in the analysis of applications acted upon by the Federal Reserve. The Board of Governors will review the guidelines from time to time for possible adjustments commensurate with changes in the economy, financial markets, and banking practices.

Two principal measurements of capital are used—the primary capital ratio and the total capital ratio. The definitions of primary and total capital for banks and bank holding companies and formulas for calculating the capital ratios are set forth below in the definitional sections of these guidelines.

Capital Guidelines

The Board has established a minimum level of primary capital to total assets of 5.5 percent and a minimum level of total capital to total assets of 6.0 percent. Generally, banking organizations are expected to operate above the minimum primary and total capital levels. Those organizations whose operations involve or are exposed to high or inordinate degrees of risk will be expected to hold additional capital to compensate for these risks.

In addition, the Board has established the following three zones for total capital for banking organizations of all sizes:

	<i>Total Capital Ratio</i>
Zone 1	Above 7.0%
Zone 2	6.0% to 7.0%
Zone 3	Below 6.0%

The capital guidelines assume adequate liquidity and a moderate amount of risk in the loan and investment portfolios and in off-balance-sheet activities. The Board is concerned

that some banking organizations may attempt to comply with the guidelines in ways that reduce their liquidity or increase risk. Banking organizations should avoid the practice of attempting to meet the guidelines by decreasing the level of liquid assets in relation to total assets. In assessing compliance with the guidelines, the Federal Reserve will take into account liquidity and the overall degree of risk associated with an organization's operations, including the volume of assets exposed to risk.

The Federal Reserve will also take into account the sale of loans or other assets with recourse and the volume and nature of all off-balance-sheet risk. Particularly close attention will be directed to risks associated with standby letters of credit and participation in joint-venture activities. The Federal Reserve will review the relationship of all on- and off-balance-sheet risks to capital and will require those institutions with high or inordinate levels of risk to hold additional primary capital. In addition, the Federal Reserve will continue to review the need for more explicit procedures for factoring on- and off-balance-sheet risks into the assessment of capital adequacy.

The capital guidelines apply to both banks and bank holding companies on a consolidated basis.¹ Some banking organizations are engaged in significant nonbanking activities that typically require capital ratios higher than those of commercial banks alone. The Board believes that, as a matter of both safety and soundness and competitive equity, the degree of leverage common in banking should not automatically extend to nonbanking activities. Consequently, in evaluating the consolidated capital positions of banking organizations, the Board is placing greater weight on the build-

¹ The guidelines will apply to bank holding companies with less than \$150 million in consolidated assets on a bank-only basis unless (1) the holding company or any nonbank subsidiary is engaged directly or indirectly in any nonbank activity involving significant leverage or (2) the holding company or any nonbank subsidiary has outstanding significant debt held by the general public. Debt held by the general public is defined to mean debt held by parties other than financial institutions, officers, directors, and principal shareholders of the banking organization or their related interests.

ing-block approach for assessing capital requirements. This approach generally provides that nonbank subsidiaries of a banking organization should maintain levels of capital consistent with the levels that have been established by industry norms or standards, by federal or state regulatory agencies for similar firms that are not affiliated with banking organizations, or that may be established by the Board after taking into account risk factors of a particular industry. The assessment of an organization's consolidated capital adequacy must take into account the amount and nature of all nonbank activities, and an institution's consolidated capital position should at least equal the sum of the capital requirements of the organization's bank and nonbank subsidiaries as well as those of the parent company.

Supervisory Action

The nature and intensity of supervisory action will be determined by an organization's compliance with the required minimum primary capital ratio as well as by the zone in which the company's total capital ratio falls. Banks and bank holding companies with primary capital ratios below the 5.5 percent minimum will be considered undercapitalized unless they can demonstrate clear extenuating circumstances. Such banking organizations will be required to submit an acceptable plan for achieving compliance with the capital guidelines and will be subject to denial of applications and appropriate supervisory enforcement actions.

The zone into which an organization's total capital ratio falls will normally trigger the following supervisory responses, subject to qualitative analysis:

- For institutions operating in zone 1, the Federal Reserve will consider that capital is generally adequate if the primary capital ratio is acceptable to the Federal Reserve and is above the 5.5 percent minimum.
- For institutions operating in zone 2, the Federal Reserve will pay particular attention to financial factors, such as asset quality, liquidity, off-balance-sheet risk, and interest rate risk, as they relate to the adequacy of capital. If these areas are deficient and the Federal Reserve concludes capital

is not fully adequate, the Federal Reserve will intensify its monitoring and take appropriate supervisory action.

- For institutions operating in zone 3, the Federal Reserve will—
 - consider that the institution is undercapitalized, absent clear extenuating circumstances;
 - require the institution to submit a comprehensive capital plan, acceptable to the Federal Reserve, that includes a program for achieving compliance with the required minimum ratios within a reasonable time period; and
 - institute appropriate supervisory and/or administrative enforcement action, which may include the issuance of a capital directive or denial of applications, unless a capital plan acceptable to the Federal Reserve has been adopted by the institution.

Treatment of Intangible Assets for Purpose of Assessing Capital Adequacy

In considering the treatment of intangible assets for the purpose of assessing capital adequacy, the Federal Reserve recognizes that the determination of the future benefits and useful lives of certain intangible assets may involve a degree of uncertainty that is not normally associated with other banking assets. Supervisory concern over intangible assets derives from this uncertainty and from the possibility that, in the event an organization experiences financial difficulties, such assets may not provide the degree of support generally associated with other assets. For this reason, the Federal Reserve will carefully review the level and specific character of intangible assets in evaluating the capital adequacy of state member banks and bank holding companies.

The Federal Reserve recognizes that intangible assets may differ with respect to predictability of any income stream directly associated with a particular asset, the existence of a market for the asset, the ability to sell the asset, or the reliability of any estimate of the asset's useful life. Certain intangible assets have predictable income streams and objectively verifiable values and may contribute to an organization's profitability and overall fi-

nancial strength. The value of other intangibles, such as goodwill, may involve a number of assumptions and may be more subject to changes in general economic circumstances or to changes in an individual institution's future prospects. Consequently, the value of such intangible assets may be difficult to ascertain. Consistent with prudent banking practices and the principle of the diversification of risks, banking organizations should avoid excessive balance-sheet concentration in any category or related categories of intangible assets.

Bank Holding Companies

While the Federal Reserve will consider the amount and nature of all intangible assets, those holding companies with aggregate intangible assets in excess of 25 percent of tangible primary capital (i.e., stated primary capital less all intangible assets) or those institutions with lesser, although still significant, amounts of goodwill will be subject to close scrutiny. For the purpose of assessing capital adequacy, the Federal Reserve may, on a case-by-case basis, make adjustments to an organization's capital ratios based upon the amount of intangible assets in excess of the 25 percent threshold level or upon the specific character of the organization's intangible assets in relation to its overall financial condition. Such adjustments may require some organizations to raise additional capital.

The Board expects banking organizations (including state member banks) contemplating expansion proposals to ensure that pro forma capital ratios exceed the minimum capital levels without significant reliance on intangibles, particularly goodwill. Consequently, in reviewing acquisition proposals, the Board will take into consideration both the stated primary capital ratio (that is, the ratio without any adjustment for intangible assets) and the primary capital ratio after deducting intangibles. In acting on applications, the Board will take into account the nature and amount of intangible assets and will, as appropriate, adjust capital ratios to include certain intangible assets on a case-by-case basis.

State Member Banks

State member banks with intangible assets in excess of 25 percent of tangible primary capital

will be subject to close scrutiny. In addition, for the purpose of calculating capital ratios of state member banks, the Federal Reserve will deduct goodwill from primary capital and total capital. The Federal Reserve may, on a case-by-case basis, make further adjustments to a bank's capital ratios based on the amount of intangible assets (aside from goodwill) in excess of the 25 percent threshold level or on the specific character of the bank's intangible assets in relation to its overall financial condition. Such adjustments may require some banks to raise additional capital.

In addition, state member banks and bank holding companies are expected to review periodically the value at which intangible assets are carried on their balance sheets to determine whether there has been any impairment of value or whether changing circumstances warrant a shortening of amortization periods. Institutions should make appropriate reductions in carrying values and amortization periods in light of this review, and examiners will evaluate the treatment of intangible assets during on-site examinations.

Definition of Capital to Be Used in Determining Capital Adequacy

Primary Capital Components

The components of primary capital are—

- common stock,
- perpetual preferred stock (preferred stock that does not have a stated maturity date and that may not be redeemed at the option of the holder),
- surplus (excluding surplus relating to limited-life preferred stock),
- undivided profits,
- contingency and other capital reserves,
- mandatory convertible instruments,²
- allowance for possible loan and lease losses (exclusive of allocated transfer risk reserves),
- minority interest in equity accounts of consolidated subsidiaries, and
- perpetual debt instruments (for bank holding companies but not for state member banks).

² See the definitional section below that lists the criteria for mandatory convertible instruments to qualify as primary capital.

Limits on Certain Forms of Primary Capital

Bank holding companies. The maximum composite amount of mandatory convertible securities, perpetual debt, and perpetual preferred stock that may be counted as primary capital for bank holding companies is limited to 33.3 percent of all primary capital, including these instruments. Perpetual preferred stock issued prior to November 20, 1985, (or determined by the Federal Reserve to be in the process of being issued prior to that date) shall continue to be included as primary capital.

The maximum composite amount of mandatory convertible securities and perpetual debt that may be counted as primary capital for bank holding companies is limited to 20 percent of all primary capital, including these instruments. The maximum amount of equity commitment notes (a form of mandatory convertible securities) that may be counted as primary capital for a bank holding company is limited to 10 percent of all primary capital, including mandatory convertible securities. Amounts outstanding in excess of these limitations may be counted as secondary capital provided they meet the requirements of secondary capital instruments.

State member banks. The composite limitations on the amount of mandatory convertible securities and perpetual preferred stock (perpetual debt is not primary capital for state member banks) that may serve as primary capital for bank holding companies shall not be applied formally to state member banks, although the Board shall determine appropriate limits for these forms of primary capital on a case-by-case basis.

The maximum amount of mandatory convertible securities that may be counted as primary capital for state member banks is limited to 16 $\frac{2}{3}$ percent of all primary capital, including mandatory convertible securities. Equity commitment notes, one form of mandatory convertible securities, shall not be included as primary capital for state member banks except that notes issued by state member banks prior to May 15, 1985, will continue to be included in primary capital. Amounts of mandatory convertible securities in excess of these limitations may be counted as secondary capital if

they meet the requirements of secondary capital instruments.

Secondary Capital Components

The components of secondary capital are—

- limited-life preferred stock (including related surplus) and
- bank subordinated notes and debentures and unsecured long-term debt of the parent company and its nonbank subsidiaries.

Restrictions Relating to Capital Components

To qualify as primary or secondary capital, a capital instrument should not contain or be covered by any covenants, terms, or restrictions that are inconsistent with safe and sound banking practices. Examples of such terms are those regarded as unduly interfering with the ability of the bank or holding company to conduct normal banking operations or those resulting in significantly higher dividends or interest payments in the event of a deterioration in the financial condition of the issuer.

The secondary components must meet the following conditions to qualify as capital:

- The instrument must have an original weighted-average maturity of at least seven years.
- The instrument must be unsecured.
- The instrument must clearly state on its face that it is not a deposit and is not insured by a federal agency.
- Bank debt instruments must be subordinated to claims of depositors.
- For banks only, the aggregate amount of limited-life preferred stock and subordinate debt qualifying as capital may not exceed 50 percent of the amount of the bank's primary capital.*

As secondary capital components approach maturity, the banking organization must plan to redeem or replace the instruments while maintaining an adequate overall capital position. Thus, the remaining maturity of secondary capital components will be an important consideration in assessing the adequacy of total capital.

* See also 12 CFR 204.129 (*Federal Reserve Regulatory Service 2-260.56; 1988 Federal Reserve Bulletin 124*).

Capital Ratios

The primary and total capital ratios for bank holding companies are computed as follows:

Primary capital ratio:

$$\frac{\text{Primary capital components}}{\text{Total assets} + \text{Allowance for loan and lease losses (exclusive of allocated transfer risk reserves)}}$$

Total capital ratio:

$$\frac{\text{Primary capital components} + \text{Secondary capital components}}{\text{Total assets} + \text{Allowance for loan and lease losses (exclusive of allocated transfer risk reserves)}}$$

The primary and total capital ratios for state member banks are computed as follows:

Primary capital ratio:

$$\frac{\text{Primary capital components} - \text{Goodwill}}{\text{Average total assets} + \text{Allowance for loan and lease losses (exclusive of allocated transfer risk reserves)} - \text{Goodwill}}$$

Total capital ratio:

$$\frac{\text{Primary capital components} + \text{Secondary capital components} - \text{Goodwill}}{\text{Average total assets} + \text{Allowance for loan and lease losses (exclusive of allocated transfer risk reserves)} - \text{Goodwill}}$$

Generally, period-end amounts will be used to calculate bank holding company ratios. However, the Federal Reserve will discourage temporary balance-sheet adjustments or any other "window dressing" practices designed to achieve transitory compliance with the guidelines. Banking organizations are expected to maintain adequate capital positions at all times. Thus, the Federal Reserve will, on a case-by-case basis, use average total assets in the calculation of bank holding company capital ratios whenever this approach provides a more meaningful indication of an individual holding company's capital position.

For the calculation of bank capital ratios, "average total assets" will generally be defined as the quarterly average total assets figure reported on the bank's Report of Condition. If warranted, however, the Federal Reserve may calculate bank capital ratios based upon total

assets as of period-end. All other components of the bank's capital ratios will be based upon period-end balances.

Criteria for Determining Primary Capital Status of Mandatory Convertible Securities

Mandatory convertible securities are subordinated debt instruments that are eventually transformed into common or perpetual preferred stock within a specified period of time, not to exceed 12 years. To be counted as primary capital, mandatory convertible securities must meet the criteria set forth below. These criteria cover the two basic types of mandatory convertible securities: equity contract notes (securities that obligate the holder to take common or perpetual preferred stock of the issuer in lieu of cash for repayment of principal) and equity commitment notes (securities that are redeemable only with the proceeds from the sale of common or perpetual preferred stock). Both equity commitment notes and equity contract notes qualify as primary capital for bank holding companies, but only equity contract notes qualify as primary capital for banks.

Criteria Applicable to Both Types of Mandatory Convertible Securities

- The securities must mature in 12 years or less.
- The issuer may redeem securities prior to maturity only with the proceeds from the sale of common or perpetual preferred stock of the bank or bank holding company. Any exception to this rule must be approved by the Federal Reserve. The securities may not be redeemed with the proceeds of another issue of mandatory convertible securities. Nor may the issuer repurchase or acquire its own mandatory convertible securities for resale or reissuance.
- Holders of the securities may not accelerate the payment of principal except in the event of bankruptcy, insolvency, or reorganization.
- The securities must be subordinate in right of payment to all senior indebtedness of the

issuer. In the event that the proceeds of the securities are reallocated to an affiliate, the loan must be subordinated to the same degree as the original issue.

e. An issuer that intends to dedicate the proceeds of an issue of common or perpetual preferred stock to satisfy the funding requirements of an issue of mandatory convertible securities (i.e. the requirement to retire or redeem the notes with the proceeds from the issuance of common or perpetual preferred stock) generally must make such a dedication during the quarter in which the new common or preferred stock is issued.³ As a general rule, if the dedication is not made within the prescribed period, then the securities issued may not at a later date be dedicated to the retirement or redemption of the mandatory convertible securities.⁴

Additional Criteria Applicable to Equity Contract Notes

a. The note must contain a contractual provision (or must be issued with a mandatory stock purchase contract) that requires the holder of the instrument to take the common or perpetual stock of the issuer in lieu of cash in satisfaction of the claim for principal repayment. The obligation of the holder to take the common or perpetual preferred stock of the issuer may be waived if, and to the extent that, prior to the maturity date of the obligation, the issuer sells new common or perpetual pre-

ferred stock and dedicates the proceeds to the retirement or redemption of the notes. The dedication generally must be made during the quarter in which the new common or preferred stock is issued.

b. A stock purchase contract may be separated from a security only if (1) the holder of the contract provides sufficient collateral⁵ to the issuer, or to an independent trustee for the benefit of the issuer, to ensure performance under the contract and (2) the stock purchase contract requires the purchase of common or perpetual preferred stock.

Additional Criteria Applicable to Equity Commitment Notes

a. The indenture or note agreement must contain the following two provisions:

1. The proceeds of the sale of common or perpetual preferred stock will be the sole source of repayment for the notes, and the issuer must dedicate the proceeds for the purpose of repaying the notes. (Documentation certified by an authorized agent of the issuer showing the amount of common or perpetual preferred stock issued, the dates of issue, and amounts of such issues dedicated to the retirement or redemption of mandatory convertible securities will satisfy the dedication requirement.)

2. By the time that one-third of the life of the securities has run, the issuer must have raised and dedicated an amount equal to one-third of the original principal of the securities. By the time that two-thirds of the life of the securities has run, the issuer must have raised and dedicated an amount equal to two-thirds of the original principal of the securities. At least 60 days prior to the maturity of the securities, the issuer must have raised and dedicated an amount equal to the entire original principal of the securities. Proceeds dedicated to redemption or retirement of the notes must come only

³ Common or perpetual preferred stock issued under dividend reinvestment plans or issued to finance acquisitions, including acquisitions of business entities, may be dedicated to the retirement or redemption of the mandatory convertible securities. Documentation certified by an authorized agent of the issuer showing the amount of common stock or perpetual preferred stock issued, the dates of issue, and amounts of such issues dedicated to the retirement or redemption of mandatory convertible securities will satisfy the dedication requirement.

⁴ The dedication procedure is necessary to ensure that the primary capital of the issuer is not overstated. For each dollar of common or perpetual preferred proceeds dedicated to the retirement or redemption of the notes, there is a corresponding reduction in the amount of outstanding mandatory securities that may qualify as primary capital. De minimis amounts (in relation to primary capital) of common or perpetual preferred stock issued under arrangements in which the amount of stock issued is not predictable, such as dividend reinvestment plans and employee stock option plans (but excluding public stock offerings and stock issued in connection with acquisitions), should be dedicated by no later than the company's fiscal year-end.

⁵ Collateral is defined as (1) cash or certificates of deposit; (2) U.S. government securities that will mature prior to or simultaneous with the maturity of the equity contract and that have a par or maturity value at least equal to the amount of the holder's obligation under the stock purchase contract; (3) standby letters of credit issued by an insured U.S. bank that is not an affiliate of the issuer; or (4) other collateral as may be designated from time to time by the Federal Reserve.

from the sale of common or perpetual preferred stock.⁶

b. If the issuer fails to meet any of these periodic funding requirements, the Federal Reserve immediately will cease to treat the unfunded securities as primary capital and will take appropriate supervisory action. In addition, failure to meet the funding requirements will be viewed as a breach of a regulatory commitment and will be taken into consideration by the Board in acting on statutory applications.

c. If a security is issued by a subsidiary of a bank or bank holding company, any guarantee of the principal by that subsidiary's parent bank or bank holding company must be subordinate to the same degree as the security issued by the subsidiary and limited to repayment of the principal amount of the security at its final maturity.

Criteria for Determining the Primary Capital Status of Perpetual Debt Instruments of Bank Holding Companies

a. The instrument must be unsecured and, if issued by a bank, must be subordinated to the claims of depositors.

b. The instrument may not provide the noteholder with the right to demand repayment of principal except in the event of bankruptcy, insolvency, or reorganization. The instrument must provide that nonpayment of interest shall not trigger repayment of the principal of the perpetual debt note or any other obligation of the issuer, nor shall it constitute prima facie evidence of insolvency or bankruptcy.

c. The issuer shall not voluntarily redeem the debt issue without prior approval of the Federal Reserve, except when the debt is converted to, exchanged for, or simultaneously replaced in like amount by an issue of common or perpetual preferred stock of the issuer or the issuer's parent company.

d. If issued by a bank holding company, a bank subsidiary, or a subsidiary with substantial operations, the instrument must contain a provision that allows the issuer to defer interest payments on the perpetual debt in the event of, and at the same time as the elimination of dividends on all outstanding common or preferred stock of the issuer (or in the case of a guarantee by a parent company at the same time as the elimination of the dividends of the parent company's common and preferred stock). In the case of a nonoperating subsidiary (a funding subsidiary or one formed to issue securities), the deferral of interest payments must be triggered by elimination of dividends by the parent company.

e. If issued by a bank holding company or a subsidiary with substantial operations, the instrument must convert automatically to common or perpetual preferred stock of the issuer when the issuer's retained earnings and surplus accounts become negative. If an operating subsidiary's perpetual debt is guaranteed by its parent, the debt may convert to the shares of the issuer or guarantor and such conversion may be triggered when the issuer's or parent's retained earnings and surplus accounts become negative. If issued by a nonoperating subsidiary of a bank holding company or bank, the instrument must convert automatically to common or preferred stock of the issuer's parent when the retained earnings and surplus accounts of the issuer's parent become negative.

⁶ The funded portions of the securities will be deducted from primary capital to avoid double counting.



Supplementary Material

	<u>Item</u>
Risk Based Capital Guidelines	
Notice of Proposed Rule	
Making on Interest Rate Risk	2

FEDERAL RESERVE press release

For immediate release

September 14, 1993

The Federal Reserve Board today requested public comment on an interagency notice revising risk-based capital standards to implement Section 305 of the Federal Deposit Insurance Corporation Improvement Act (FDICIA) regarding interest rate risk.

Comments should be received by October 29, 1993.

The proposed rule is designed to ensure that banking institutions effectively measure and monitor interest rate risk (IRR) and that this risk is adequately considered in the Board's risk-based capital standards.

As part of this proposal, the Board is requesting comment on procedures for measuring IRR exposures and two alternative methods for determining the additional capital, if any, a bank may be required to have for interest rate risk.

The agencies sought public comment on a proposed framework for IRR in August 1992, and the current proposal has been revised to take account of the commenters' concerns and recommendations.

The interagency notice is attached.

-0-

Attachment

[4810-33-M]
[6210-01-F]
[6714-01-M]

DEPARTMENT OF THE TREASURY

Office of the Comptroller of the Currency

12 CFR Part 3

[Docket No. 93-11]

FEDERAL RESERVE SYSTEM

12 CFR Part 208

[Docket No. R-0802]

FEDERAL DEPOSIT INSURANCE CORPORATION

12 CFR Part 325

RIN 3064-AB22

RISK-BASED CAPITAL STANDARDS: INTEREST RATE RISK

AGENCIES: Office of the Comptroller of the Currency (OCC), Treasury, Board of Governors of the Federal Reserve System (Board), and Federal Deposit Insurance Corporation (FDIC).

ACTION: Notice of proposed rulemaking.

SUMMARY: The OCC, the Board, and the FDIC (the Banking Agencies) are issuing this proposed rule to implement the portion of section 305 of the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA) that requires a

revision of their risk-based capital guidelines to ensure that those standards take adequate account of interest rate risk (IRR). Other revisions to the risk-based capital standards as prescribed in section 305 of FDICIA are to be addressed in separate rulemakings.

This proposal would amend the Banking Agencies' capital adequacy standards to provide for consideration of IRR in the overall determination of a bank's minimum capital ratios. The intended effect of the proposal would be to ensure that banking institutions effectively measure and monitor their IRR and that they maintain adequate capital for that risk.

As part of the proposal, the Banking Agencies are publishing for comment procedures for measuring IRR exposures and two alternative methods for determining what amount of additional capital, if any, a bank may be required to have for interest rate risk. In addition, the Banking Agencies will recommend to the Federal Financial Institutions Examination Council (FFIEC) expanded Call Report requirements to facilitate the monitoring of IRR exposures of commercial banks.

The Banking Agencies sought public comment on a proposed framework for IRR in August, 1992. The current proposal reflects substantial modifications to that proposal in response to the concerns raised and recommendations made by commenters. The proposed amendments to the regulations

differ among the Banking Agencies to take account of the existing regulatory structure at each Agency. Nonetheless, the proposed amendments are intended to have the same effect.

DATES: Comments must be received on or before October 29, 1993.

ADDRESSES: Interested parties are invited to submit written comments to any or all of the Banking Agencies. All comments will be shared among the Banking Agencies.

OCC: Written comments should be submitted to Docket No. 93-11, Communications Division, Ninth Floor, Office of the Comptroller of the Currency, 250 E Street, S.W., Washington, D.C. 20219, Attention: Karen Carter. Comments will be available for inspection and photocopying at that address.

Board of Governors: Comments, which should refer to Docket No. R-0802, may be mailed to Mr. William Wiles, Secretary, Board of Governors of the Federal Reserve System, 20th and Constitution Avenue, N.W., Washington, D.C. 20551. Comments addressed to Mr. Wiles may also be delivered to the Board's mail room between 8:45 a.m. and 5:15 p.m. and to the security control room outside of those hours. Both the mail room and control room are accessible from the courtyard

entrance on 20th Street between Constitution Avenue and C Street, N.W. Comments may be inspected in Room B-1122 between 9:00 a.m. and 5:00 p.m., except as provided in § 261.8 of the Board's "Rules Regarding Availability of Information," 12 CFR 261.8.

FDIC: Hoyle L. Robinson, Executive Secretary, Attention: Room F-400, Federal Deposit Insurance Corporation, 550 17th Street, N.W., Washington, D.C. 20429. Comments may be hand-delivered to Room F-400, 1776 F Street N.W., Washington, D.C. 20429, on business days between 8:30 a.m. and 5:00 p.m. [FAX number (202) 898-3838]. Comments will be available for inspection and photocopying in Room 7118, 550 17th Street, N.W., Washington, D.C. 20429, between 9:00 a.m. and 4:30 p.m. on business days.

FOR FURTHER INFORMATION CONTACT:

OCC: Christina Benson, Capital Markets Specialist (202/874-5070), or Kurt Wilhelm, National Bank Examiner (202/874-5070), Office of the Chief National Bank Examiner; Kevin Jacques, Financial Economist, Economics and Evaluation (202/874-5220), and Ronald Shimabukuro, Senior Attorney, Bank Operations and Assets Division (202/874-4460), Office of the Comptroller of the Currency, 250 E Street, S.W., Washington, D.C. 20219.

Board of Governors: James Houpt, Assistant Director (202/452-3358), James Embersit, Manager (202/452-5249), William Treacy, Supervisory Financial Analyst (202/452-3859), Division of Banking Supervision and Regulation; Scott G. Alvarez, Associate General Counsel (202/452-3583), Gregory A. Baer, Senior Attorney (202/452-3236), Legal Division, Board of Governors of the Federal Reserve System. For the hearing impaired only, Telecommunication Device for the Deaf (TDD), Dorothea Thompson (202/452-3544), Board of Governors of the Federal Reserve System, 20th and C Streets, N.W., Washington, D.C. 20551.

FDIC: William A. Stark, Assistant Director (202/898-6972) or Sharon Lee, Capital Markets Specialist (202/898-6789), Division of Supervision; for legal issues, Claude A. Rollin, Senior Counsel (202/898-3985), Legal Division, Federal Deposit Insurance Corporation, 550 17th Street, N.W., Washington, D.C. 20429.

SUPPLEMENTARY INFORMATION:

A. BACKGROUND

1. Section 305 and the Basle Accord

IRR is the adverse effect that changes in market interest rates may have on a bank's financial condition.

This risk is inherent to the business of banking. Section 305 of the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA), Pub. L. 102-242, requires the Banking Agencies to revise their risk-based capital guidelines to take adequate account of IRR. FDICIA also requires the Banking Agencies to publish final regulations implementing section 305 and to establish transition rules to facilitate compliance with those regulations.

Section 305(b)(2) of FDICIA requires the Banking Agencies to discuss the development of comparable standards with members of the supervisory committee of the Bank for International Settlements (BIS), which has also been working on ways to incorporate IRR into the risk-based capital standard. The Banking Agencies are actively participating in that international effort. However, the time required for developing and implementing an international standard is uncertain and an international standard is as yet unavailable.

In implementing section 305 of FDICIA, the Banking Agencies seek to create a viable system for measuring IRR, while at the same time continuing to work with international organizations to develop consistent international capital standards. Many elements of the supervisory measurement system proposed in this notice are consistent with, although not identical to, key elements of the approach being pursued

internationally. At the time that an international agreement emerges, the Banking Agencies will revisit this approach in light of the international standard. Such re-evaluation may occur during the biennial review of capital standards that is required by section 305 of FDICIA.

Comments are requested on all aspects of this proposal. Issues on which comment is specifically requested are identified in numbered questions in section D.

2. Advance Notice of Proposed Rulemaking (ANPR)

In August 1992, the Banking Agencies issued an ANPR soliciting comments on a framework for revising their risk-based capital standards to take adequate account of IRR, as well as approaches to address the risks arising from credit concentrations and nontraditional activities (57 FR 35507, August 10, 1992). The ANPR outlined a possible IRR measurement system and asked for comments on that system, including its use as a basis for determining a capital requirement.

The framework outlined was designed to ensure that banks with significant levels of IRR would have sufficient capital to cover their exposure. IRR exposures were quantified by a proposed supervisory risk measure that sought to estimate the economic effect of an interest rate change on the present value of a bank's net worth, rather than the effect on current or near-term earnings. This

measure required banks to slot their assets, liabilities, and off-balance-sheet instruments into a maturity schedule based on each instrument's remaining contractual maturity or next repricing date. The proposed maturity schedule used six maturity ranges or time bands, with balances in each time band weighted by a risk factor, or "risk weight," that estimated the price sensitivity of the instrument to changes in market interest rates. The summation of these weighted values, the "Net Risk-Weighted Position," was used to estimate the change in a bank's equity value for a 100 basis point change in interest rates. This measure was to serve as the basis for determining a bank's IRR exposure for capital adequacy purposes. To mitigate concerns about the imprecision in measuring IRR and to recognize that some degree of IRR is inherent in banking activities, only those banks with relatively significant measured exposure would have been required to allocate capital for IRR. As proposed, banks with exposures in excess of a "threshold" level of measured risk equal to plus or minus 1.0 percent of assets were required to allocate capital in an amount equal to that excess exposure.

3. Responses to the ANPR

The Banking Agencies collectively received a total of 214 responses to the ANPR. Of these, 182 addressed the proposed framework for IRR while 32 addressed only issues

relating to credit concentrations or nontraditional activities.

The letters on the IRR proposal expressed a wide and diverse range of opinions. Most commenters recommended modifications to, or expressed concern with, some aspect of the proposal. Many commenters acknowledged the need for the Banking Agencies to monitor and evaluate the level of interest rate risk taken by banks. However, many commenters did not believe that the framework, as proposed, would lead to more effective supervision of IRR. As a result of these comments and further analysis, the Banking Agencies have modified the framework outlined in the ANPR in important ways. The public comments and key changes are summarized below.

a. Public Comments

Most respondents focused on the use of the measure as the basis for determining a regulatory capital requirement for IRR. Many urged greater discretion and flexibility in its use and recommended that it be used as an examiner tool, rather than as the basis for a capital charge. Many institutions believed that the precision of the measure should be enhanced if it is to be used to determine a capital charge. Therefore, they requested greater sophistication in some areas which would increase complexity and require more information. Others, however, cited concerns with the complexity and reporting burden of

the measure and requested an exemption test to exclude banks with low IRR from added reporting or capital requirements.

Many commenters argued against a standard supervisory model and set of assumptions for measuring IRR, often citing the diversity within the commercial banking industry caused by the size, location, or general nature of each bank's activities. Many institutions also cited the greater accuracy of their own risk measurement models and urged the Banking Agencies to rely more heavily on them. Some cautioned that imposing a capital charge based on a supervisory model might cause some institutions to make decisions in deference to that model even though the bank's internal analysis might indicate that other actions were advisable.

Many respondents also stated that certain assumptions made in the supervisory model were improper for their institutions and perhaps for the industry as a whole. For example, many criticized the proposed treatment of deposits that do not have specified maturities (referred to as non-maturity deposits). These deposits can be withdrawn at any time but are typically rather stable both in price and volume. They include demand deposits, money market demand accounts (MMDA), negotiable order of withdrawal (NOW) accounts, and savings deposits. Other comments regarding specific aspects of the proposed supervisory model included

criticisms and recommendations on the interest rate scenario used and the construction of the risk weights.

b. Responses to Comments

In response to the comments received, the Banking Agencies are proposing a measurement of IRR exposure with major changes from that in the ANPR and are considering two alternative uses of the measured exposure. Major changes are summarized below. However, other changes also have been incorporated to increase accuracy or reduce regulatory burden.

- (1) A proposed quantitative screen would exempt banks identified as potentially low-risk institutions from additional reporting and, most likely, from any capital requirement for IRR.

- (2) Use of a bank's internal risk measure would be permitted for evaluating IRR when the methodology and key assumptions of that measure are deemed adequate by the appropriate Banking Agency. Examination guidelines and analytical tools would be provided to examiners for this purpose. Banks would be expected to maintain appropriate internal risk measurement systems consistent with their risk profiles.

- (3) Various refinements have been made to the supervisory measure that would be used to evaluate IRR for non-exempt banks where internal models are not available or are deemed inadequate. These modifications include changes to the method for determining risk weights, the specific treatment of non-maturity deposits, the reporting of amortizing and non-amortizing financial instruments, and the addition of another time band to provide for greater accuracy and consistency with existing Call Report information.

B. DISCUSSION OF PROPOSAL

1. Overview

The Banking Agencies propose to modify their existing risk-based capital standards to provide for the explicit consideration of IRR when assessing the capital adequacy of an institution. This proposal addresses two elements: A measure of IRR exposure and an approach for assessing capital adequacy for IRR. Exposures to IRR would be measured as the effect that a specified change in market interest rates would have on the net economic value of a bank.¹ This economic perspective considers the effect that

¹The change in an institution's net economic value is defined as the change in the present value of its assets minus the change in the present value of its liabilities plus the change in the present value of its off-balance-sheet positions.

changing market interest rates may have on the value of a bank's assets, liabilities, and off-balance-sheet positions.

The Banking Agencies propose to measure an institution's exposure using either a supervisory model or the bank's own internal model. In either case, the results could be used in one of two ways when assessing capital adequacy for IRR. One approach would be to reduce an institution's risk-based capital ratios by an amount based on the level of measured risk. The other would be to use the measured exposure as only one of several factors in assessing the need for capital. The measurement systems and their possible uses are discussed in greater detail in sections that follow.

a. Structure of the Supervisory Model

The supervisory model would require banks to report their assets, liabilities and off-balance-sheet positions into time bands based upon their remaining maturities or nearest repricing dates. Each position would then be multiplied by an IRR "risk weight" developed by the Banking Agencies that represents the estimated sensitivity of the economic value of that position to a specified change in market interest rates. The risk-weighted positions of all balances would be summed to produce a net risk-weighted position. This net position represents the estimated change in the bank's net economic value and would be the primary quantitative measure used to assess a bank's level of IRR.

To avoid collecting information about the maturities, cash flows, coupons, and yields of each bank's assets, liabilities, and off-balance-sheet positions, the risk weights would be developed using hypothetical instruments that are deemed to be representative of the position being weighted. The risk weights developed would be the percentage change in the present value of those hypothetical instruments for the given interest rate change.

The structure, reporting requirements, and key assumptions of the model are discussed in section 3 below. The Banking Agencies believe that this basic measure can be useful for supervisory purposes in evaluating the IRR of many banks. However, the Banking Agencies recognize that this basic model would not offer the precision of many acceptable internal models and that certain types of financial instruments have risk profiles that may be difficult to incorporate accurately into this basic model. For these reasons, the Banking Agencies are proposing to make use of a bank's own model, if it is deemed accurate.

b. Use of a Bank's Internal Model

The Banking Agencies recognize that many banking institutions have sophisticated internal models for measuring IRR that take account of complexities not addressed in the basic supervisory model and that are tailored to circumstances at each bank. Consequently, the Banking Agencies propose to make use of a bank's own IRR

model if it is deemed adequate by examiners. To make this determination, examiners would consider the types of instruments held or offered by the bank, the integrity of the data, and whether the assumptions and relationships underlying the model are reasonable.

The supervisory model and other analytical tools could be used to assist examiners in evaluating the adequacy of a bank's internal model. The other analytical tools would be developed by the Banking Agencies over time. Such tools might include an options-pricing model to assist in the evaluation of explicit and embedded option products and the capability to use more detailed coupon and maturity information in estimating market value sensitivities. As experience is gained with the basic model and these supplemental tools, the Banking Agencies may seek to refine the basic measure to include additional or more sophisticated measurement methodologies or models.

When examiners determine that the risk profile generated by a bank's internal model is an adequate measure of the bank's risk position, that measure would be used for supervisory purposes. The bank, however, would continue to report the proposed expanded Call Report information used in the supervisory model. In banks without internal models, examiners would rely on the supervisory model. If warranted by the size and complexity of the bank's activities, however, examiners may require an institution to have an adequate internal model in the interest of bank safety and

soundness. This approach should create incentives for banks to improve their ability to measure risk.

When reviewing a bank's internal model, examiners would evaluate its analytical approach and underlying assumptions. To the extent the model contains material weaknesses or its assumptions are judged to be unreasonable, examiners may require the bank to modify its procedures before judging the model to be acceptable or, alternatively, may rely on results of the supervisory model. At a minimum, examiners would identify the components of an internal model that incorporate assumptions or calculations that differ significantly from those used in the supervisory model, assess the importance of these differences, and then determine whether the bank has a sufficient basis for its treatment. Examiners would also monitor changes to an institution's assumptions or calculation procedures over time in order to assure the on-going integrity of the measure.

If the Minimum Capital Standard approach is adopted, an institution may be required to base that calculation on the results of a more sophisticated internal model, if available. Such an institution would not be permitted to use the basic supervisory model to determine its exposure for capital purposes, but rather would have to use an internal model. This requirement would be based upon the size and complexities of an institution's activities and would reflect the recognition that the supervisory model may

not fully capture the risks of certain types of financial instruments or activities. The Banking Agencies seek comment on the appropriateness of such a requirement and on the types and scopes of activities that should trigger it.

c. Threshold Level

When evaluating a bank's need for capital for IRR, the Banking Agencies propose to focus on institutions with relatively high levels of measured risk. This focus on "outliers" reflects the view that a certain amount of IRR is inherent and appropriate in commercial banking, that the level of risk is difficult to measure precisely, and that IRR has not been a principal threat to the financial health of commercial banks in the past.

A threshold level representing a decline in net economic value equal to 1.0 percent of assets is proposed to account for measurement imprecision and some amount of IRR implicit in the current risk-based capital standard. Measured exposures resulting in a decline in value of less than the 1.0 percent of assets level would generally be considered insufficient to require capital, although examiners could determine otherwise in unusual circumstances. The Banking Agencies may need to reconsider this proposed threshold level when other aspects of the proposal have been decided. Moreover, since the threshold exists in part to account for measurement imprecision, the Banking Agencies also request comment on the merits of using

a lower threshold when results of more accurate internal models are used to evaluate IRR.

d. Reporting Requirements

While the regulatory changes proposed are expected to result in changes to the Call Report, no paperwork changes are specifically contained in this rule. The examples of Call Report schedules are provided to assist the reader in analyzing the full implications of the proposal. They are not intended as proposed forms. However, realistically, if the agencies adopt the final rule substantially as proposed, the resulting changes to the Call Report will probably be similar to the models provided and to what is recommended by the Banking Agencies to the Federal Financial Institutions Examination Council (FFIEC). The agencies will submit any Call Report changes to OMB for review as required under the Paperwork Reduction Act (44 U.S.C. 3501 et seq.). Opportunity for public comment is always provided in relation to such a submission. Nevertheless, the agencies invite comments regarding the paperwork implications of this notice of proposed rulemaking, and will carefully consider any comments received in the development of the final rule, as well as in the development of proposed revisions to the Call Report.

To collect the information necessary to monitor the level of IRR and assess the need for additional capital at banks that may have significant exposures, the Banking

Agencies believe that additional Call Report information will be needed. Accordingly, the Banking Agencies seek comment on a Call Report schedule currently under consideration which would provide information necessary for calculating the supervisory measure. The FDIC would also replace supplemental Schedule RC-J, currently completed only by FDIC-supervised savings banks, with this new Call Report schedule. All FDIC-supervised savings banks would complete the new Call Report schedule and would not be afforded the reporting exemption as described in section E below.

Comment is also requested on a second schedule that would be completed only by banks that elect or that may be required to use the results of their internal models. This second schedule would be required only if the Banking Agencies relied on the information to provide an explicit capital charge for IRR and would not be needed if the measured exposure was considered only as one element of broader guidelines for assessing capital adequacy for IRR.²

The proposed reporting schedules (Schedules 1 and 2) are illustrated and discussed in sections 3 and 4 below.

e. Reporting Exemptions

To minimize the reporting and other regulatory burdens associated with this proposal, the Banking Agencies propose to exempt from any additional reporting requirements

²The Banking Agencies may choose to treat the proposed second schedule as confidential.

institutions that meet certain criteria associated with "low-risk" institutions. The Banking Agencies propose that an institution would have to meet the following two criteria to qualify for such an exemption:

- (1) The total notional principal amount of all of the institution's off-balance-sheet interest rate contracts³ does not exceed 10 percent of its total assets; and
- (2) 15 percent of the sum of the institution's fixed- and floating-rate loans and securities that mature or reprice beyond 5 years is less than 30 percent of its total capital.

The first criterion evaluates whether an institution has a significant amount of off-balance-sheet obligations that may warrant further scrutiny. The second criterion tests whether a significant decline in the market value of those assets most exposed to changing interest rates would reduce the institution's capital substantially.

To qualify for the reporting exemption, banks would need to meet these criteria at each quarterly Call Report date. Based on data for December 31, 1992, approximately 8,400 institutions with about 30 percent of

³Off-balance-sheet interest rate contracts are those reported on Schedule RC-L items 11.a., 11.b., 11.c.(1) and 11.c.(2) of the Consolidated Report of Financial Condition.

U.S. commercial bank assets would meet these criteria. However, the Banking Agencies reserve the right to require an institution to report the additional information even if the institution satisfies these criteria. If a previously exempted bank fails to meet these criteria, or otherwise becomes non-exempt, it would be required to report the additional data at the next two Call Report dates, regardless of its future exemption status. Therefore, exempted banks would need to ensure that they are able to provide the requested information, if necessary.

Although exempted banks would not be required to report any additional data, they would be expected to maintain adequate policies and procedures for measuring, controlling, and managing interest rate risk.

f. Implementation Schedule

The Banking Agencies propose to require the additional reporting by non-exempt banks beginning with the March 1994 Call Reports. Full implementation of the guidelines for assessing the adequacy of bank capital would be effective December 31, 1994. However, the Banking Agencies also propose that examiners apply these standards on an advisory basis beginning with examinations commencing after December 31, 1993, to the extent that data are reasonably available.

Comments are requested on all aspects of the proposal, including the suggested implementation schedule.

2. Major Considerations in Measuring Interest Rate Risk

Obtaining meaningful results from either the supervisory or internal models requires appropriate treatment of three critical elements:

- (1) The interest rate scenario used to measure the effect of changing rates;
- (2) The asymmetrical rate sensitivity that results for certain bank products when both rising and falling interest rate scenarios are considered; and
- (3) The treatment of non-maturity deposits, i.e., demand deposits, NOW and savings accounts, and MMDAs.

Another important consideration, especially when evaluating the risk of an individual bank that is part of a multi-bank holding company, is the relationship of that bank's exposure to positions held by its parent or other affiliated institutions. Each of these issues is discussed below.

a. Interest Rate Scenario

The interest rate scenario used to determine risk weights should cover an appropriate range of possible interest rate changes and reflect these factors:

- (1) A time horizon over which institutions and supervisors can reasonably be expected to identify an institution's risk and implement meaningful and loss-limiting responses, taking into account both the frequency of reporting and examinations; and
- (2) An appropriate probability of occurrence, as reflected by the historical volatility of market interest rates over the chosen time horizon.

The chosen time horizon is an important determinant of the size of the specified rate change. In general, a shorter time horizon implies a smaller potential rate change; generally, nominal rate changes based on quarterly time horizons are roughly one half of those derived from annual time horizons. A quarterly interval would correspond to the regulatory reporting cycle and may also allow sufficient time for bank management to identify and reposition an interest rate risk exposure.

However, an annual or semi-annual time horizon may better reflect the time necessary for management to recognize trends in interest rates and determine an appropriate response, and for the results of management's actions to be reflected to a material degree in the bank's positions. It may also be more appropriate than a quarterly time horizon given the sluggishness of non-maturity deposit rates to respond to market changes.

The Banking Agencies recognize that interest rate volatility varies with different maturities and that this volatility generally increases with the level of rates (i.e., that volatility is roughly proportional to the absolute level of rates).⁴ Holding other factors the same, longer-term rates are typically less volatile than short-term rates.

The observed range of historical movements in interest rates over the selected time horizon will differ depending on the sample period used. Volatility experienced over a long sample period (e.g., the past 15 years) could be significantly different from that experienced over a shorter sample period (e.g., the prior 3 to 5 years). Longer sample periods could be used to ensure that the estimated volatilities reflect the full range of potential changes in rates over entire interest rate cycles and thus, might be

⁴Based on the following standard deviations of the percent change in rates on U.S. Treasury securities estimated over the period 1977 to 1992, one standard deviation of annual rate changes in the 3-month Treasury Bill is approximately 29.5% of the outstanding 3-month Bill rate. One standard deviation of annual changes for the 30-year U.S. Treasury bond is roughly 15.9% of the prevailing 30-year bond rate. The corresponding absolute changes in rates depend on the level of rates to which the percent change is applied.

	<u>Monthly</u> <u>Changes</u>	<u>Quarterly</u> <u>Changes</u>	<u>Annual</u> <u>Changes</u>
3 Mo.	.0711	.1515	.2949
1 Yr.	.0642	.1358	.2665
2 Yr.	.0574	.1200	.2327
5 Yr.	.0468	.0978	.1953
7 Yr.	.0424	.0880	.1827
10 Yr.	.0393	.0810	.1733
30 Yr.	.0346	.0721	.1590

more representative than shorter sample periods. On the other hand, shorter and more recent sample periods would better reflect prevailing rates and volatilities.

The Banking Agencies solicit comments on the appropriate time horizon, volatility measure and historical sample period to use in developing an interest rate scenario for assessing interest rate risk exposures. Specifically, comments are sought on alternative methodologies for determining scenarios. The first alternative measures historical volatility using nominal basis point changes in market rates. For example, a change in the 6-month rate from 3.0 percent to 3.5 percent would be measured as a movement of 50 basis points, as would a change from 10.0 percent to 10.5 percent. Scenarios would be based on two standard deviations (covering 95 percent of the observations) of quarterly basis point changes over a selected sample period -- for example, 5 years.

A second alternative measures historical volatility as a proportion by which rates change. For example, the same increase from 3.0 to 3.5 percent would be measured as a movement of 16.6 percent of the initial rate (i.e., $0.005/0.03$) whereas the increase from 10.0 to 10.5 percent would be measured as a change of 5 percent

(0.005/.10).⁵ Under this alternative, a volatility factor covering two standard deviations of the distribution of proportional rate changes over the sample period would be applied to the prevailing level of rates at each point along the yield curve. A 30.0 percent proportional rate change represents roughly two standard deviations of quarterly movements of 3-month instruments, or annual movements of 30-year instruments observed during the period 1977 to 1992. This "volatility factor" would produce a 90 basis point change if applied to a market rate of 3.0 percent (0.30×0.03). The same factor, if applied to a 10.0 percent market rate, would produce a 300 basis point change (0.30×0.10).

Possible interest rate scenarios using both alternative methods and quarterly and annual time horizons are shown below:

<u>Maturity</u>	<u>Scenarios Using Nominal Change</u>		<u>Scenarios Using Proportional Change</u>	
	<u>Quarterly Horizon</u>	<u>Annual Horizon</u>	<u>Quarterly Horizon</u>	<u>Annual Horizon</u>
	(Col. 1)	(Col. 2)	(Col. 3)	(Col. 4)
0-3 Months	115 bp	320 bp	100 bp	190 bp
3-12 Months	120 bp	300 bp	100 bp	190 bp
1-3 Years	130 bp	250 bp	110 bp	210 bp

⁵Under current industry convention, proportional volatility is expressed as a percent change in the level of a given market interest rate. This can create some confusion, in that it represents a "percent of a percent." Alternatively, the volatility can be considered to be a multiple of the level of a market rate (e.g., 30 percent of the rate is the same as .30 of the rate).

3-5 Years	125 bp	200 bp	115 bp	235 bp
5-10 Years	110 bp	170 bp	110 bp	235 bp
10-20 Years	100 bp	140 bp	110 bp	235 bp
Over 20 Years	80 bp	130 bp	110 bp	240 bp

Columns 1 and 2 illustrate scenarios using nominal changes in rates for a quarterly and an annual time horizon, respectively, as exhibited during the past five years. Columns 3 and 4 illustrate the rate changes derived using volatility factors for quarterly and annual time horizons, respectively, applied to the average level of rates during the fourth quarter of 1992. The relative uniformity of rate changes across the term structure under the proportional methodology (columns 3 and 4) reflects the steepness of the yield curve during that quarter; the sharply higher level of longer-term rates more than offsets the effect of their lower proportional volatility. A less steep yield curve would generally produce smaller changes for long-term rates than those for short-term rates.

Currently, the results under either proposed methodology indicate rate changes that are about 100 basis points using a quarterly time horizon and 200 basis points using annual volatilities. In the interest of simplicity, the Banking Agencies also seek comment on the use of a parallel 100 or 200 basis point shift. For purposes of this proposed rulemaking, a simple 200 basis point shift is

illustrated in the proposed amendments to the regulations of the Banking Agencies.

Whichever rate scenario is selected, the rate change would be treated as an instantaneous movement in market interest rates and would be used for both the supervisory and internal models for purposes of assessing capital adequacy. The selected rate scenario would be reconsidered periodically as market condition change. However, it is the intent of the Banking Agencies to minimize changes to the specified scenarios. Therefore, barring extenuating circumstances, the Banking Agencies propose to make changes to the specified scenarios no more frequently than annually.

b. Rising and Falling Rate Scenarios

Another issue is whether the Banking Agencies should evaluate IRR under scenarios reflecting both rising and declining market interest rates. The interest rate sensitivity of many financial instruments can differ, in amount, under rising and declining rate scenarios. This difference can reflect differences in consumer behavior as well as management's pricing strategies. Evaluating exposures for both rising and declining rate scenarios would allow consideration of the asymmetry in a bank's assets, liabilities and off-balance-sheet items. Although banks can face potential losses in economic value under either situation, historically a rising rate environment has been

more threatening to depository institutions. Important exceptions include institutions that have purchased large amounts of mortgage servicing rights, that hold large volumes of certain types of high-risk mortgage derivative instruments, or that have created certain types of exposures in off-balance-sheet positions.

One possible approach, reflected in the proposed rule, would be to evaluate exposures to both rising and declining rates. Internal models could estimate the change in economic value for both scenarios. For the supervisory model, different risk weights would be used for the rising and declining rate scenarios to reflect the asymmetric behavior of certain instruments. In the interest of avoiding complexity, another approach would be to consider only the risk of rising rates in the supervisory model and to address exposure to declining rates only during on-site examinations. Comments are requested regarding the burden associated with either approach.

c. Treatment of Non-Maturity Deposits

The treatment of deposits without specific maturity or repricing dates may be one of the most important elements in calculating an institution's level of IRR exposure, whether an internal model or the basic supervisory measure is used. For purposes of calculating the supervisory measure, the Banking Agencies propose to permit banks limited flexibility in distributing their non-maturity

deposits among time bands. Within these limits, banks would distribute the balances as they believe most appropriately reflects the price sensitivity of these deposits. Banks using their own models would be subject to the same effective maturity ranges when estimating the sensitivity of their deposits. Details on the proposed maturity ranges that would be allowed are provided in section 3 below under the discussion of "Reporting for Non-Maturity Deposits."

Considering the inherent difficulties in determining the appropriate treatment of non-maturity deposits, the Banking Agencies solicit comment and any relevant empirical evidence on the price sensitivity and market valuation of these deposits. Information relevant to assessing the changes in the market value of these deposits relative to changing interest rates would be most helpful. The Banking Agencies also seek comment on whether banks that have well reasoned and documented calculations showing rate sensitivities that are outside the proposed supervisory ranges should be allowed to use those calculations. Of particular interest are the specific types of analyses that should be required from banks to support such calculations.

d. Multi-bank Holding Companies

Banking organizations manage the IRR of their bank and nonbank subsidiaries in a variety of ways. Techniques include managing risk separately for each subsidiary depository institution and nonbank affiliate, on a

consolidated basis for all banking entities, or on a fully consolidated basis for the holding company and all its subsidiaries.

Although recognizing these diverse practices, the Banking Agencies propose that each subsidiary depository institution report its assets, liabilities and off-balance-sheet positions separately (provided that the subsidiary is not exempted from the reporting requirement based on the criteria described in section 1 above). Multi-bank holding companies that use their own models also would need to calculate the exposure of each individual bank, although the actual calculation could be done by staff at the corporate or lead-bank level. This procedure will allow the Banking Agencies to monitor the IRR exposure of individual banks and to evaluate the ability of the banks to manage their measured levels of risk. This approach seems most consistent with the structure of existing capital standards and legislative requirements.

3. Description of Supervisory Model

a. General Comments

This section describes the structure, possible reporting requirements, and key assumptions and procedures of the proposed supervisory model. The measurement system is designed to minimize reporting burdens while meeting the supervisory need to estimate the extent to which the net

economic value of an institution would change under a specified change in market interest rates. As such, it is not intended to replace other, more sophisticated procedures that banks may use in their risk management process.

A key component of the proposed supervisory system is a set of "risk weights" that -- when applied to reported asset, liability and off-balance-sheet positions -- estimates the sensitivity of the present value of each position to a specified change in interest rates. The sum of all weighted values of a bank's assets, liabilities and off-balance-sheet positions represents the amount by which the bank's net economic value is estimated to change, given an assumed change in interest rates. This number, called the "Net Risk-Weighted Position", is the primary quantitative measure that would be used to evaluate an institution's exposure to IRR.

b. Information Requirements

Use of the supervisory measurement system requires information on the maturity and repricing characteristics of an institution's assets, liabilities and off-balance-sheet positions. As described in section 1 above, an IRR reporting exemption would be granted to institutions meeting certain criteria. Non-exempt institutions and FDIC-insured savings banks would be required to report maturity and repricing information for both on- and off-balance-sheet items in a Call Report schedule such as that illustrated in

Schedule 1. Non-exempt commercial banks would no longer need to report the similar maturity and repricing data currently collected on the memoranda items of Schedules RC-B, RC-C, and RC-E. Exempt institutions with the exception of FDIC-insured savings banks, however, would continue to report these memoranda items.

Proposed Interest Rate Risk Schedule

DRAFT

Schedule 1

(to be completed by non-empti institutions only)

Mainly self-reporting data
 Monetary and reporting data
 should be provided for all items
 according to their remaining term to
 maturity or time to repricing

Dollar Amounts in Thousands

1	Securities	Total			Up to 3 months			> 3 months and <= 1 year			> 1 year and <= 3 years			> 3 years and <= 5 years			> 5 years and <= 10 years			> 10 years and <= 20 years			> 20 years				
		Bal.	Mid	Thru	Bal.	Mid	Thru	Bal.	Mid	Thru	Bal.	Mid	Thru	Bal.	Mid	Thru	Bal.	Mid	Thru	Bal.	Mid	Thru	Bal.	Mid	Thru		
1	Adjustable rate mortgage securities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	Fixed rate mgt. asset backed securities	1	099	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Zero or low coupon securities	11	750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	High risk mortgage securities	3	048	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	All other securities	39	708	0	7	000	0	12	150	0	4	475	0	6	720	0	10	564	0	8	837	0	9	462	0	0	
6	Loan and Leases	6	000	0	4	000	0	2	000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Adjustable rate mortgages	23	420	0	1	500	0	1	950	0	2	950	0	4	166	0	6	620	0	3	204	0	3	030	0	0	0
8	Fixed rate mgt. consumer loan	61	188	0	15	672	0	11	382	0	21	136	0	13	008	0	0	0	0	0	0	0	0	0	0	0	0
9	All other loans (C&I, etc.)	1	450	0	1	450	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	All Other Int Bearing Assets (Bal. Inc. Fed Funds)	71	070	0	21	433	0	31	862	0	8	621	0	9	096	0	64	000	0	0	0	0	0	0	0	0	0
11	Liabilities	14	258	0	1	650	0	6	433	0	6	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Time deposits	59	287	0	0	0	0	36	287	0	23	000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	MATBAs & IDAs - rising rates	71	525	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	NUWA & savings - rising rates	59	287	0	11	500	0	36	287	0	11	500	0	8	000	0	0	0	0	0	0	0	0	0	0	0	0
15	MATBAs & IDAs - declining rates	21	525	0	4	000	0	3	000	0	13	525	0	1	000	0	0	0	0	0	0	0	0	0	0	0	0
16	NUWA & savings - declining rates	0	0	0	3	000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	Off Balance Sheet Positions	0	0	0	3	000	0	500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Swaps, futures, FRAs, etc.	0	0	0	1	000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	Options, caps, floors, etc.	0	0	0	1	000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	Mortgages & other amortizing instruments	12	975	0	2	550	0	4	900	0	5	525	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Trading Account	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	Cash positions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	Off balance sheet positions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Memoranda	Carrying Value			Rising Rates			Declining Rates																				
	Bal.	Mid	Thru	Bal.	Mid	Thru	Bal.	Mid	Thru																		
1	High Risk Securities Evaluated	2	000	0	2	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	High Risk Securities Not Evaluated	1	000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The reporting format being proposed would require institutions to report assets, liabilities and off-balance-sheet items across seven maturity ranges (time bands) based on the time remaining to maturity or next repricing date.

The proposed time bands are:

- o Up to 3 Months,
- o 3 to 12 Months,
- o 1 to 3 Years,
- o 3 to 5 Years,
- o 5 to 10 Years,
- o 10 to 20 Years,
- o Greater than 20 years.

In the interest of minimizing reporting burdens, no coupon or yield data would be collected. Rather, the supervisory model would apply general assumptions regarding coupon rates and other characteristics of the underlying assets, liabilities, and off-balance-sheet instruments in developing the interest rate sensitivity weights. When used as an alternative, internal models would be expected to reflect actual coupons and yields of the specific holdings of the institution.

Reporting for Assets. The price sensitivity of a financial instrument is determined by the instrument's cash flow characteristics. Accordingly, maturity and repricing

data on most assets would be collected in one of four categories that reflect different types of cash flows:

- o Adjustable-rate mortgages (ARMs) and mortgage securities;
- o Fixed-rate mortgage securities, asset-backed securities, fixed-rate mortgages, consumer loans and other easily identifiable instruments that involve scheduled periodic amortization of principal;
- o Zero or low coupon securities with either no periodic interest payments or interest coupons of 2 percent or lower; and
- o All other instruments, which are assumed to involve scheduled periodic payments of interest and the payment of principal at maturity.

As proposed, those ARMs tied to a current market index (e.g., Constant Maturity Treasury rates) would be reported in the time band according to their next repricing date. ARMs tied to a lagging index (e.g., 11th District Cost of Funds) have greater price sensitivity owing to the lagging nature of their repricing behavior. These

instruments would be reported in the 3 to 5 year time band to reflect this price sensitivity.

Only outstanding principal balances would be distributed across the time bands. This distribution would be based on each instrument's remaining contractual maturity or repricing date. A bank's own estimate of expected cash flows would not be reported. Instead, the Banking Agencies would incorporate the rate of anticipated prepayments on amortizing instruments, such as residential mortgages and mortgage pass-through securities, into the IRR risk weights using standardized assumptions and market expectations.

Mortgage derivative products would be treated differently. Under the FFIEC Policy Statement on Securities Activities, mortgage derivative products are defined as stripped mortgage-backed securities, tranches of collateralized mortgage obligations (CMOs) and real estate mortgage investment conduits (REMICs), CMO and REMIC residual securities and other instruments having the same characteristics as these securities. In general, banks would report "high-risk" mortgage derivative products

differently from those that are "nonhigh-risk."⁶ Banks would report only the total carrying value of "high-risk" mortgage derivative products that are held for sale. A memorandum item would be used to collect information on the interest rate sensitivity of these instruments. All other mortgage derivative products would be classified as "nonhigh-risk" and would be distributed across the time bands of the proposed reporting form, in the "All Other

⁶Effective February 10, 1992 the Banking Agencies and the Office of Thrift Supervision adopted revised supervisory policies on securities activities that were developed under the auspices of the FFIEC. The revised policies established a framework for identifying "high-risk mortgage securities" which must be reported as securities held for sale or for trading. A "high-risk mortgage security" is defined as any mortgage derivative product that, at the time of purchase, or at a subsequent date, meets any of the following tests:

- (1) Average Life Test: The mortgage derivative product has an expected weighted average life greater than 10.0 years.
- (2) Average Life Sensitivity Test: The expected weighted average life of the product:
 - (a) Extends by more than 4.0 years, assuming an immediate and sustained parallel shift in the yield curve of plus 300 basis points, or
 - (b) Shortens by more than 6.0 years, assuming an immediate and sustained parallel shift in the yield curve of minus 300 basis points.
- (3) Price Sensitivity Test: The estimated change in the price of the mortgage derivative product is more than 17 percent, due to an immediate and sustained parallel shift in the yield curve of plus or minus 300 basis points.

In general, a mortgage derivative product that does not meet any of the three tests is considered to be a "nonhigh-risk mortgage security."

Securities" category, according to their current average life as calculated by bank management.⁷

Time deposits held at other institutions, Federal funds sold, Securities Purchased Under Agreement to Resell (i.e., reverse repurchase agreements) and other interest-bearing assets would also be reported in the proposed reporting form as a single line item.

Reporting for Time Deposits and Purchased Funds.

All time deposits and other interest-bearing liabilities with well-defined maturities -- such as Federal funds purchased, securities sold under agreement to repurchase and other borrowed funds -- would be distributed across the time bands of Schedule 1 in the "All Other" category.

Reporting for Non-Maturity Deposits. The Banking Agencies are proposing uniform rules for distributing deposits without well-defined maturities or repricing dates (demand deposits, MMDAs, NOWs and savings deposits) across the time bands. These proposed rules would specify the longest time band that could be used for each type of deposit and the maximum percentage amount that could be slotted into that time band. Institutions would distribute such deposits across the time bands according to their

⁷All underlying assumptions used in calculating the average life of these instruments must be reasonable and available for examiner review. For example, if an institution's prepayment assumptions differ significantly from the median prepayment assumptions of several major dealers as selected by examiners, the examiners may use these median prepayment assumptions in determining the appropriate average life of the instrument.

individual assumptions and experience, subject to the following constraints:

- o Demand deposits and MMDAs may be distributed across any of the first three time bands, with a maximum of 40 percent of these balances in the 1 to 3 year time band; and
- o Savings and NOW account balances may be distributed across any of the first four time bands, with a maximum of 40 percent of the total of these balances in the 3 to 5 year time band.

As was noted in section 2 above, the Banking Agencies are proposing to measure a bank's IRR exposure under both a rising and falling rate scenario. These deposit slotting rules would allow an institution some flexibility to slot deposits with undefined maturities differently for rising and falling rate scenarios.

Reporting for Off-Balance-Sheet Positions.

Institutions would be required to distribute off-balance-sheet positions among the time bands of Schedule 1. The Banking Agencies expect banks that engage in a significant amount of off-balance-sheet activities to have internal systems, including options pricing models as appropriate, that can properly value the types of transactions they use in their risk management activities. Accordingly, the

Banking Agencies propose to allow banks to estimate the interest sensitivity of off-balance-sheet instruments using internal models. If a separate Call Report schedule for reporting internal model results is not adopted or required (see discussion in section 4 below), the results of these internal models could be incorporated as a memorandum item on Schedule 1. These models would be reviewed by examiners as part of the examination process and exposures based on internal models would be used for supervisory purposes when available and deemed acceptable to the examiner. Comment is requested on the reporting burden associated with distributing off-balance-sheet positions among time bands, when results of internal models are also provided.

With regard to reporting off-balance-sheet positions in the proposed maturity reporting schedule, those with option characteristics (e.g., swaptions, caps, floors and options) would be reported separately from those representing firm commitments (e.g., swaps, futures, and forward-rate agreements). Mortgage-related fixed-rate commitments and other off-balance-sheet derivative instruments whose value depends on the value of an underlying asset or index with amortizing characteristics also would be reported separately.

Futures, forwards, options and firm commitments to buy or sell loans and securities would be reported using two entries, with one entry reported in the time band corresponding to the settlement date of the contract plus

the maturity of the underlying instrument, and an offsetting entry of opposite sign slotted in the time band corresponding to the settlement date of the contract. Interest rate swaps, caps, and floors would also be reported using two separate entries, with one entry reported in the time band corresponding to the maturity of the instrument and an offsetting entry in the time band corresponding to the next repricing of the floating side of the instrument.

The dollar entries reported for firm commitments would equal the notional principal values of the instruments. The dollar entries reported for instruments with option characteristics would be derived using one of two alternative methods. The first method, reflected in the proposed rule, would require the reporting of positions using delta-equivalent values.⁴ The second reporting alternative would require the reporting of positions only if, on the report date, the index rate or the rate to be received is within 100 basis points of the strike rate (price). If the position is reported, the notional value would be used. Comment is requested on this reporting methodology as well as the use of delta-equivalent values for off-balance-sheet positions with option characteristics.

⁴The delta value of an option represents the expected change in the option's price as a proportion of a small change in the price of the underlying instrument. An option whose price changes by \$1 for every \$2 change in the price of the underlying instrument has a delta of 0.5. The delta-equivalent value of an option position is equal to the option's current delta multiplied by its principal or notional value.

Reporting for Trading Account Positions.

Institutions would be required to distribute trading account securities, including off-balance-sheet positions associated with the trading account, by maturity in the rows and columns specified in Schedule 1. As with off-balance-sheet instruments, the Banking Agencies propose to allow banks to use and report the results of internal models for estimating the interest rate sensitivity of trading portfolios. This information would be collected either through the proposed separate Call Report schedule or through a memorandum item on Schedule 1. Comment is requested on the reporting burden associated with distributing trading account positions among time bands when results of internal models are also provided.

The Banking Agencies would expect banks to have prudential internal risk limits and effective risk measurement systems for their trading activities. For banks with significant trading operations, the adequacy and results of those systems will be closely reviewed by examiners and would be incorporated into their assessment of the bank's overall risk position.

The Basle Committee on Bank Supervision is also considering methods of evaluating IRR in trading accounts and determining appropriate capital requirements. This work, which relates to activities of internationally active banks could affect the treatment for trading activities for U.S. banks if it leads to an international agreement.

Memoranda Items for "High-Risk Mortgage Securities". Under revised supervisory policies on securities activities that became effective on February 10, 1992, institutions must evaluate at least quarterly whether their holdings of high-risk mortgage securities reduce interest rate risk. The reporting form takes advantage of the availability of this information by allowing an institution to report, in a memorandum item, the current carrying value of high-risk mortgage derivative products that are held for sale along with the estimated changes in market value for the specified interest rate scenario. Such data would be used directly in calculating an institution's IRR exposure.

Mortgage derivative securities that were purchased prior to February 10, 1992 and meet the high-risk tests are subject to previously existing supervisory policies and are, therefore, not subject to the quarterly IRR risk evaluation criteria. For such holdings, institutions would have the option to: (1) Report the interest rate sensitivity of these holdings in a similar fashion as post-February 10, 1992, purchases; or (2) report only the current carrying value of those securities. Balances reported under the second option would be assumed to have significant price volatility, similar to long dated, zero or low coupon instruments. However, unlike zero coupon and most other debt instruments, the prices of certain high-risk mortgage securities do not always move in the opposite direction of a change in market

interest rates (i.e., decline in price when interest rates rise or increase in price when interest rates decline). Because the directional change in the price of these securities is difficult to ascertain unless the specific cash flows of each security are reported, the Banking Agencies propose to assume that the balances reported under the second option will depreciate in value under both a rising and a falling interest rate scenario. To reflect this assumption, the balances would be assigned the risk weight that is applied to long-term, zero or low coupon securities under the rising interest rate scenario. The Banking Agencies request comment on the reasonableness of this approach. For illustrative purposes, the example bank in Schedule 1 that has \$3 million in high-risk mortgage derivative securities has elected to report only the current carrying value for \$1 million of securities that would otherwise meet the current high-risk tests but were purchased prior to February 10, 1992.

Reporting for Multi-bank Holding Companies. As noted in section 2 above, the Banking Agencies propose that each subsidiary depository institution report its assets, liabilities and off-balance-sheet positions separately.

Reporting of Foreign Currency Positions. The Banking Agencies propose that positions not denominated in U.S. dollars be converted into U.S. dollar equivalents using prevailing exchange rates and reported along with all other on- and off-balance-sheet positions on the same reporting

form. Although this treatment ignores imperfect correlation among exchange rates, it avoids the complexity entailed by separate reporting for each currency, and the need to derive and distribute correlation statistics to reporting banks.

However, a basic supervisory principle in evaluating bank management is that an institution's policies, procedures and general capabilities should be consistent with the nature of the bank's business. Accordingly, examiners would expect institutions that have significant positions denominated in foreign currencies or that conduct significant foreign exchange transactions to have the capability to measure and assess the related risks. Examiners would consider both the adequacy and result of a bank's internal risk measure, along with other available information, in the overall evaluation of the bank's model. When appropriate, internal models should take adequate account of changes in foreign exchange rates.

c. Derivation of Risk Weights

In the proposed measurement system, reported positions would be multiplied by an IRR weight. Each risk weight is constructed to approximate the percentage change in value of the position resulting from a specified change in interest rates. The risk weights are based on the percentage change in present value (i.e., price) of hypothetical instruments, as calculated using static cash flow analysis. Such weights directly incorporate convexity

for the rate scenario.⁹ These weights also facilitate the measurement of options in certain types of assets, such as the prepayment option in mortgage loans.

The risk weights used would depend on the interest rate scenario for which the change is measured. As discussed above, comments are being sought on alternative methodologies for determining supervisory interest rate scenarios and whether these scenarios should include both rising and falling rates.

If both a rising-rate and declining-rate scenario are used, as reflected in the proposed rule, separate risk weights would be calculated to account for the asymmetrical price behavior of various bank assets, liabilities and off-balance-sheet instruments. An alternative and simpler approach would use the same risk weights for both rising and declining rate scenarios. The Banking Agencies seek comment on whether the distortions introduced by such a simpler approach are meaningful within the overall context of the supervisory model.

In general, the set of risk weights used for each scenario would consist of:

⁹Convexity refers to the non-linear price/yield relationship of fixed-rate financial instruments. Instruments without option features, such as Treasury notes, have positive convexity, meaning that as the price of the instrument falls, its yield will increase by a proportionately greater amount. Other instruments, such as certain mortgage-backed securities, have negative convexity.

- o Seven "Amortizing" risk weights (i.e., one for each time band) to be used for mortgages, pass-through mortgage securities, asset-backed securities, consumer loans and amortizing off-balance-sheet instruments;
- o Seven "Zero or Low Coupon" risk weights;
- o Seven "All Other" risk weights; and,
- o Seven liability risk weights.

Bank supervisors would construct risk weights using hypothetical market instruments that are representative of the category being measured. The instruments chosen would vary depending on the category of instrument and the time band. A 30-year mortgage pass-through security with the composite characteristics (e.g., gross and net coupons, original and remaining maturity) of a current coupon, 30-year conventional mortgage pass-through security at par value would be used to estimate the price change for fixed-rate mortgages and mortgage securities reported in the greater than 20 year time band. Similarly, a current coupon 15-year conventional mortgage pass-through security would be used to estimate the risk weight for mortgages and mortgage securities reported in the 10 to 20 year time band. For the 5 to 10 year time band, a current

coupon 15-year mortgage pass-through security with a remaining maturity equal to 7.5 years would be used.

For amortizing instruments with maturities less than 5 years, a hypothetical monthly amortizing instrument would be used that had these characteristics: (1) An original maturity equal to the end point of the specific time band; (2) a remaining maturity equal to the midpoint of the time band; and (3) a coupon and yield equal to the effective yield on the industry's earning assets.¹⁰

An important consideration in estimating the price sensitivity of amortizing instruments is the change in prepayments as interest rates change. In calculating the risk weights from the 15- and 30-year fixed-rate mortgages, expected prepayments would be applied in each rate scenario in accordance with a consensus of market prepayment estimates. Amortizing instruments with maturities of less than 5 years would be assumed to represent consumer installment loans with prepayment rates of approximately 1.0 percent (1 percent ABS) of outstanding principal per month.¹¹

The risk weights for the "All Other" category would be calculated assuming semi-annual interest payments, a maturity equal to the mid-point of each time band, and an

¹⁰For 1992 the average effective yield on earning assets at all commercial banks was approximately 8.5 percent.

¹¹ABS stands for Asset-Backed Security. 1 percent ABS assumes 1 percent prepayment of outstanding principal balance per month throughout the life of the loan.

assumed coupon and yield equal to the effective yield on the industry's earning assets in 1992. Similarly, the "Zero or Low Coupon" risk weights are calculated using the percentage change in the price of a zero coupon instrument with an assumed maturity equal to the mid-point of each time band and the same industry average effective yield assumed above.

Only one set of risk weights would be used for liabilities: the percentage price change for a semi-annual interest-bearing instrument with an assumed coupon and yield equal to the effective yield on interest bearing liabilities.¹²

For illustrative purposes, Table 1 shows the risk weights developed for a 200 basis point parallel shift in interest rates, as well as the parameters used to derive them. The specific risk weights used to evaluate exposures would be derived in a similar fashion when the Banking Agencies adopt a specific supervisory scenario. In the illustration, risk weights for both a rising and declining interest rate scenario have been constructed. Under the proposed measurement system, the Banking Agencies expect that the risk weights would be reasonably stable over time so as to facilitate a bank's risk management and capital planning. However, they may need to be adjusted periodically as market conditions change, or as part of the

¹²For the liability weights a 4.75 percent coupon is assumed, which approximates the effective yield on interest bearing liabilities at all commercial banks during 1992.

biennial review of risk-based capital required by section
305(a) of FDICIA.

Table 1

DRAFT

Derivation of Risk Weights

Amortizing Instruments

		Scenario 1				Scenario 2				
		200 Basis Point Rise				200 Basis Point Decline				
Time band	Maturity	Coupon	Initial Price (% of Par)	Initial PSA/ ABS	Expected PSA/ ABS	Price (% of Par)	% Change in Present Value (Risk Weights)	Expected PSA/ ABS	Price (% of Par)	% Change in Present Value (Risk Weights)
0-3 Months	1.5 Mo.	8.5%	100.00%	1.0% ABS	1.0% ABS	99.90%	-0.10%	1.0% ABS	100.10%	0.10%
0-3 Months	7.5 Mo.	8.5%	100.00%	1.0% ABS	1.0% ABS	99.50%	-0.50%	1.0% ABS	100.60%	0.60%
1-3 Years	2 Years	8.5%	100.00%	1.0% ABS	1.0% ABS	98.40%	-1.60%	1.0% ABS	101.70%	1.70%
3-5 Years	4 Years	8.5%	100.00%	1.0% ABS	1.0% ABS	97.00%	-3.00%	1.0% ABS	103.10%	3.10%
5-10 Years	7.5 Years	7.0%*	100.00%	1.66% PSA ***	1.37% PSA ***	94.70%	-5.30%	501% PSA ***	103.40%	3.40%
10-20 Years	15 Years	7.0%*	100.00%	1.66% PSA ***	1.37% PSA ***	91.20%	-8.80%	501% PSA ***	105.90%	5.90%
Over 20 Years	25 Years	7.5%*	100.00%	2.42% PSA ***	1.46% PSA ***	90.80%	-9.20%	590% PSA ***	103.60%	3.60%

All Other Instruments

0-3 Months	1.5 Mo.	8.5%	100.00%	****	99.75%	-0.25%	100.25%	0.25%
0-3 Months	7.5 Mo.	8.5%	100.00%	****	98.80%	-1.20%	101.20%	1.20%
1-3 Years	2 Years	8.5%	100.00%	****	96.50%	-3.50%	103.70%	3.70%
3-5 Years	4 Years	8.5%	100.00%	****	93.60%	-6.40%	107.00%	7.00%
5-10 Years	7.5 Years	8.5%	100.00%	****	89.80%	-10.20%	111.70%	11.70%
10-20 Years	15 Years	8.5%	100.00%	****	85.10%	-14.90%	119.00%	19.00%
Over 20 Years	25 Years	8.5%	100.00%	****	82.40%	-17.60%	124.60%	24.60%

Liabilities

0-3 Months	1.5 Mo.	4.75%	100.00%	****	99.75%	0.25%	100.25%	-0.25%
0-3 Months	7.5 Mo.	4.75%	100.00%	****	98.80%	1.20%	101.20%	-1.20%
1-3 Years	2 Years	4.75%	100.00%	****	96.30%	3.70%	103.90%	-3.90%
3-5 Years	4 Years	4.75%	100.00%	****	93.10%	6.90%	107.50%	-7.50%
5-10 Years	7.5 Years	4.75%	100.00%	****	88.40%	11.60%	113.50%	-13.50%
10-20 Years	15 Years	4.75%	100.00%	****	81.30%	18.70%	124.50%	-24.50%
Over 20 Years	25 Years	4.75%	100.00%	****	76.00%	24.00%	136.00%	-36.00%

Zero or Low Coupon Securities

0-3 Months	1.5 Mo.	8.5%	98.97%	8.5%	98.77%	-0.25%	99.22%	0.25%
0-3 Months	7.5 Mo.	8.5%	94.95%	8.5%	93.81%	-1.20%	96.09%	1.20%
1-3 Years	2 Years	8.5%	84.66%	8.5%	81.53%	-3.70%	87.96%	3.91%
3-5 Years	4 Years	8.5%	71.68%	8.5%	66.38%	-7.40%	77.41%	8.00%
5-10 Years	7.5 Years	8.5%	53.56%	8.5%	46.44%	-13.30%	61.92%	13.60%
10-20 Years	15 Years	8.5%	28.69%	8.5%	21.55%	-24.90%	38.30%	33.50%
Over 20 Years	25 Years	8.5%	12.48%	8.5%	7.74%	-38.00%	20.21%	61.90%

* Current coupon of 15-year conventional mortgage securities as of 12/31/92

** Current coupon of 30-year conventional mortgage securities as of 12/31/92

*** Consensus of dealer prepayment estimates for 15- & 30-year conventional mortgage securities for selected scenarios as of 12/31/92

**** Actual initial price is slightly less than par

d. Calculation of the Interest Rate Risk Measure

Tables 2 and 3 are IRR worksheets that illustrate the method by which an institution's IRR exposure would be calculated under the proposed supervisory methodology using a 200 basis point parallel shift in interest rates. Data collected on the reporting forms and the existing Call Report Schedules would be transcribed to column A. For illustrative purposes, non-interest-sensitive balances are included in "Other Assets" and "Other Liabilities" to allow the worksheet to represent an institution's entire balance sheet.

Under the proposed measurement system, the risk weights (shown in column B of Tables 2 and 3) represent the estimated percentage change in the value of the instrument under the designated rate shock. Therefore, multiplying the reported positions by the risk weights produces an estimate of the dollar change in the present value of that position for the specified change in rates (column C of the Tables). In Table 2, for example, the \$5.5 million of ARMs, fixed-rate mortgages, asset-backed securities and consumer loans repricing within 3 months and reported on line I.1.(a) are multiplied or "weighted" by 0.0010 (or .10 percent as shown in the second column) to produce an estimated change of \$6,000 in the present value of that position. This risk weight carries a negative sign, reflecting that the present

value of these assets would decline if market rates were to rise. Conversely, Table 3 illustrates the changes in value for a decline in rates.

Interest Rate Risk Worksheet (200 Basis Point Rising Rate Scenario)
DRAFT

55

Table 2

REPORTING INSTITUTION: Sample Bank

Date: 12/31/92

\$ Thousands

I. INTEREST-SENSITIVE ASSETS

	(A) TOTAL	(B) Risk Weights	(C) Risk Weighted Position	(D) Total Risk Weighted Position
(A) x (B)				
1 ARMs, FRMs, asset-backed securities, consumer loans				
(a) Up to 3 months	\$5,500	-0.10%		(\$6)
(b) 3 to 12 months	\$4,950	-0.50%		(\$25)
(c) 1 to 3 years	\$4,050	-1.60%		(\$65)
(d) 3 to 5 years	\$4,166	-3.00%		(\$125)
(e) 5 to 10 years	\$6,620	-5.30%		(\$351)
(f) 10 to 20 years	\$6,454	-8.80%		(\$568)
(g) Greater than 20 years	\$10,430	-9.20%		(\$960)
2 Zero or low coupon securities				
(a) Up to 3 months	\$1,000	-0.25%		(\$3)
(b) 3 to 12 months	\$1,000	-1.20%		(\$12)
(c) 1 to 3 years	\$1,000	-3.70%		(\$37)
(d) 3 to 5 years	\$0	-7.40%		\$0
(e) 5 to 10 years	\$0	-13.30%		\$0
(f) 10 to 20 years	\$0	-24.90%		\$0
(g) Greater than 20 years	\$0	-38.00%		\$0
3 "All other" securities, loans, & trading account				
(a) Up to 3 months	\$26,677	-0.25%		(\$67)
(b) 3 to 12 months	\$28,432	-1.20%		(\$341)
(c) 1 to 3 years	\$31,136	-3.50%		(\$1,090)
(d) 3 to 5 years	\$19,728	-6.40%		(\$1,263)
(e) 5 to 10 years	\$10,564	-10.20%		(\$1,078)
(f) 10 to 20 years	\$8,837	-14.90%		(\$1,317)
(g) Greater than 20 years	\$9,462	-17.60%		(\$1,665)
4 High-risk mortgage securities				
(a) Self-reporting	\$2,000			\$160
(b) Risk weighting	\$1,000	-38.00%		(\$380)
5 Total Interest-Sensitive Assets	\$183,000			(\$9,190)
I ALL OTHER ASSETS	\$3,000			
II TOTAL ASSETS	\$186,000			

IV. INTEREST-SENSITIVE LIABILITIES

1 Non-maturity deposits, time deposits and "all other"

(a) Up to 3 months	\$23,083	0.25%		\$58
(b) 3 to 12 months	\$74,582	1.20%		\$895
(c) 1 to 3 years	\$51,321	3.70%		\$1,899
(d) 3 to 5 years	\$17,090	6.90%		\$1,179
(e) 5 to 10 years	\$64	11.60%		\$7
(f) 10 to 20 years	\$0	18.70%		\$0
(g) Greater than 20 years	\$0	24.00%		\$0
2 Total Interest-Sensitive Liabilities	\$166,140			\$4,038
V NONINTEREST-SENSITIVE LIABILITIES	\$860			
VI TOTAL LIABILITIES	\$167,000		\$4,038	\$4,038
VII EQUITY CAPITAL	\$19,000			

VIII. OFF-BALANCE-SHEET POSITIONS

1 Interest rate contracts				
(a) Up to 3 months	\$4,000	-0.25%		(\$10)
(b) 3 to 12 months	\$500	-1.20%		(\$6)
(c) 1 to 3 years	(\$4,050)	-3.50%		(\$142)
(d) 3 to 5 years	(\$450)	-6.40%		(\$29)
(e) 5 to 10 years	\$0	-10.20%		\$0
(f) 10 to 20 years	\$0	-14.90%		\$0
(g) Greater than 20 years	\$0	-17.60%		\$0
2 Mortgage and other amortizing contracts				
(a) Up to 3 months	\$1,000	-0.10%		(\$1)
(b) 3 to 12 months	\$0	-0.50%		\$0
(c) 1 to 3 years	(\$1,000)	-1.60%		(\$16)
(d) 3 to 5 years	\$0	-3.00%		\$0
(e) 5 to 10 years	\$0	-5.30%		\$0
(f) 10 to 20 years	\$0	-8.80%		\$0
(g) Greater than 20 years	\$0	-9.20%		\$0
3 Total Off-Balance-Sheet Positions	\$0			(\$17)
Net Risk Weighted Position				(\$4,281.86)
Net Position/Assets				-2.68%

Interest Rate Risk Worksheet (200 Basis Point Declining Rate Scenario)

REPORTING INSTITUTION: Sample Bank

Table 3

Date: 12/31/92

\$ Thousands

I. INTEREST-SENSITIVE ASSETS

1. ARMs, FRMs, asset-backed securities, consumer loans

- (a) Up to 3 months
 (b) 3 to 12 months
 (c) 1 to 3 years
 (d) 3 to 5 years
 (e) 5 to 10 years
 (f) 10 to 20 years
 (g) Greater than 20 years

2. Zero or low coupon securities

- (a) Up to 3 months
 (b) 3 to 12 months
 (c) 1 to 3 years
 (d) 3 to 5 years
 (e) 5 to 10 years
 (f) 10 to 20 years
 (g) Greater than 20 years

3. *All other* securities, loans, & trading account

- (a) Up to 3 months
 (b) 3 to 12 months
 (c) 1 to 3 years
 (d) 3 to 5 years
 (e) 5 to 10 years
 (f) 10 to 20 years
 (g) Greater than 20 years

4. High-risk mortgage accounts

- (a) Self-reporting
 (b) Risk weighting

5. Total Interest-Sensitive Assets

II. ALL OTHER ASSETS

III. TOTAL ASSETS

IV. INTEREST-SENSITIVE LIABILITIES

1. Non-maturity deposits, time deposits and "all other"

- (a) Up to 3 months
 (b) 3 to 12 months
 (c) 1 to 3 years
 (d) 3 to 5 years
 (e) 5 to 10 years
 (f) 10 to 20 years
 (g) Greater than 20 years

2. Total Interest-Sensitive Liabilities

V. NONINTEREST-SENSITIVE LIABILITIES

VI. TOTAL LIABILITIES

VII. EQUITY CAPITAL

VIII. OFF-BALANCE-SHEET POSITIONS

1. Interest rate contracts

- (a) Up to 3 months
 (b) 3 to 12 months
 (c) 1 to 3 years
 (d) 3 to 5 years
 (e) 5 to 10 years
 (f) 10 to 20 years
 (g) Greater than 20 years

2. Mortgage and other encumbering contracts

- (a) Up to 3 months
 (b) 3 to 12 months
 (c) 1 to 3 years
 (d) 3 to 5 years
 (e) 5 to 10 years
 (f) 10 to 20 years
 (g) Greater than 20 years

3. Total Off-Balance-Sheet Positions

Net Risk Weighted Position

Net Position/ Assets

	(A)	(B)	(C)	(D)
	TOTAL	Risk Weights	Risk Weighted Position	Total Risk Weighted Position
			(A) x (B)	
1. ARMs, FRMs, asset-backed securities, consumer loans				
(a) Up to 3 months	\$5,500	0.10%	\$6	
(b) 3 to 12 months	\$4,950	0.60%	\$30	
(c) 1 to 3 years	\$4,050	1.70%	\$69	
(d) 3 to 5 years	\$4,166	3.10%	\$129	
(e) 5 to 10 years	\$6,620	3.40%	\$225	
(f) 10 to 20 years	\$6,454	5.90%	\$381	
(g) Greater than 20 years	\$10,430	3.60%	\$375	
2. Zero or low coupon securities				
(a) Up to 3 months	\$1,000	0.25%	\$3	
(b) 3 to 12 months	\$1,000	1.20%	\$12	
(c) 1 to 3 years	\$1,000	3.90%	\$39	
(d) 3 to 5 years	\$0	8.00%	\$0	
(e) 5 to 10 years	\$0	15.00%	\$0	
(f) 10 to 20 years	\$0	33.50%	\$0	
(g) Greater than 20 years	\$0	61.90%	\$0	
3. *All other* securities, loans, & trading account				
(a) Up to 3 months	\$26,672	0.25%	\$67	
(b) 3 to 12 months	\$28,432	1.20%	\$341	
(c) 1 to 3 years	\$31,136	3.70%	\$1,152	
(d) 3 to 5 years	\$19,728	7.00%	\$1,381	
(e) 5 to 10 years	\$10,564	11.70%	\$1,236	
(f) 10 to 20 years	\$8,837	19.00%	\$1,679	
(g) Greater than 20 years	\$9,462	24.60%	\$2,328	
4. High-risk mortgage accounts				
(a) Self-reporting	\$2,000		(\$2000)	
(b) Risk weighting	\$1,000	-38.00%	(\$380)	
5. Total Interest-Sensitive Assets	\$183,000		\$8,871	\$8,871
II. ALL OTHER ASSETS	\$3,000			
III. TOTAL ASSETS	\$186,000			
IV. INTEREST-SENSITIVE LIABILITIES				
1. Non-maturity deposits, time deposits and "all other"				
(a) Up to 3 months	\$38,583	-0.25%	(\$96)	
(b) 3 to 12 months	\$77,582	-1.20%	(\$931)	
(c) 1 to 3 years	\$29,871	-3.90%	(\$1,153)	
(d) 3 to 5 years	\$10,090	-7.50%	(\$757)	
(e) 5 to 10 years	\$64	-13.50%	(\$9)	
(f) 10 to 20 years	\$0	-24.50%	\$0	
(g) Greater than 20 years	\$0	-36.00%	\$0	
2. Total Interest-Sensitive Liabilities	\$166,140		(\$3,346)	
V. NONINTEREST-SENSITIVE LIABILITIES	\$860			
VI. TOTAL LIABILITIES	\$167,000		(\$3,346)	(\$3,346)
VII. EQUITY CAPITAL	\$19,000			
VIII. OFF-BALANCE-SHEET POSITIONS				
1. Interest rate contracts				
(a) Up to 3 months	\$4,000	0.25%	\$10	
(b) 3 to 12 months	\$500	1.20%	\$6	
(c) 1 to 3 years	(\$4,050)	3.70%	(\$150)	
(d) 3 to 5 years	(\$450)	7.00%	(\$32)	
(e) 5 to 10 years	\$0	11.70%	\$0	
(f) 10 to 20 years	\$0	19.00%	\$0	
(g) Greater than 20 years	\$0	24.60%	\$0	
2. Mortgage and other encumbering contracts				
(a) Up to 3 months	\$1,000	0.10%	\$1	
(b) 3 to 12 months	\$0	0.60%	\$0	
(c) 1 to 3 years	(\$1,000)	1.70%	(\$17)	
(d) 3 to 5 years	\$0	3.10%	\$0	
(e) 5 to 10 years	\$0	3.40%	\$0	
(f) 10 to 20 years	\$0	5.90%	\$0	
(g) Greater than 20 years	\$0	3.60%	\$0	
3. Total Off-Balance-Sheet Positions	\$0		(\$18)	(\$18)
Net Risk Weighted Position				\$5,344 \$1
Net Position/ Assets				2.87%

The sum of the estimated changes in present value for each category of instrument provides an estimate of the institution's overall interest rate risk, that is, the change in the net economic value of the institution that would result from the specified shift in market interest rates. As shown in Table 2, the specified 200 basis point increase in rates is estimated to reduce the present value of the bank's assets by roughly \$9.19 million, raise the present value of its liabilities by an estimated \$4.04 million and raise the value of its off-balance-sheet items by \$170,000. The net result, or the "Net Risk-Weighted Position" (bottom of the worksheet) is a decline of roughly \$4.98 million in the net economic value of this institution. This net risk-weighted position would be the primary measure of the level of an institution's interest rate risk.

Table 3 shows the effect of a decline in rates. This decline is estimated to increase the present value of the example bank's assets by \$8.87 million, lower the present value of its liabilities by \$3.35 million, and reduce the value of its off-balance-sheet items by \$181,000. The Net Risk-Weighted Position represents an increase of roughly \$5.34 million in the net economic value of this institution. The difference in the magnitude of the change in value from that derived for the rising rate scenario is attributable to asymmetries in the price sensitivity of financial instruments as interest rates change (i.e.,

convexity) and different slotting of non-maturity deposits in the rising and falling rate scenarios.

The rate scenario that produces the larger loss or negative net position would be used in the assessment of capital for IRR. In the case of the example bank illustrated in Tables 2 and 3, the exposure to rising rates would be used to evaluate capital adequacy for IRR.

4. Reporting of Internal Model Results

The Banking Agencies request comment on a second Call Report schedule under consideration that could be used by banks that elect or that may be required to have their exposures evaluated on the basis of the results of their own internal models. This supplemental schedule would be recommended to the Federal Financial Institution Examination Council if the Banking Agencies relied on the information to provide an explicit capital charge for IRR.

The schedule (Schedule 2) consists of several asset, liability, and off-balance-sheet categories, with two scenarios for each category:

- o Scenario 1 represents a specified increase in interest rates over the rates prevailing as of the report date. In each category under Scenario 1, the bank would report its estimate of the change in present value of the instruments if rates were to rise as specified in Scenario 1.

Proposed Internal Interest Rate Scenario Analysis Schedule:
DRAFT

Schedule 2

To be filed by institutions that use an internal interest rate risk measurement system for compliance with guidelines.

Dollar Amounts in Thousands

Interest Rate Risk Sensitivity Analysis - Estimated Change in Economic Value

	Rising Rates			Declining Rates		
	Bill	Mil	Thou	Bill	Mil	Thou
1. Securities						
a. Adjustable-rate mortgage securities	XXXX			XXXX		
b. Fixed-rate mtgs, asset-backed securities	XXXX			XXXX		
c. Zero or low coupon securities	XXXX			XXXX		
d. High-risk mortgage securities	XXXX			XXXX		
e. All other securities	XXXX			XXXX		
2. Loan and Leases						
a. Adjustable-rate mortgages	XXXX			XXXX		
b. Fixed-rate mtg, consumer loans	XXXX			XXXX		
c. All other loans (C&I, etc.)	XXXX			XXXX		
3. All Other Int-Bearing Assets (Bal. Due, Fed Fuods)	XXXX			XXXX		
4. Total Liabilities:						
a. Non-maturity deposits (MMDAs, DDAs, NOWs, savings)	XXXX			XXXX		
b. Time deposits	XXXX			XXXX		
c. All other (include repos and sub. debt)	XXXX			XXXX		
5. Off-Balance-Sheet Contracts						
a. Swaps, futures, FRAs, etc.	XXXX			XXXX		
b. Options, caps, floors, etc.	XXXX			XXXX		
c. Mortgages & other amortizing instruments	XXXX			XXXX		
6. Trading Account						
a. Cash positions	XXXX			XXXX		
b. Off-balance-sheet positions	XXXX			XXXX		
7. Total Assets - Total Liabilities +/- Off-Balance-Sheet	XXXX			XXXX		

- o Likewise, Scenario 2 represents a specified decrease in interest rates below the rates prevailing as of the report date. In each category under Scenario 2, the bank would report its estimates of the dollar change in present value of the respective instruments should rates fall as specified in Scenario 2.

The rate scenarios would be the same as those used for the supervisory model. The rate scenario that produces the higher loss or negative net position would be used in the assessment of capital for IRR. When used, internal models would be expected to reflect actual coupons and yields for the institution's positions, rather than those incorporated in the construction of the risk weights used in the supervisory model.

As currently drafted, this schedule would be a supplemental one and non-exempted banks would still be required to complete, in its entirety, the proposed schedule illustrated by Schedule 1, found in section 2 above. However, the Banking Agencies recognize that spreading trading account and off-balance-sheet positions across time bands may be especially burdensome for banks with large portfolios and that, in many instances, the results of internal models may provide a more accurate assessment of the risk in these portfolios. Hence, the Banking Agencies

request comment on the regulatory burden associated with reporting such positions by time bands.

C. ASSESSMENT OF CAPITAL ADEQUACY FOR IRR

Two alternative methods are proposed for assessing a bank's capital adequacy for IRR. Under one approach the Banking Agencies would establish minimum capital standards for IRR, relying on results of either the supervisory measure or the bank's internal model. Banks would be required to have capital sufficient to cover the amount of measured exposure in excess of the threshold level (e.g., the amount of their "excess" exposure). The second approach would not establish an explicit minimum capital requirement for IRR. Rather, examiners would consider results of quantitative measures of IRR exposure along with other factors in evaluating a bank's capital adequacy for IRR. Both of these alternatives are discussed in greater detail below.

Current supervisory policies require examiners to review IRR exposure and bank IRR management systems during the examination process. This review would continue under either approach to capital, but more specific procedures or examiner tools would exist. In addition to reviewing the risk measures described in this proposal, examiners would continue to consider the following managerial factors when evaluating safety and soundness:

- o The adequacy of and compliance with the bank's written policies, procedures, and internal controls;
- o The existence of and adherence to specific risk limits relating to both loss of income and capital;
- o Management's knowledge and ability to identify and manage sources of interest rate risk effectively; and
- o The adequacy of internal risk measurement and monitoring systems.

1. Minimum Capital Standard Approach

Under this approach, institutions would be required to hold capital for IRR sufficient to cover their "excess exposure." Excess exposure is defined as the aggregate dollar decline in the net economic value of the institution, as measured by either the supervisory or the

internal bank model, that exceeds the proposed supervisory threshold of 1 percent of assets.¹³

The dollar amount of capital required for IRR would be incorporated into the risk-based capital requirements by increasing the bank's risk-weighted assets. Because the amount of risk-weighted assets forms the denominator of the risk-based capital ratios, any increase to that denominator will lower a bank's measured ratio. Specifically, the dollar amount of the capital requirement for IRR would be multiplied by 12.5, which is the reciprocal of the 8 percent minimum risk-based capital ratio. This amount would be added to the total of the bank's risk-weighted assets for purposes of calculating the risk-based capital ratios. This approach does not reduce the amount of Tier 1 or total capital used to derive a bank's risk-based

¹³That is, when the measured exposure indicates a decline in net economic value that is greater than 1% of total assets, then:

$$\begin{aligned} &\text{Required Minimum Capital} = \\ &\text{Measured Exposure} - (.01 \times \text{Total Assets}) \end{aligned}$$

Otherwise, required minimum capital for IRR would be zero.

capital ratio, and therefore, avoids reducing the bank's leverage ratio or producing other unintended results.¹⁴

The following example illustrates how capital for IRR would be calculated and incorporated into a bank's risk-based capital ratio. In this example, a bank has \$125 million in total assets, \$100 million in risk-weighted assets, and \$10 million in total capital. The bank's own model is used for measuring its IRR exposure and the model indicates, using the specified rate scenarios, a \$2.25 million decline in net economic value for the rising rate scenario and a \$3.0 million increase for the declining rate scenario. For this bank, the rising rate scenario is used to evaluate capital because it is this scenario which produces a decline in net economic value. The bank's excess exposure, and hence the amount of capital required for IRR, is \$1 million (\$2.25 million measured exposure less the

¹⁴An alternative technique being considered by the Banking Agencies would directly deduct the amount of excess measured exposure from Tier 1 or total capital. For an institution with an 8 percent risk-based capital ratio, the amount of capital required for IRR would be the same using either technique. However, this alternative capital calculation might have certain undesirable results. A deduction from Tier 1 would unintentionally complicate the calculation of an institution's leverage ratio and might require a different definition of Tier 1 capital for use in the leverage calculation. A deduction from total capital could, under certain conditions, leave an institution with Tier 1 risk-based capital ratio that is greater than its total capital ratio, even though total capital was intended to be the broader definition of capital. Moreover, in isolated cases, a deduction from capital for IRR could exceed the institution's regulatory capital, creating a negative capital position. In Section D, the Banking Agencies seek comments on whether the proposed method or the alternative technique is more appropriate to use in calculating capital under the Minimum Capital Standard approach.

threshold level of 1 percent of total assets or \$1.25 million). This \$1 million capital charge is then multiplied by 12.5 with the result (\$12.5 million) added to the bank's risk-weighted assets. The new level of risk-weighted assets that would be used to calculate the bank's risk-based capital ratio would be \$112.5 million. The resulting risk-based capital ratio would be 8.89 percent.

This approach would explicitly incorporate IRR into the existing risk-based capital framework. Banks would be required to have capital equal to at least 8 percent of the new risk-weighted assets. However, because most banks currently have risk-based capital ratios above the 8 percent minimum, this additional component of risk-weighted assets would not require most banks to raise additional capital. The additional component would, however, reduce a bank's calculated risk-based capital ratios and, in certain cases, could affect the bank's treatment under the provisions of prompt corrective action, as well as its deposit insurance premiums.

As with the approach taken in administering the current international risk-based capital standard, any amount of capital required for IRR by this risk measurement process would represent a minimum capital requirement. The exposure would be calculated each quarter using Call Report data, and banks would be expected to meet any capital requirement on a continuous basis. Banks using examiner-

approved internal models to evaluate IRR for supervisory purposes would report the results of those models.

The adequacy of a bank's IRR management process and the precise characteristics of the bank's assets, liabilities, and other positions would also be evaluated during on-site examinations. The on-site examination process would play a critical role in this approach by allowing examiners, during the examination, to consider specific factors relevant to that institution. A bank could be required to have higher amounts of capital for IRR if examiners found material deficiencies in its risk management policies, procedures, or controls or if its specific circumstances were substantially different from those assumed by the supervisory measure.¹⁵

2. Risk Assessment Approach

Under this approach, the level of measured interest rate exposure would be just one of several factors that examiners would consider when determining a bank's capital needs for interest rate risk. Other factors that would be considered include the quality of a bank's IRR management, internal controls, and the overall financial condition of the bank, including its earnings capacity, capital base, and the level of other risks which may impair future earnings or capital.

¹⁵When internal models are used, by design, their results would always reflect the specific characteristics of the bank's on- and off-balance-sheet positions.

Examiners would evaluate a bank's capital adequacy as part of the on-site examination process and the Banking Agencies would provide examiners with guidance to determine the amount, which might be expressed as a range of capital, that may be needed for IRR in light of the above factors. These guidelines would provide examiners with criteria for assessing capital based on the adequacy of the bank's interest rate risk management process as well as the level of its interest rate risk exposure. In general, banks whose measured exposure exceeded the established threshold or whose risk management systems were judged to be deficient would be expected to hold additional capital commensurate with the risks being taken. However, any capital required for IRR would not be automatically incorporated into a bank's risk-based capital ratio.

This approach emphasizes the importance of risk factors that are not easily incorporated into quantitative measures and the role of examiner judgment. The on-site examination process would play a critical role in this approach by allowing examiners, during the examination, to consider specific factors relevant to that institution. Unique characteristics of each bank warrant evaluation on a case-by-case basis. However, uniformity in the examination process also is important and the guidelines mentioned above would be designed to ensure greater uniformity in this process.

To assess the level of interest rate risk exposure, examiners would initially use the supervisory model as a basis for discussions with bank management. All data, including trading account positions, would be drawn from Schedule 1 for use in this model. However, greater reliance would be placed on the results of a bank's own model if the examiner determined that the model provided a more accurate measure of the bank's risk. The examiner would evaluate the results of the internal model during on-site examinations, but banks would not be required to report this information in the Call Report. When an internal model is not available or is inadequate, examiners would rely on the results of the supervisory model.

In general, a bank would be viewed as having high levels of IRR if its measured exposure indicated a decline in the economic value of the institution that exceeded a threshold level of 1.0 percent of total assets. Banks that pass the reporting exemption test, or that otherwise have small measured interest rate risk exposures, would typically be considered to have low levels of risk. Other banks whose measured exposures were below threshold levels but were not minimal, or that held complex financial instruments with significant options-related risks that could result in significant risk measurement error, would generally be viewed as having moderate levels of interest rate risk.

At the completion of each examination, examiners would form and document conclusions as to the adequacy of a

bank's capital and risk management process with regard to interest rate risk. An examiner's conclusions about both the level of risk and the adequacy of the risk management process would play an integral role in determining a bank's need for capital for IRR. Banks with high levels of measured exposure and weak management systems generally would need to hold capital for IRR, while those with low levels of exposures and adequate management systems might not be required to hold additional capital for IRR. The specific amount of capital that might be needed by a bank would be determined by the examiner using guidelines provided by the Banking Agencies. The examiner's findings would be discussed with bank management at the close of each examination.

During the intervals between examinations, the Banking Agencies would monitor bank IRR exposures through Call Report data and the supervisory model. Information about results of internal models would not be required in the Call Report. Significant changes in reported exposures or in a bank's overall financial condition would be analyzed by the supervisors to determine whether additional capital may be needed. This review of a bank's capital adequacy would also be required for any bank whose measured exposure exceeded the established threshold. The conclusions of this review would be documented by the supervisor and shared with bank management. However, bank management would be given

the opportunity to respond to this review before any additional capital would be required.

D. ISSUES FOR COMMENT:

1. Supervisory Measurement System

As proposed, the Banking Agencies would use the percent change in the net present value of a hypothetical instrument as the risk weight for balances represented by that instrument. Does use of the change in net present value sufficiently overcome the weakness of using the instrument's modified duration so as to provide a reasonable basis for risk weights?

2. Treatment of "Non-Maturity" Deposits

The Banking Agencies propose limits on the slotting of deposits without specified maturities (DDA, NOW, MMDA and savings) among time bands because of the problems inherent in measuring the price sensitivity of these deposits and the significant effect that different treatments for them can have on measuring a bank's IRR.

- a. Do the proposed rules provide sufficient flexibility to reflect an institution's deposit behavior without undermining the risk measurement process?

- b. Should institutions that have well-reasoned and documented internal assessments showing rate sensitivities that are outside of the proposed ranges be allowed to use those assessments? What specific types of analyses and supporting documentation should be required from banks that are allowed such an exception? Would most institutions have the capability of producing such types of analyses?
- c. What is the appropriate basis for measuring changes in the price sensitivity or "market value" of these deposits?

The Banking Agencies also solicit comment and any relevant empirical evidence on the price sensitivity and market valuation of these deposits. Information relevant to assessing the changes in the market value of these deposits relative to changing interest rates would be most helpful.

3. Interest Rate Scenarios

In varying degrees, the proposed interest rate scenarios reflect the historical volatility of rates, the current level of rates, and the slope of the yield curve.

- a. Should the sample period used to calculate the historical volatility of interest rates be based on a shorter period such as 5 years or a longer period such as 15 years?
- b. Should the time interval used to measure volatility and to determine the corresponding rate scenarios be based on quarterly, semi-annual or annual interest rate volatilities?
- c. Which is the preferred scenario to be used for both the supervisory and internal models?
- d. Is it appropriate to use the same interest rate scenario for both the supervisory model and internal models?
- e. Can banks' internal models incorporate the rate scenarios under consideration?
- f. Should the Banking Agencies consider the effect of both rising and declining market interest rates? If both, should the risk weights be different to reflect the asymmetrical changes in the market values of certain instruments to the various rate changes, or should they be the same in the interest of simplicity?

- g. Currently, the results under either proposed alternative indicate rate changes that are about 100 basis points using a quarterly time horizon and 200 basis points using annual volatilities. In the interest of simplicity, would the use of a parallel 100 or 200 basis point shift be preferred to the proposed nominal or proportional change methodology?

4. Use of Internal Models

The Banking Agencies propose to make greater use of a bank's own model, if the model is deemed adequate by examiners. The Banking Agencies seek comment on the following issues:

- a. Is it appropriate to substitute the results of internal models for a standard supervisory calculation when assessing capital adequacy?
- b. If internal models are used, to what extent should the Banking Agencies provide guidance to the industry on these models (e.g., acceptable methodologies or modeling parameters)? Would simply providing the interest rate scenario and requiring banks to evaluate the effect of the rate change on their net economic value suffice?

- c. Which aspects of an internal model should examiners review to determine whether the model is adequate?

- d. Should the assumptions required for the supervisory model also be imposed on internal models when these are used under Alternative One (Minimum Capital Standard approach)? To what degree should results of internal and supervisory measures be allowed to diverge because of different assumptions regarding non-maturity deposits, prepayments, or other factors? What competitive inequities might result if large differences are allowed?

- e. Should some institutions be required to use more sophisticated internal models to calculate IRR exposure if an explicit capital charge for IRR is established? If so, what type or scope of activities should trigger such a requirement?

5. Use of OTS Model

The Office of Thrift Supervision (OTS) has adopted an alternative method for measuring the IRR exposures of savings associations which differs from that proposed by the Banking Agencies [see 57 FR 40524, September 3, 1992]. Under the OTS method, savings associations

report weighted average coupon and weighted maturity information for various classes of assets, liabilities, and off-balance-sheet instruments. For certain instruments, mortgage-related instruments in particular, the amount of information reported is significantly more detailed than that proposed by the Banking Agencies.

The reported information is used in the OTS Market Value Model to estimate the change in a savings association's market value under various interest rate scenarios. The OTS model uses two valuation methodologies: (1) a static discounted cash flow analysis similar to that proposed by the Banking Agencies, and (2) an option-based pricing model (also known as an option-adjusted spread or OAS methodology) for valuing certain assets, such as mortgages and mortgage-related instruments, that contain embedded options.

The Banking Agencies request comment on the following issues:

- a. Should commercial banks with portfolios that are similar to thrifts or those that are highly susceptible to IRR be required to use the OTS (or similar) model and reporting requirements to

measure IRR in lieu of the proposed supervisory model?

- b. If so, what criteria should the Banking Agencies use to determine which commercial banks should be subject to the OTS (or similar) model?
- c. If a bank were required to use the OTS (or similar) model, should that bank still be allowed to report the results of an adequate internal model as proposed by the Banking Agencies? Alternatively, should the requirement to use the OTS (or similar) model rule out any reporting of the internal model?
- d. For banks that may be required to use the OTS (or similar) model, does the OTS reporting format impose significant reporting burdens? What modifications could be made to reduce the burden if the Banking Agencies decide to use the basic approach of the OTS model?

6. Reporting Requirements

The Banking Agencies propose to recommend to the FFIEC a new reporting schedule to provide information better suited to determining the interest rate exposure of

those institutions that do not meet the exemption criteria.

- a. Does the reporting format currently under consideration, illustrated by Schedule 1, impose significant reporting burdens on non-exempted institutions? What modifications could be made to reduce the burden?

The Banking Agencies are also considering implementing a separate reporting schedule on which banks could report IRR exposures as measured by their own models.

- b. If the Banking Agencies rely on a bank's internal model for assessing its IRR, should the bank be required to report the results of that model each quarter?
- c. Should some or all of the information about the internal model be treated as confidential?
- d. Is the information requested on Schedule 2 appropriate?

7. Threshold Level

The Banking Agencies propose to use a threshold level to determine whether a bank may be taking high levels

of interest rate risk and, thus, need additional capital for IRR. As proposed, a bank would be viewed as having a high level of exposure if its measured exposure indicates a decline in the economic value of the institution that exceeds 1.0 percent of total assets.

- a. Is this threshold appropriate?
- b. The threshold level is based, in part, on the imprecision of the supervisory model. When more accurate internal systems are used, and especially if greater flexibility is permitted regarding the treatment of non-maturity deposits, should a lower threshold also be used?

8. Exemption Test

The Banking Agencies have proposed a screening test that would exempt banks from any additional reporting requirements.

- a. Are the exemption criteria reasonable?
- b. Does the test adequately safeguard against exempting banks that pose significant risks to the deposit insurance fund due to IRR?

- c. Since previously exempted banks may need to be prepared to report the data if they no longer meet the exemption criteria, does the exemption test significantly reduce record-keeping costs?
- d. Is the reporting burden sufficiently onerous to warrant the reporting exemption?

9. Use of IRR Measure

The Banking Agencies are considering two approaches for using the proposed measurement system when evaluating capital adequacy. Under the Minimum Capital Standard approach, the measurement system would be the primary determinant in evaluating the need for capital for IRR. The Risk Assessment approach would use the measurement system as just one factor in determining the need for additional capital.

- a. Comments are requested on the merits of each of these approaches.
- b. Under the Minimum Capital Standard approach, the Banking Agencies are proposing that the capital requirement for IRR be implemented by increasing a bank's risk-weighted assets by an amount equal to 12.5 times the excess measured exposure, where 12.5 represents the reciprocal of the 8 percent

minimum risk-based capital ratio. An alternative technique would be to directly deduct the amount of excess measured exposure from Tier 1 or total capital. The Banking Agencies seek comments on whether the proposed method or the alternative technique is more appropriate to use in calculating capital under the Minimum Capital Standard approach.

10. Capital Assessment

In determining a bank's capital needs for IRR, the Banking Agencies seek comment on the following issues:

- a. To what extent should examiners have flexibility when evaluating an institution's measured IRR exposure for capital purposes?
- b. What consideration should be given to the quality of a bank's risk management process when evaluating the bank's IRR? How should this consideration be incorporated into an assessment of capital adequacy?

11. Reporting for Multi-bank Holding Companies

The proposal states that data will be collected and risk measured for individual banks.

- a. In addition to reviewing individual bank positions, to what extent should the Banking Agencies also consider consolidated positions of the parent holding company or, alternatively, the aggregate position of only its affiliated banks?
- b. What is the extent of the reporting burden associated with reporting individual bank positions?

12. Leverage Standard

When announcing regulations to implement section 38 of FDICIA in September, 1992, the federal banking agencies stated that they intend to lower or eliminate the leverage capital component from the risk-based capital standard after that standard has been revised to take into account interest rate risk and after experience has been gained with the (modified) standard. Does either the Minimum Capital Standard approach or the Risk Assessment approach provide an adequate basis for reconsidering the need for the leverage standard? Would the basis for removing that standard be stronger under one approach than the other?

REGULATORY FLEXIBILITY ACT STATEMENT

Each agency has concluded after reviewing the proposed regulations that the regulations, if adopted, will

not impose a significant economic hardship on small institutions. The proposal does not necessitate the development of sophisticated recordkeeping or reporting systems by small institutions nor will small institutions need to seek out the expertise of specialized accountants, lawyers, or managers in order to comply with the regulation. Each agency therefore hereby certifies pursuant to section 605b of the Regulatory Flexibility Act (5 U.S.C. 605b) that the proposal, if adopted, will not have a significant economic impact on a substantial number of small entities within the meaning of the Regulatory Flexibility Act (5 U.S.C. 601 et seq.).

Executive Order 12291

The Comptroller of the Currency has preliminarily determined that proposed regulation may be a "major rule" within the meaning of Executive Order 12291. Accordingly, the OCC has prepared a Preliminary Regulatory Impact Analysis.

The objectives of the proposed regulation are to ensure that banks: (1) Hold capital consistent with the level of IRR in their portfolios so as to reduce the incidence of bank failures and claims upon the Bank Insurance Fund (BIF); (2) effectively measure and monitor their IRR exposures; and (3) consider both interest rate and credit risks in making investment and lending decisions.

This proposed rule implements section 305(b)(1)(A)(i) of FDICIA and is consistent with those requirements.

A number of benefits can be expected to accrue from the proposed regulation. These include: (1) Either an increase in bank capital or a reduction in IRR for those banks with high levels of IRR; (2) a reduction in the incentive for banks to substitute IRR for credit risk; and (3) an increase in the awareness among banks of the need to measure and manage IRR. A number of costs can be expected to accrue from the proposed regulation. These include: (1) Direct compliance costs; (2) supervisory costs; and (3) costs associated with the impact of the rule on bank behavior.

The Regulatory Impact Analysis is based on preliminary and limited data that make it difficult to estimate the impact of this rule. This difficulty arises from the lack of sufficient data to accurately estimate which banks may be found to have high IRR exposures under the proposal, the amount of capital those banks may need, and the complexities of trying to estimate how banks may change their behavior in response to the proposed rule.

The OCC seeks to issue a final rule that will meet its objectives at the least possible net cost to the economy. The OCC invites commenters to provide any data they may have on the costs and benefits of this proposal with regard to the management of IRR at banking organizations, the impact on bank capital levels and on the

pricing, selection and offering of products and investments by banks, and on any direct costs that banks may incur as the result of the proposed rule.

Copies of the Preliminary Regulatory Impact Analysis may be obtained by writing to the following address: IRR Impact Statement, Mail Stop 9-16, Communications Division, Office of the Comptroller of the Currency, 250 E Street, S.W., Washington, D.C. 20219.

List of Subjects

12 CFR Part 3

Administrative practice and procedure, Capital risk, National banks, Reporting and recordkeeping requirements.

12 CFR Part 208

Accounting, Agriculture, Banks, banking, Confidential business information, Currency, Reporting and recordkeeping requirements, Securities.

12 CFR 325

Bank deposit insurance, Banks, banking, Capital adequacy, Reporting and recordkeeping requirements, Savings associations, State nonmember banks.

COMPTROLLER OF THE CURRENCY

Authority and Issuance

For the reasons set out in the joint preamble, part 3 of chapter I of title 12 of the Code of Federal Regulations is proposed to be amended as set forth below.

PART 3--MINIMUM CAPITAL RATIOS; ISSUANCE OF DIRECTIVES

1. The authority citation for part 3 continues to read as follows:

AUTHORITY: 12 U.S.C. 93a, 161, 1818, 1828(n), 1828 note, 1831n note, 3907 and 3909.

ALTERNATIVE ONE (MINIMUM CAPITAL STANDARD APPROACH) FOR
APPENDIX A AND B TO PART 3--RISK-BASED CAPITAL GUIDELINES

2. In appendix A, section 4 is amended by revising paragraph (b) (1), redesignating paragraphs (b) (2) and (b) (3) as paragraphs (b) (3) and (b) (4), respectively, and by adding a new paragraph (b) (2) to read as follows:

Section 4. Implementation, Transition Rules, and Target Ratios.

* * * * *

(b) (1) Each national bank must maintain a minimum ratio of total capital (after deductions) to risk-weighted assets (adjusted for interest rate risk) of 8.0%.

(b) (2) If a bank is required to maintain additional capital for interest rate risk exposure, as determined in accordance with appendix B to part 3, risk-weighted assets must be increased by an amount equal to 12.5 times the dollar amount of the additional capital requirement for interest rate risk, before determining the minimum ratio of total capital to risk-weighted assets specified in section 4(b) (1) of this appendix A.

* * * * *

3. A new appendix B is added to part 3 after appendix A to read as follows:

Appendix B--Interest Rate Risk Component

Section 1. Purpose, Definitions, and Applicability of Guidelines.

(a) Purpose. This appendix B explains precisely how the interest rate risk exposure of a bank is to be measured for the purposes of determining compliance with the capital adequacy requirements.

(b) Definitions. For the purpose of this appendix B, the following definitions apply:

(1) Excess measured exposure means the dollar amount of measured exposure to interest rate risk in excess of the supervisory threshold. This amount represents the amount of interest rate risk against which the bank must maintain capital.

(2) Interest rate scenarios means the specified changes in market interest rates used in calculating a bank's measured exposure.

(3) Measured exposure means the estimated dollar decline in the net economic value of the bank in response to a potential change in market interest rates under the specified interest rate scenarios, as determined pursuant to either the supervisory measure or the bank's internal measure. When the supervisory measure is used to calculate the bank's measured exposure, pursuant to section 4 of this appendix B, a bank's measured exposure is derived by calculating the bank's net risk-weighted position.

(4) Mortgage derivative products means interest-only and principal-only stripped mortgage-backed securities (IOs and POs), tranches of collateralized mortgage obligations (CMOs) and real estate mortgage investment conduits

(REMICs), CMO and REMIC residual securities, and other instruments having the same characteristics as these securities.

(5) Net economic value of the bank means the net present value of its assets minus the net present value of its liabilities plus the net present value of its off-balance-sheet instruments.

(6) Net risk-weighted position means the sum of all risk-weighted positions of a bank's assets, liabilities and off-balance sheet items. For the purposes of the supervisory measure, this number represents the amount by which the net economic value of the bank is estimated to change in response to a potential change in market interest rates under the specified interest rate scenarios.

(7) Nonmaturity deposits mean demand deposit accounts (DDAs), money market deposit accounts (MMDAs), savings accounts, and negotiable order of withdrawal accounts (NOWs).

(8) Notional principal amount means the total dollar amount upon which a contract is based.

(9) Supervisory threshold means 1% of a bank's total assets.

(c) Applicability and exemption for institutions with low risk. (1) All national banks are subject to the requirements of this appendix B and must calculate their excess measured exposure as required by the supervisory model or by an internal measure, pursuant to sections 4 or 9 of this appendix B, unless:

(i) The total notional principal amount of the bank's off-balance sheet interest rate contracts is less than 10% of total assets, and

(ii) 15% of the sum of fixed- and floating-rate loans and securities that mature or reprice beyond 5 years is less than 30% of total capital.

(2) Notwithstanding paragraph (c)(1) of this section, the OCC may require a bank to meet the requirements of this appendix B if compliance is necessary to ensure the capital adequacy of the bank.

Section 2. Capital Requirement for Interest Rate Risk.

A bank shall maintain capital for interest rate risk in an amount equal to the bank's excess measured exposure. The amount of capital required for interest rate risk is in addition to the amount of capital required by appendix A of

this part 3. Compliance shall be determined as specified in section 4(b)(2) of appendix A.

Section 3. Specified Interest Rate Scenarios.

For the purpose of calculating a bank's measured exposure, under either the supervisory measure or an internal measure, the bank shall use both a rising and falling interest rate scenario based on an instantaneous uniform 200 basis point parallel change in market interest rates at all maturities. The interest rate scenarios, with the accompanying risk weights, are provided in Table 1 of section 7 of this appendix B. The OCC may modify the specified interest rate scenarios as appropriate considering historical and current interest rate levels, interest rate volatilities and other relevant market and supervisory considerations.

Risk Weights

Table 1

Amortizing Instruments	Scenario 1	Scenario 2
	200 Basis Point Rise	200 Basis Point Decline
	% Change in Present Value (Risk Weights)	% Change in Present Value (Risk Weights)
Timeband		
0-3 months	-0.10%	0.10%
3-12 months	-0.50%	0.60%
1-3 Years	-1.60%	1.70%
3-5 Years	-3.00%	3.10%
5-10 Years	-5.30%	3.40%
10-20 Years	-8.80%	5.90%
Over 20 Years	-9.20%	3.60%

All Other Instruments

0-3 months	-0.25%	0.25%
3-12 months	-1.20%	1.20%
1-3 Years	-3.50%	3.70%
3-5 Years	-6.40%	7.00%
5-10 Years	-10.20%	11.70%
10-20 Years	-14.90%	19.00%
Over 20 Years	-17.60%	24.60%

Liabilities

0-3 months	0.25%	-0.25%
3-12 months	1.20%	-1.20%
1-3 Years	3.70%	-3.90%
3-5 Years	6.90%	-7.50%
5-10 Years	11.60%	-13.50%
10-20 Years	18.70%	-24.50%
Over 20 Years	24.00%	-36.00%

Zero or Low Coupon Securities

0-3 months	-0.25%	0.25%
3-12 months	-1.20%	1.20%
1-3 Years	-3.70%	3.90%
3-5 Years	-7.40%	8.00%
5-10 Years	-13.30%	15.60%
10-20 Years	-24.90%	33.50%
Over 20 Years	-38.00%	61.90%

Section 4. Supervisory Measure.

(a) Use of supervisory measure. Except as provided by section 9 of this appendix B, a bank's measured exposure to interest rate risk must be calculated pursuant to the supervisory measure as specified by sections 5 through 8 of this appendix B.

(b) Overview of interest rate risk calculation. The calculation of a bank's measured exposure generally requires the following steps:¹

(1) The bank's assets, liabilities, and off-balance sheet contracts must be assigned to the appropriate balance sheet categories based on the instrument's cash flow characteristics.

(2) Within each balance sheet category, each asset, liability or off-balance sheet contract must be assigned to the appropriate time band generally based on each instrument's remaining maturity or next repricing date.

(3) Balances within each time band are multiplied by the appropriate risk weight to produce a risk-weighted position for each interest rate scenario.

¹The calculations for the rising and falling interest rate scenarios are illustrated in Table 2 and Table 3, respectively.

(4) All risk-weighted positions are summed to produce a net risk-weighted position for each interest rate scenario which is the basis for determining the bank's measured exposure to interest rate risk.

Section 5. Balance Sheet Categories.

All assets, liabilities, and off-balance sheet positions must be assigned to one of the following interest rate risk balance-sheet categories, as appropriate:

(a) Adjustable-rate assets. Adjustable-rate mortgage loans and adjustable-rate mortgage securities.

(b) Amortizing fixed-rate loans and securities. Fixed-rate mortgage securities, and asset-backed securities; fixed-rate mortgage loans, consumer loans and other instruments that involve scheduled periodic amortization of principal, except for mortgage derivative products.

(c) High-risk mortgage securities. Any mortgage derivative product that at the time of purchase or at any subsequent date:

(1) Has an expected weighted average life greater than 10 years; or

(2) Has an expected weighted average life that:

(i) Extends by more than 4 years, assuming an immediate and sustained parallel shift in the yield curve of plus 300 basis points; or

(ii) Shortens by more than 6 years, assuming an immediate and sustained parallel shift in the yield curve of minus 300 basis points; or

(3) Has a change in price of greater than 17%, assuming an immediate and sustained parallel shift in the yield curve of plus or minus 300 basis points.

(d) Zero- or low-coupon assets. Securities with either no periodic interest payments or stated coupons of 2% or lower.

(e) Trading account items. Trading account assets and related off-balance sheet instruments.

(f) All other assets. All other interest-sensitive instruments, which are assumed to involve scheduled periodic payments of interest and the payment of principal at maturity and all mortgage derivative products that are not high-risk mortgage securities.

(g) Liabilities. All deposits and all nondeposit liabilities whose values are sensitive to movements in interest rates.

(h) Off-balance sheet items. Interest-rate contracts including swaps, forwards, options, and futures and mortgage-related fixed-rate commitments and other off-balance sheet derivative instruments whose value depends on the value of an underlying asset or index with amortizing characteristics

Section 6. Time Bands

(a) Assignment of item balances. The balance of each asset, liability, and off-balance sheet item within each balance sheet category, as specified in section 5 of this appendix B, must be assigned to one of the following time bands according to the remaining maturity or next repricing date of the asset, liability, or off-balance sheet item:

- (1) Less than or equal to 3 months;
- (2) Greater than 3 months and less than or equal to 12 months;
- (3) Greater than 1 year and less than or equal to 3 years;
- (4) Greater than 3 years and less than or equal to 5 years;

- (5) Greater than 5 years and less than or equal to 10 years;
- (6) Greater than 10 years and less than or equal to 20 years;
- (7) Greater than 20 years.

(b) Remaining maturity and repricing date. (1)

General. Except for certain mortgage derivative products and nonmaturity deposits, the remaining maturity of an asset, liability, or off-balance sheet item generally is determined by the remaining time before maturity, or the next actual or potential repricing date, associated with the outstanding principal or notional principal amount as specified by contract or agreement.

(2) Remaining maturity and repricing date for mortgage derivative products. (i) For mortgage derivative products, other than for high-risk mortgage securities, the current expected average life must be used instead of the remaining time before maturity or the next actual or potential repricing date. For high-risk mortgage securities, a bank's own estimate of the change in market value under the specified interest rate scenario is to be used. However, if this information is not available from the bank, the OCC will determine the appropriate treatment for maturity and repricing.

(ii) The current expected average life of a mortgage derivative product is to be determined by the management of the bank. All underlying assumptions, such as prepayment assumptions, used in determining the current expected average life of these instruments must be reasonable and will be subject to OCC review.

(3) Remaining maturity and repricing date for nonmaturity deposits. Notwithstanding paragraph (b)(1) of this section, the remaining maturity and repricing date for nonmaturity deposits is determined by the management of the bank based on its own assumptions and experience, subject to the following conditions:

(i) The remaining maturity and repricing date for DDAs and MMDAs may not exceed 3 years, with a maximum of 40% of these balances in the "greater than 1 year but less than or equal to 3 years" time band;

(ii) The remaining maturity and repricing date for savings and NOW account balances may not exceed 5 years, with a maximum of 40% of the total of these balances in the "greater than 3 years but less than or equal to 5 years" time band; and

(iii) All assumptions used by the bank in determining the remaining maturity and repricing date for nonmaturity

deposits must be reasonable and are subject to review by the OCC.

Section 7. Risk Weights. The risk weights estimate the sensitivity of the present value of each asset, liability, and off-balance sheet item within each balance sheet category and time band under a rising and falling interest rate scenario. These risk weights are provided in Table 1. The risk-weighted positions for all assets, liabilities, and off-balance sheet items must be calculated by multiplying all assets, liabilities, and off-balance sheet items as specified according to balance sheet category and time band, by the corresponding risk weight as illustrated in Table 2 (rising interest rate scenario) and Table 3 (falling interest rate scenario).

Interest Rate Risk Worksheet (200 Basis Point Rising Rate Scenario)

DRAFT

Table 2

REPORTING INSTITUTION: Sample Bank

Date: 12/31/92

\$ Thousands

I. INTEREST-SENSITIVE ASSETS

1. ARMs, FRMs, asset-backed securities, consumer loans

- (a) Up to 3 months
 (b) 3 to 12 months
 (c) 1 to 3 years
 (d) 3 to 5 years
 (e) 5 to 10 years
 (f) 10 to 20 years
 (g) Greater than 20 years

2. Zero or low coupon securities

- (a) Up to 3 months
 (b) 3 to 12 months
 (c) 1 to 3 years
 (d) 3 to 5 years
 (e) 5 to 10 years
 (f) 10 to 20 years
 (g) Greater than 20 years

3. "All other" securities, loans, & trading account

- (a) Up to 3 months
 (b) 3 to 12 months
 (c) 1 to 3 years
 (d) 3 to 5 years
 (e) 5 to 10 years
 (f) 10 to 20 years
 (g) Greater than 20 years

4. High-risk mortgage securities

- (a) Self-reporting
 (b) Risk weighting

5. Total Interest-Sensitive Assets

II. ALL OTHER ASSETS

III. TOTAL ASSETS

IV. INTEREST-SENSITIVE LIABILITIES

1. Non-maturity deposits, time deposits and "all other"

- (a) Up to 3 months
 (b) 3 to 12 months
 (c) 1 to 3 years
 (d) 3 to 5 years
 (e) 5 to 10 years
 (f) 10 to 20 years
 (g) Greater than 20 years

2. Total Interest-Sensitive Liabilities

V. NONINTEREST-SENSITIVE LIABILITIES

VI. TOTAL LIABILITIES

VII. EQUITY CAPITAL

VIII. OFF-BALANCE-SHEET POSITIONS

1. Interest rate contracts

- (a) Up to 3 months
 (b) 3 to 12 months
 (c) 1 to 3 years
 (d) 3 to 5 years
 (e) 5 to 10 years
 (f) 10 to 20 years
 (g) Greater than 20 years

2. Mortgage and other amortizing contracts

- (a) Up to 3 months
 (b) 3 to 12 months
 (c) 1 to 3 years
 (d) 3 to 5 years
 (e) 5 to 10 years
 (f) 10 to 20 years
 (g) Greater than 20 years

3. Total Off-Balance-Sheet Positions

	(A) TOTAL	(B) Risk Weights	(C) Risk Weighted Position	(D) Total Risk Weighted Position
			(A) x (B)	
1. ARMs, FRMs, asset-backed securities, consumer loans				
(a) Up to 3 months	\$5,500	-0.10%	(550)	
(b) 3 to 12 months	\$4,950	-0.50%	(2475)	
(c) 1 to 3 years	\$4,050	-1.60%	(6480)	
(d) 3 to 5 years	\$4,186	-3.00%	(12558)	
(e) 5 to 10 years	\$6,620	-5.20%	(34324)	
(f) 10 to 20 years	\$6,454	-8.80%	(56815)	
(g) Greater than 20 years	\$10,430	-9.20%	(95956)	
2. Zero or low coupon securities				
(a) Up to 3 months	\$1,000	-0.25%	(250)	
(b) 3 to 12 months	\$1,000	-1.20%	(1200)	
(c) 1 to 3 years	\$1,000	-3.20%	(3200)	
(d) 3 to 5 years	\$0	-7.40%	\$0	
(e) 5 to 10 years	\$0	-13.20%	\$0	
(f) 10 to 20 years	\$0	-24.20%	\$0	
(g) Greater than 20 years	\$0	-28.00%	\$0	
3. "All other" securities, loans, & trading account				
(a) Up to 3 months	\$26,672	-0.25%	(6668)	
(b) 3 to 12 months	\$78,432	-1.20%	(94118)	
(c) 1 to 3 years	\$21,126	-3.50%	(73967)	
(d) 3 to 5 years	\$19,778	-6.40%	(126678)	
(e) 5 to 10 years	\$10,564	-10.20%	(107835)	
(f) 10 to 20 years	\$8,817	-14.80%	(130491)	
(g) Greater than 20 years	\$9,462	-17.60%	(166520)	
4. High-risk mortgage securities				
(a) Self-reporting	\$2,000			\$160
(b) Risk weighting	\$1,000	-38.00%		(3800)
5. Total Interest-Sensitive Assets	\$183,000			(82,190)
II. ALL OTHER ASSETS	\$3,000			
III. TOTAL ASSETS	\$186,000			
IV. INTEREST-SENSITIVE LIABILITIES				
1. Non-maturity deposits, time deposits and "all other"				
(a) Up to 3 months	\$73,083	0.25%	\$18271	
(b) 3 to 12 months	\$74,582	1.20%	(89498)	
(c) 1 to 3 years	\$51,321	3.20%	(164228)	
(d) 3 to 5 years	\$17,090	6.80%	(116014)	
(e) 5 to 10 years	\$64	11.60%	(7424)	
(f) 10 to 20 years	\$0	18.20%	\$0	
(g) Greater than 20 years	\$0	24.00%	\$0	
2. Total Interest-Sensitive Liabilities	\$166,140			\$4,038
V. NONINTEREST-SENSITIVE LIABILITIES	\$860			
VI. TOTAL LIABILITIES	\$167,000		\$4,038	\$4,038
VII. EQUITY CAPITAL	\$19,001			
VIII. OFF-BALANCE-SHEET POSITIONS				
1. Interest rate contracts				
(a) Up to 3 months	\$4,000	-0.25%	(1000)	
(b) 3 to 12 months	\$500	-1.20%	(600)	
(c) 1 to 3 years	(24,050)	-3.50%	(84175)	
(d) 3 to 5 years	(2450)	-6.40%	(15680)	
(e) 5 to 10 years	\$0	-10.20%	\$0	
(f) 10 to 20 years	\$0	-14.80%	\$0	
(g) Greater than 20 years	\$0	-17.60%	\$0	
2. Mortgage and other amortizing contracts				
(a) Up to 3 months	\$1,000	-0.10%	(100)	
(b) 3 to 12 months	\$0	-0.50%	\$0	
(c) 1 to 3 years	(1,000)	-1.60%	(160)	
(d) 3 to 5 years	\$0	-3.00%	\$0	
(e) 5 to 10 years	\$0	-5.20%	\$0	
(f) 10 to 20 years	\$0	-8.80%	\$0	
(g) Greater than 20 years	\$0	-9.20%	\$0	
3. Total Off-Balance-Sheet Positions	\$0		\$170	\$170
Net Risk Weighted Position				(64,981,86)
Net Position/ Assets				-3.49%

Net Risk Weighted Position
 Net Position/ Assets

Interest Rate Risk Worksheet (200 Basis Point Declining Rate Scenario)

DRAFT

Table 3

REPORTING INSTITUTION: Sample Bank

Date: 12/31/92

\$ Thousands

I. INTEREST-SENSITIVE ASSETS

1. ARMs, FRMs, asset-backed securities, consumer loans

	(A) TOTAL	(B) Risk Weights	(C) Risk Weighted Position (A) x (B)	(D) Total Risk Weighted Position
(a) Up to 3 months	\$5,500	0.10%	\$6	
(b) 3 to 12 months	\$4,950	0.60%	\$30	
(c) 1 to 3 years	\$4,050	1.70%	\$69	
(d) 3 to 5 years	\$4,166	3.10%	\$129	
(e) 5 to 10 years	\$6,620	3.40%	\$225	
(f) 10 to 20 years	\$6,454	5.90%	\$381	
(g) Greater than 20 years	\$10,430	3.60%	\$375	

2. Zero or low coupon securities

(a) Up to 3 months	\$1,000	0.25%	\$3	
(b) 3 to 12 months	\$1,000	1.20%	\$12	
(c) 1 to 3 years	\$1,000	3.90%	\$39	
(d) 3 to 5 years	\$0	8.00%	\$0	
(e) 5 to 10 years	\$0	15.60%	\$0	
(f) 10 to 20 years	\$0	33.50%	\$0	
(g) Greater than 20 years	\$0	61.90%	\$0	

3. "All other" securities, loans, & trading account

(a) Up to 3 months	\$26,673	0.25%	\$67	
(b) 3 to 12 months	\$28,432	1.20%	\$341	
(c) 1 to 3 years	\$31,136	3.70%	\$1,152	
(d) 3 to 5 years	\$19,728	7.00%	\$1,381	
(e) 5 to 10 years	\$10,564	11.70%	\$1,236	
(f) 10 to 20 years	\$8,817	19.00%	\$1,679	
(g) Greater than 20 years	\$9,462	24.60%	\$2,328	

4. High-risk mortgage securities

(a) Self-reporting	\$2,000		(\$200)	
(b) Risk weighting	\$1,000	-38.00%	(\$380)	

5. Total Interest-Sensitive Assets

	\$183,000		\$8,871	\$8,871
	\$3,000			
III. TOTAL ASSETS	\$186,000			

IV. INTEREST-SENSITIVE LIABILITIES

1. Non-maturity deposits, time deposits and "all other"

(a) Up to 3 months	\$38,583	-0.25%	(\$96)	
(b) 3 to 12 months	\$77,582	-1.20%	(\$931)	
(c) 1 to 3 years	\$39,821	-3.90%	(\$1,553)	
(d) 3 to 5 years	\$10,080	-7.50%	(\$752)	
(e) 5 to 10 years	\$64	-13.50%	(\$9)	
(f) 10 to 20 years	\$0	-24.50%	\$0	
(g) Greater than 20 years	\$0	-36.00%	\$0	
2. Total Interest-Sensitive Liabilities	\$166,140		(\$3,340)	
V. NONINTEREST-SENSITIVE LIABILITIES	\$860			
VI. TOTAL LIABILITIES	\$167,000		(\$3,340)	(\$3,340)
VII. EQUITY CAPITAL	\$19,000			

VIII. OFF-BALANCE-SHEET POSITIONS

1. Interest rate contracts

(a) Up to 3 months	\$4,000	0.25%	\$10	
(b) 3 to 12 months	\$500	1.20%	\$6	
(c) 1 to 3 years	(\$4,050)	3.70%	(\$150)	
(d) 3 to 5 years	(\$450)	7.00%	(\$32)	
(e) 5 to 10 years	\$0	11.70%	\$0	
(f) 10 to 20 years	\$0	19.00%	\$0	
(g) Greater than 20 years	\$0	24.60%	\$0	

2. Mortgage and other amortizing contracts

(a) Up to 3 months	\$1,000	0.10%	\$1	
(b) 3 to 12 months	\$0	0.60%	\$0	
(c) 1 to 3 years	(\$1,000)	1.70%	(\$17)	
(d) 3 to 5 years	\$0	3.10%	\$0	
(e) 5 to 10 years	\$0	3.40%	\$0	
(f) 10 to 20 years	\$0	5.90%	\$0	
(g) Greater than 20 years	\$0	3.60%	\$0	
3. Total Off-Balance-Sheet Positions	\$0		(\$18)	(\$18)

Net Risk Weighted Position

Net Position/ Assets

	\$5,344.31
	2.87%

Section 8. Calculation of Excess Measured Exposure.

(a) Calculation of net risk-weighted position. The net risk-weighted position must be calculated for both the rising interest rate scenario and the falling interest rate scenario. The net risk-weighted position for the rising interest rate scenario is calculated by summing the risk-weighted positions for all assets, liabilities, and off-balance sheet items, as derived in Table 2 of this appendix B. The net risk-weighted position for the falling interest rate scenario is calculated by summing the risk-weighted positions for all assets, liabilities, and off-balance sheet items, as derived in Table 3 of this appendix B. In mathematical terms the calculation for the net risk-weighted position is $(\text{Assets} \times \text{Risk Weights}) + (\text{Liabilities} \times \text{Risk Weights}) + (\text{Off-Balance-Sheet Positions} \times \text{Risk Weight}) = \text{Net Risk-Weighted Position}$.

(b) Calculation of measured exposure to interest rates. The bank's net risk-weighted positions under the rising interest rate scenario and the falling interest rate scenario represent the bank's measured exposures to interest rate risk. If the bank's net risk-weighted position is positive under both of the interest rate scenarios, then the bank's measured exposure is set to zero. If the bank's net risk-weighted position is negative under one or both of the

interest rate scenarios, then the bank's measured exposure is equal to the larger decline in the net economic value of the bank under the two interest rate scenarios.

(c) Calculation of excess measured exposure. The bank's excess measured exposure is the positive difference of the absolute dollar amount of the measured exposure minus the dollar amount of the supervisory threshold. In mathematical terms the calculation for a bank's excess measured exposure is $\text{Measured Exposure} - (\text{Total Assets} \times .01)$. If the amount of the supervisory threshold is greater than the measured exposure, then the excess measured exposure is zero.

Section 9. Internal Measure.

The OCC may permit or require a bank to use an internal measure developed or acquired by the bank to determine its measured exposure instead of the supervisory measure where the OCC deems that such internal measure is acceptable.

(a) Acceptable internal measure. Factors that the OCC will consider in determining whether to permit a bank to use an internal measure include:

(1) Whether the assumptions and structure of the supervisory measure accurately reflect the bank's assets,

liabilities, and off-balance sheet positions, and whether the internal measure provides a more precise measurement of the changes in the net economic value of the bank than the supervisory measure;

(2) Whether the internal measure makes use of generally accepted techniques in estimating measured exposure;

(3) Whether the internal measure is appropriate to the nature and scope of the activities of the bank; and

(4) Whether the internal measure provides an adequate indication of the exposure of the institution to interest rate risk in all material respects.

(b) Required use of internal measure. The OCC may require a bank for the purposes of compliance with the requirements of this appendix B to use an existing internal measure where the OCC determines that:

(1) The supervisory measure does not adequately characterize the interest rate risk of the bank's positions; and

(2) The use of the supervisory measure would materially misrepresent the bank's actual interest rate risk exposure.

(c) Interest Rate Scenario. Where a bank is either permitted or required to use an internal measure, the internal measure must incorporate the same interest rate scenarios used by the supervisory measure as specified in section 3 in this appendix B.

Section 10. Implementation.

The requirements of this appendix B are applicable to all national banks after December 31, 1994.

ALTERNATIVE TWO (RISK ASSESSMENT APPROACH) FOR PART 3--RISK-BASED CAPITAL GUIDELINES

4. In § 3.10, paragraph (d) is amended by removing the phrase "interest rate risk,;" paragraphs (e), (f), (g), (h), and (i) are redesignated as paragraphs as (f), (g), (h), (i), and (j), respectively; and new paragraph (e) is added to read as follows:

§ 3.10 Applicability.

* * * * *


(e) A bank with significant interest rate risk exposure;

* * * * *

This signature page relates to the Joint Notice of Proposed Rulemaking titled Risk-Based Capital Standards: Interest Rate Risk, Office of the Comptroller of the Currency, Department of the Treasury, Docket Number 93-11.

OFFICE OF THE COMPTROLLER OF THE CURRENCY

September 2, 1993
Date



Eugene A. Ludwig
Comptroller of the Currency

FEDERAL RESERVE SYSTEM**Authority and Issuance**

For the reasons set out in the joint preamble, part 208 of chapter II of title 12 of the Code of Federal Regulations is proposed to be amended as set forth below.

**PART 208--MEMBERSHIP OF STATE BANKING INSTITUTIONS IN THE
FEDERAL RESERVE SYSTEM**

1. The authority citation for part 208 continues to read as follows:

Authority: 12 U.S.C. 36, 248(a), 248(c), 321-338, 461, 481-486, 601, 611, 1814, 1823(j), 3105, 3310, 3331-3351, and 3906-3909; 15 U.S.C. 78b, 781(b), 781(g), 781(i), 78o-4(c)(5), 78q, 78q-1, and 78w.

**ALTERNATIVE ONE (MINIMUM CAPITAL STANDARD APPROACH) FOR
APPENDIX A TO PART 208--CAPITAL ADEQUACY GUIDELINES FOR
STATE MEMBER BANKS: RISK-BASED MEASURE**

2. Section III of appendix A to part 208 is amended by revising the first undesignated paragraph of

paragraph A, and by adding new paragraph F. to read as follows:

**Appendix A to Part 208--Capital Adequacy Guidelines for
State Member Banks: Risk-Based Measure**

* * * * *

III. * * *

A. * * *

Assets and credit-equivalent amounts of off-balance-sheet items of state member banks are assigned to one of several broad risk categories, according to the obligor, or, if relevant, the guarantor or the nature of the collateral. The aggregate dollar value of the amount in each category is then multiplied by the risk weight associated with that category. In addition, a credit equivalent amount of each bank's excess measured exposure to interest rate risk is calculated. The weighted values from each of the risk categories and the credit equivalent amount for interest rate risk are added together, and this sum is the bank's total weighted-risk assets that comprise the denominator of the risk-based capital ratio. Attachment I provides a sample calculation.

* * * * *

F. Interest Rate Risk

Credit equivalent amounts for interest rate risk are calculated by multiplying a bank's excess measured exposure to interest rate risk by 12.5.

1. Definitions

- (i) Excess measured exposure means the dollar amount of measured exposure to interest rate risk in excess of the supervisory threshold.
- (ii) Measured exposure means the estimated dollar decline in the net economic value of the bank under the specified interest rate scenario, as determined pursuant to either a supervisory measure or, where the Board deems appropriate, the bank's internal measure of interest rate exposure. When the supervisory measure is used to calculate the bank's measured exposure pursuant to paragraph (2) (i), a bank's measured exposure is derived by calculating the bank's net risk-weighted position, as described in part I.A. of attachment VIII.

- (iii) Net economic value of a bank means the net present value of its assets minus the net present value of its liabilities plus the net present value of its off-balance-sheet instruments.
- (iv) Net risk-weighted position means the sum of all risk-weighted positions of a bank's assets, liabilities and off-balance-sheet items. For purposes of the supervisory measure, this number represents the amount by which the net economic value of the bank is estimated to change in response to a potential change in market interest rates under the specified interest rate scenarios.
- (v) Supervisory threshold means the equivalent of 1 percent of the bank's total assets.
2. Exemption for banks with low risk.
- (i) In general. Except as provided in paragraph 2.(i), a state member bank's excess measured exposure shall be calculated pursuant to this section unless:
- a. The total notional principal amount of the bank's off-balance-sheet interest

rate contracts is less than 10% of total assets; and

- b. 15 percent of the sum of fixed- and floating-rate loans and securities that mature or reprice beyond 5 years is less than 30 percent of total capital;

- (ii) Discretion of the Board. The Board may require the calculation of a bank's excess measured exposure if the Board determines that such calculation is necessary to assess the capital adequacy of the bank.

3. Measured exposure.

- (i) Supervisory measure. Except as provided in paragraph 3.(ii), a bank's measured exposure to interest rate risk shall be calculated pursuant to the supervisory measure set forth in attachment VIII to this appendix.
- (ii) Use of Internal Measure. During each examination, or at the request of a bank, the Board will examine any internal measure of interest rate risk. If the bank's internal measure is acceptable to the Board in its

sole discretion, then the bank's measure may be used in place of the supervisory model in determining the bank's excess measured exposure.

(iii) Acceptable internal measure. In determining whether a bank's internal measure of exposure to interest rate risk is acceptable, the Board will consider:

- a. Whether the assumptions and structure of the supervisory measure accurately reflect the bank's assets, liabilities, and off-balance-sheet positions, and whether the internal measure provides a more precise measurement of the change in economic value of the bank;
- b. Whether the internal measure makes use of generally accepted techniques in estimating measured exposure;
- c. Whether the internal measure is appropriate to the nature and scope of the bank's activities; and

d. Whether the internal measure provides an adequate indication of the exposure of the bank to interest rate risk in all material respects.

(iv) Requirement to use internal measure. The Board may require that a bank use its existing internal measure for the purposes of this section if the Board determines that the internal measure represents the bank's positions more accurately than the supervisory model.

(v) Interest rate scenario. Measured exposure will be estimated for a specified change in the level of market interest rates, as provided in attachment VIII. This change will be a uniform increase of 2 percentage points (200 basis points) in market interest rates at all maturities.

3. Attachment I to Appendix A to part 208 is revised as follows:

Attachment I -- Sample Calculation of Risk-Based Capital Ratio for State Member Banks

Example of a bank with \$6,000 in total capital and the following assets and off-balance-sheet items.

Balance sheet assets

Cash	\$ 5,000
U.S. Treasuries	20,000
Balances at domestic banks	5,000
Loans secured by first liens on 1- to 4- family residential properties	5,000
Loans to private corporations	<u>65,000</u>
Total Balance-Sheet Assets	\$100,000

Off-balance-sheet items

Standby letters of credit (SLCs) backing general- obligation debt issues of U.S. municipalities (GOs)	\$ 10,000
Long-term legally binding commitments to private	

	114
corporations	<u>20,000</u>
Total Off-Balance-Sheet Items	\$ 30,000

Interest Rate Risk (IRR)

Excess measured exposure to IRR \$ 2,000

This bank's total capital to total assets (leverage) ratio would be:

$$(\$6,000/\$100,000) = 6.00\%$$

To compute the bank's risk-weighted assets--

1. Compute the credit-equivalent amount of each off-balance-sheet (OBS) item.

Credit

OBS	Face	Conversion	Equivalent
<u>Item</u>	<u>Value</u>	<u>Factor</u>	<u>Amount</u>

SLCs backing municipal

GOs	\$10,000	*	1.00	=	\$10,000
-----	----------	---	------	---	----------

Long-term commitments

to private

corporations \$20,000 * 0.50 = \$10,000

2. Compute the credit-equivalent amount of excess measured exposure to IRR.

Credit

<u>Excess Measured</u> <u>Exposure</u>		<u>Conversion</u> <u>Factor</u>		<u>Equivalent</u> <u>Amount</u>
\$2,000	*	12.5	=	\$25,000

3. Multiply each balance-sheet asset and the credit equivalent amount of each OBS item and excess measured exposure to IRR by the appropriate risk weight.

Credit

<u>Item</u>	<u>Face</u> <u>Value</u>	<u>Conversion</u> <u>Factor</u>	<u>Equivalent</u> <u>Amount</u>
<u>0% category</u>			

Cash \$ 5,000

U.S. Treasuries 20,000

\$ 25,000 * 0 = \$ 0

20¢ category

Balances at

domestic banks \$ 5,000

Credit-equivalent

amounts of SLCs

backing GOs of U.S.

municipalities 10,000

\$ 15,000 * 0.20 = \$ 3,000

50¢ category

Loans secured by

first liens on 1-

to 4-family

residential

properties \$ 5,000 * 0.50 = \$ 2,500

100¢ category

Loans to private corporations	\$ 65,000			
Credit-equivalent amounts of long-term commitments to private corporations	10,000			
Credit-equivalent amount of excess measured exposure to IRR	<u>25,000</u>			
	\$100,000	* 1.00	=	<u>\$100,000</u>
Total Risk-Weighted Assets				\$105,500

This bank's ratio of total capital to weighted-risk assets (risk-based capital ratio) would be:

$$(\$6,000/\$105,500) = 5.69\%$$

**ALTERNATIVE TWO (RISK ASSESSMENT APPROACH) FOR APPENDIX A TO
PART 208--CAPITAL ADEQUACY GUIDELINES FOR STATE MEMBER
BANKS: RISK-BASED MEASURE**

4. The sixth undesignated paragraph of section I of appendix A to Part 208 is amended by adding the words "and interest rate risk, considering the bank's measured excess exposure to interest rate risk (as determined pursuant to attachment VIII) and other relevant factors" to the end of the first sentence.

2. Appendix A to Part 208 is amended by adding Attachment VIII as follows:

ATTACHMENT VIII
REGULATION H, APPENDIX A

Measurement of Interest Rate Risk
for State Member Banks

I. **Supervisory Measure**

A. Measured Exposure to Interest Rates

A bank's measured exposure to interest rate risk is derived by calculating the bank's net risk-weighted position under two interest rate scenarios, a rise in interest rates and a fall in interest rates. If the bank's net risk-weighted position is positive under both scenarios, then the bank's measured exposure would be equal to zero. If the bank's net risk-weighted position is negative under one or both of the scenarios, then the bank's measured exposure would be equal to the larger decline in the net economic value of the bank under the two scenarios.

B. Calculation of Net Risk-Weighted Position

A bank's net risk-weighted position is calculated by multiplying its assets, liabilities, and off-balance-sheet positions by the appropriate risk weight for each scenario. The sum of the weighted values represents the net risk-

weighted position or the dollar amount by which the bank's net economic value is estimated to change in response to each scenario.

The calculation is: $(\text{Assets} \times \text{Risk Weights}) - (\text{Liabilities} \times \text{Risk Weights}) + (\text{Off-Balance-Sheet Positions} \times \text{Risk Weight}) = \text{Net Risk Weighted Position}$. The resulting number is expressed as a percent of total assets and is the primary quantitative measure that would be used to evaluate a bank's measured exposure to IRR.

1. Risk Weights. For use in supervisory calculation of a bank's interest rate risk, reported asset, liability and off-balance-sheet positions will be multiplied by corresponding risk weights. The risk-weights estimate the sensitivity of the present value of each position to the specified interest rate scenario. The supervisory risk weights apply general assumptions regarding coupon rates and other characteristics of the underlying assets, liabilities, and off-balance-sheet instruments. Table 1 shows the risk weights developed for a 200 basis point parallel rise and fall in interest rates.

Risk Weights

Table 1

Amortizing Instruments Timeband	Scenario 1	Scenario 2
	200 Basis Point Rise	200 Basis Point Decline
	% Change in Present Value (Risk Weights)	% Change in Present Value (Risk Weights)
0-3 months	-0.10%	0.10%
3-12 months	-0.50%	0.60%
1-3 Years	-1.60%	1.70%
3-5 Years	-3.00%	3.10%
5-10 Years	-5.30%	3.40%
10-20 Years	-8.80%	5.90%
Over 20 Years	-9.20%	3.60%

All Other Instruments

0-3 months	-0.25%	0.25%
3-12 months	-1.20%	1.20%
1-3 Years	-3.50%	3.70%
3-5 Years	-6.40%	7.00%
5-10 Years	-10.20%	11.70%
10-20 Years	-14.90%	19.00%
Over 20 Years	-17.60%	24.60%

Liabilities

0-3 months	0.25%	-0.25%
3-12 months	1.20%	-1.20%
1-3 Years	3.70%	-3.90%
3-5 Years	6.90%	-7.50%
5-10 Years	11.60%	-13.50%
10-20 Years	18.70%	-24.50%
Over 20 Years	24.00%	-36.00%

Zero or Low Coupon Securities

0-3 months	-0.25%	0.25%
3-12 months	-1.20%	1.20%
1-3 Years	-3.70%	3.90%
3-5 Years	-7.40%	8.00%
5-10 Years	-13.30%	15.60%
10-20 Years	-24.90%	33.50%
Over 20 Years	-38.00%	61.90%

2. Reported Assets, Liabilities, and Off-Balance-Sheet Positions. Assets, liabilities, and off-balance-sheet positions will be reported within the appropriate category and time band based on their remaining maturity, next repricing, average life, or other means as directed below.

C. Summary of Asset, Liability, and Off-Balance-Sheet Categories

1. Adjustable-Rate Assets. Adjustable-rate mortgage loans and adjustable-rate mortgage securities.

2. Amortizing Fixed-rate Loans and Securities. Fixed-rate mortgage securities, and asset-backed securities; fixed-rate mortgage loans, consumer loans and other instruments that involve scheduled periodic amortization of principal.

3. Zero- or Low-Coupon Assets. Securities with either no periodic interest payments or stated coupons of 2 percent or lower.

4. Trading Account Items. Trading account assets and related off-balance-sheet positions.

5. High-risk Mortgage Security. Mortgage derivative products that, at the time of purchase or at any subsequent time, that:

(a) Have an expected weighted average life greater than 10.0 years; or

(b) Have an expected weighted average life that:

(i) Extends by more than 4.0 years, assuming an immediate and sustained parallel shift in the yield curve of plus 300 basis points; or

(ii) Shortens by more than 6.0 years, assuming an immediate and sustained parallel shift in the yield curve of minus 300 basis points; or

(c) Has a change in price of greater than 17 percent, assuming an immediate sustained shift in the yield curve of plus or minus 300 basis points.

6. All Other Assets. All other interest-sensitive instruments, which are assumed to involve scheduled periodic payments of interest and the payment of principal at maturity.

7. Liabilities. All deposits and all non-deposit liabilities whose values are sensitive to movements in interest rates.

8. Off-Balance-Sheet Items. (1) Interest rate contracts, including swaps, forwards, options, and futures; (2) mortgage related fixed-rate commitments and other off-balance-sheet derivative instruments whose value depends on the value of an underlying asset or index with amortizing characteristics.

D. Summary of Time Intervals for Maturity and Repricing

Assets, liabilities and off-balance-sheet items are assigned (in part or in total) to one of seven maturity ranges:

- Up to 3 Months,
- 3 to 12 Months,
- 1 to 3 Years,
- 3 to 5 Years,
- 5 to 10 Years,
- 10 to 20 Years,
- Greater than 20 years.

E. Summary of Maturity and Repricing

1. Maturity and Repricing -- In General. Except for mortgage derivative products and nonmaturity deposits, the remaining maturity of an asset, liability, or off-balance-sheet item is determined by the remaining time before

maturity, or next actual or potential repricing date, associated with the outstanding principal or notional balances as specified by contract or agreement.

2. Maturity and Repricing for Mortgage Derivative Products.

- (a) Use of Expected Average Life. Maturity and repricing for mortgage derivative products other than high-risk mortgage securities will be defined as their current expected average life as determined by bank management.² Maturity and repricing of "high-risk" mortgage derivative products may be estimated by bank management. Otherwise, maturity and repricing of such products will be assumed to be in the "Greater Than 20 Years" time band.
- (b) Mortgage Derivative Products Defined. Mortgage derivative products are defined as interest-only and principal-only stripped mortgage-backed securities (IOs and POs), tranches of

² All underlying assumptions used in calculating the average life of these instruments must be reasonable and available for examiner review. For example, if an institution's prepayment assumptions differ significantly from the median prepayment assumptions of several major dealers as selected by examiners, the examiners may use these median prepayment assumptions in determining the appropriate average life of the instrument.

collateralized mortgage obligations (CMOs) and real estate mortgage investment conduits (REMICs), CMO and REMIC residual securities and other instruments having the same characteristics as these securities.

3. Maturity and Repricing for Nonmaturity Deposits.

(a) Management determination of repricing and maturity. Repricing and maturity for nonmaturity deposits is determined by bank management based on its own assumptions and experience, subject to the following constraints:

(i) Repricing and maturity for DDAs and MMDAs may not exceed three years, with a maximum of 40% of these balances in the "1-3 year" time band; and

(ii) Repricing and maturity for savings and NOW account balances may not exceed five years, with a maximum of 40% of the total of these balances in the "3-5 year" time band.

(b) Nonmaturity deposits. Nonmaturity deposits are defined as demand deposit accounts (DDAs), money market deposit accounts (MMDAs), savings accounts,

and negotiable order of withdrawal accounts (NOWs).

F. Example of the Interest Rate Risk Measure

Table 2 is an interest rate risk worksheet that illustrates the method by which a bank's Net Risk-Weighted Position is calculated.

Interest Rate Risk Worksheet (200 Basis Point Rising Rate Scenario)

DRAFT

128

Table 2

REPORTING INSTITUTION: Sample Bank

Date: 12/31/92

\$ Thousands

I. INTEREST-SENSITIVE ASSETS

1. ARMs, FRMs, asset-backed securities, consumer loans

	(A)	(B)	(C)	(D)
	TOTAL	Risk Weights	Risk Weighted Position	Total Risk Weighted Position
(a) Up to 3 months	\$5,500	-0.10%	(550)	
(b) 3 to 12 months	\$4,950	-0.20%	(990)	
(c) 1 to 3 years	\$4,050	-1.60%	(648)	
(d) 3 to 5 years	\$4,166	-3.00%	(1,250)	
(e) 5 to 10 years	\$6,620	-5.20%	(3,442)	
(f) 10 to 20 years	\$6,454	-8.80%	(5,680)	
(g) Greater than 20 years	\$10,430	-9.20%	(9,596)	

2. Zero or low coupon securities

(a) Up to 3 months	\$1,000	-0.25%	(250)	
(b) 3 to 12 months	\$1,000	-1.20%	(120)	
(c) 1 to 3 years	\$1,000	-3.70%	(370)	
(d) 3 to 5 years	\$0	-7.40%	\$0	
(e) 5 to 10 years	\$0	-13.30%	\$0	
(f) 10 to 20 years	\$0	-24.80%	\$0	
(g) Greater than 20 years	\$0	-38.00%	\$0	

3. "All other" securities, loans, & trading account

(a) Up to 3 months	\$26,672	-0.25%	(667)	
(b) 3 to 12 months	\$28,437	-1.20%	(341)	
(c) 1 to 3 years	\$31,126	-3.50%	(1,090)	
(d) 3 to 5 years	\$19,728	-6.40%	(1,263)	
(e) 5 to 10 years	\$10,564	-10.20%	(1,078)	
(f) 10 to 20 years	\$8,837	-14.90%	(1,317)	
(g) Greater than 20 years	\$9,462	-17.60%	(1,665)	

4. High-risk mortgage securities

(a) Self-reporting	\$2,000			\$160
(b) Risk weighting	\$1,000	-38.00%		(380)

5. Total Interest-Sensitive Assets

	\$193,000			(92,190)
--	-----------	--	--	----------

II. ALL OTHER ASSETS

III. TOTAL ASSETS

IV. INTEREST-SENSITIVE LIABILITIES

1. Non-maturity deposits, time deposits and "all other"

(a) Up to 3 months	\$23,083	0.25%	\$58	
(b) 3 to 12 months	\$74,582	1.20%	(895)	
(c) 1 to 3 years	\$51,321	3.70%	(1,899)	
(d) 3 to 5 years	\$17,090	6.90%	(1,179)	
(e) 5 to 10 years	\$64	11.60%	(7)	
(f) 10 to 20 years	\$0	18.70%	\$0	
(g) Greater than 20 years	\$0	24.00%	\$0	

2. Total Interest-Sensitive Liabilities

	\$166,140			\$4,038
--	-----------	--	--	---------

V. NONINTEREST-SENSITIVE LIABILITIES

VI. TOTAL LIABILITIES

VII. EQUITY CAPITAL

VIII. OFF-BALANCE-SHEET POSITIONS

1. Interest rate contracts

(a) Up to 3 months	\$4,000	-0.25%	(100)	
(b) 3 to 12 months	\$500	-1.20%	(60)	
(c) 1 to 3 years	(84,050)	-3.50%	(2,942)	
(d) 3 to 5 years	(84,500)	-6.40%	(5,408)	
(e) 5 to 10 years	\$0	-10.20%	\$0	
(f) 10 to 20 years	\$0	-14.90%	\$0	
(g) Greater than 20 years	\$0	-17.60%	\$0	

2. Mortgage and other amortizing contracts

(a) Up to 3 months	\$1,000	-0.10%	(100)	
(b) 3 to 12 months	\$0	-0.50%	\$0	
(c) 1 to 3 years	(81,000)	-1.60%	(1,300)	
(d) 3 to 5 years	\$0	-3.00%	\$0	
(e) 5 to 10 years	\$0	-5.20%	\$0	
(f) 10 to 20 years	\$0	-8.80%	\$0	
(g) Greater than 20 years	\$0	-9.20%	\$0	

3. Total Off-Balance-Sheet Positions

	\$0			\$170
--	-----	--	--	-------

Net Risk Weighted Position

Net Position/ Assets

	(A)	(B)	(C)	(D)
	TOTAL	Risk Weights	Risk Weighted Position	Total Risk Weighted Position
			(A) x (B)	
	\$193,000			(92,190)
	\$166,140			\$4,038
	\$19,860			
	\$167,000			\$4,038
	\$19,000			\$170
				(84,991,86)
				-2.68%

II. Internal Measure

A state member bank's internal measure for interest rate risk will be evaluated and, if the measure is used in assessing the bank's measured exposure, calculated according to the following interest rate scenario:

<u>Maturity</u>	<u>Scenario Annual Horizon</u>
0-3 Months	200 basis points
3-12 Months	200 basis points
1-3 Years	200 basis points
3-5 Years	200 basis points
5-10 Years	200 basis points
10-20 Years	200 basis points
Over 20 Years	200 basis points

This signature page relates to the Joint Notice of Proposed Rulemaking titled Risk-Based Capital Standards: Interest Rate Risk, Office of the Comptroller of the Currency, Department of the Treasury, Docket Number R-0802.

By Order of the Board of Governors of the Federal Reserve System.

Aug. 27, 1993
Date

William W. Wiles
William Wiles
Secretary of the Board

FEDERAL DEPOSIT INSURANCE CORPORATION

Authority and Issuance

For reasons set out in the joint preamble, part 325 of chapter III of title 12 of the Code of Federal Regulations is proposed to be amended as set forth below.

PART 325--CAPITAL MAINTENANCE

1. The authority citation for part 325 continues to read as follows:

Authority: 12 U.S.C. 1815(a), 1815(b), 1816, 1818(a), 1818(b), 1818(c), 1818(t), 1819(Tenth), 1828(c), 1828(d), 1828(i), 1828(n), 1828(o), 1831o, 3907, 3909; Pub. L. 102-233, 105 Stat. 1761, 1789, 1790 (12 U.S.C. 1831n note); Pub. L. 102-242, 105 Stat. 2236, 2386 (12 U.S.C. 1828 note).

**ALTERNATIVE ONE (MINIMUM CAPITAL STANDARD APPROACH) FOR
APPENDIX A TO SUBPART A OF PART 325--THE STATEMENT OF POLICY
ON RISK-BASED CAPITAL**

2. Section II of appendix A to subpart A of part 325 is amended by revising the first undesignated paragraph under paragraph A and by adding a new paragraph F. to read as follows:

Appendix A to Subpart A of Part 325--Statement of Policy on
Risk-Based Capital

* * * * *

A. * * *

Under the risk-based capital framework, a bank's balance sheet assets and credit equivalent amounts of off-balance-sheet items are assigned to one of four broad risk categories according to the obligor or, if relevant, the guarantor or the nature of the collateral. The aggregate dollar amount in each category is then multiplied by the risk weight assigned to that category. In addition, a risk-weighted asset amount of a bank's excess measured exposure to interest rate risk (as determined pursuant to paragraph II.F. of this appendix) is calculated. The resulting weighted values from each of the four risk weight categories and the risk-weighted asset amount for interest rate risk are added together and this sum is the risk-weighted assets total that, as adjusted,¹¹ comprises the denominator of the risk-based capital ratio.

* * * * *

¹¹Any asset deducted from a bank's capital accounts when computing the numerator of the risk-based capital ratio will also be excluded from risk-weighted assets when calculating the denominator for the ratio.

F. Risk Weighted Asset Amount for Excessive Interest Rate Risk Exposure. If a bank is required to maintain additional capital for excessive interest rate risk exposure, as determined in accordance with appendix C to subpart A of part 325, the dollar amount of this additional capital requirement for interest rate risk should be multiplied by 12.5. The resulting amount should be included in the denominator for risk-weighted assets. For example, if the capital required for excessive interest rate risk under appendix C is \$100,000, the amount to be included in risk-weighted assets for this interest rate risk exposure will be \$1,250,000. Thus, consistent with the 8 percent minimum total risk-based capital ratio that banks are required to maintain under this risk-based capital policy statement, if \$100,000 in additional capital is required to be maintained for interest rate risk pursuant to appendix C, this amount will equal 8 percent of the \$1,250,000 additional amount to be included in risk-weighted assets.

**ALTERNATIVE TWO (RISK ASSESSMENT APPROACH) FOR APPENDIX A TO
SUBPART A OF PART 325--THE STATEMENT OF POLICY ON RISK-BASED
CAPITAL**

3. The fifth undesignated paragraph of appendix A to subpart A of part 325 (the FDIC's Statement of Policy on Risk-Based Capital) is revised to read as follows:

Appendix A to Subpart A of Part 325--Statement of Policy on
Risk-Based Capital

* * * * *

The risk-based capital ratio focuses principally on broad categories of credit risk; however, the ratio does not take account of many other factors that can affect a bank's financial condition. These factors include overall interest rate risk exposure; liquidity, funding and market risks; the quality and level of earnings; investment, loan portfolio, and other concentrations of credit risk; certain risks arising from nontraditional activities; the quality of loans and investments; the effectiveness of loan and investment policies; and management's overall ability to monitor and control financial and operating risks, including the risk presented by concentrations of credit and nontraditional activities. In addition to evaluating capital ratios, an overall assessment of capital adequacy must take account of each of these other factors, including, in particular, the level and severity of problem and adversely classified assets as well as a bank's excess measured exposure to interest rate risk. For this reason, the final supervisory judgment on a bank's capital adequacy may differ significantly from the conclusions that might be drawn solely from the absolute level of the bank's risk-based capital ratio.

4. Subpart A of Part 325 is revised by adding a new Appendix C to read as follows:

Appendix C to Subpart A of Part 325--Measurement of and the Assessment of Capital Requirements for Interest Rate Risk

This appendix sets forth a system for measuring IRR and determining if additional capital may be required in order to take adequate account of a bank's interest rate risk.

I. Definitions

- A. Excess Measured Exposure means the dollar amount of measured exposure to interest rate risk in excess of the supervisory threshold.
- B. Measured Exposure means the estimated dollar decline in the net economic value of a bank under the specified interest rate scenario(s) as determined pursuant to either a supervisory measure or, where the FDIC deems appropriate, the bank's internal measure of interest rate risk exposure. When the supervisory measure is used to calculate the bank's measured exposure pursuant to section III of this appendix, a bank's measured exposure is derived by calculating the bank's net risk-weighted position.

- C. Net Economic Value of a Bank means the net present value of its assets minus the net present value of its liabilities plus the net present value of its off-balance-sheet instruments.
- D. Net Risk-Weighted Position means the sum of all risk-weighted values of the bank's assets, liabilities and off-balance-sheet positions. For purposes of the supervisory measure, this number represents the amount by which the bank's net economic value is estimated to change in response to the interest rate scenario(s). This number may be expressed as a percentage of total assets or in dollar amounts.
- E. Supervisory Threshold means the equivalent of 1 percent of the bank's total assets.

II. Applicability

- A. Exemption Test for Banks with Low Risk
1. General Rule. Except as provided in paragraph A.2. a bank's excess measured exposure will be calculated pursuant to this appendix unless:

(a) The total notional principal amount of the bank's off-balance-sheet interest rate contracts is less than 10 percent of total assets; and

(b) 15 percent of the sum of fixed- and floating-rate loans and securities that mature or reprice beyond 5 years is less than 30 percent of total capital.

2. Discretion of the FDIC. The FDIC may require the calculation of a bank's excess measured exposure if the FDIC determines, based on an overall assessment of the bank's financial condition, that such calculation is necessary to assess the capital adequacy of the bank.

III. Supervisory Measure

A. Measured Exposure to Interest Rates

A bank's measured exposure to interest rate risk must be calculated pursuant to the supervisory measure as specified in section III.C. and III.D. of this appendix C.

B. Calculation of Net Risk-Weighted Position

A bank's net risk-weighted position is calculated by multiplying its assets, liabilities, and off-balance-sheet positions by the appropriate risk weight¹ for each specified rate scenario. The sum of the weighted values represents the net risk-weighted position or the dollar amount by which the bank's net economic value is estimated to change in response to each scenario.

The calculation is as follows:

$$\begin{aligned} & (\text{Assets} \times \text{Risk Weights}) - (\text{Liabilities} \times \\ & \text{Risk Weights}) + (\text{Off-Balance-Sheet} \\ & \text{Positions} \times \text{Risk Weight}) = \text{Net Risk} \\ & \text{Weighted Position} \end{aligned}$$

The resulting number is expressed in dollars and may be divided by total assets and expressed as a percent of total assets. It is the primary quantitative measure that would be used to

¹ Risk weights estimate the sensitivity of the present value of assets, liabilities and off-balance-sheet positions to the specified interest rate scenario(s). The supervisory risk weights apply general assumptions regarding coupon rates and other characteristics of the underlying assets, liabilities and off-balance-sheet instruments. Table 1 shows the risk weights developed for a [200 basis point] parallel rise and fall in interest rates.

evaluate a bank's measured exposure to interest rate risk.

Risk Weights

Table 1

Amortizing Instruments	Scenario 1	Scenario 2
	200 Basis Point Rise	200 Basis Point Decline
	% Change in Present Value (Risk Weights)	% Change in Present Value (Risk Weights)
Timeband		
0-3 months	-0.10%	0.10%
3-12 months	-0.50%	0.60%
1-3 Years	-1.60%	1.70%
3-5 Years	-3.00%	3.10%
5-10 Years	-5.30%	3.40%
10-20 Years	-8.80%	5.90%
Over 20 Years	-9.20%	3.60%

All Other Instruments

0-3 months	-0.25%	0.25%
3-12 months	-1.20%	1.20%
1-3 Years	-3.50%	3.70%
3-5 Years	-6.40%	7.00%
5-10 Years	-10.20%	11.70%
10-20 Years	-14.90%	19.00%
Over 20 Years	-17.60%	24.60%

Liabilities

0-3 months	0.25%	-0.25%
3-12 months	1.20%	-1.20%
1-3 Years	3.70%	-3.90%
3-5 Years	6.90%	-7.50%
5-10 Years	11.60%	-13.50%
10-20 Years	18.70%	-24.50%
Over 20 Years	24.00%	-36.00%

Zero or Low Coupon Securities

0-3 months	-0.25%	0.25%
3-12 months	-1.20%	1.20%
1-3 Years	-3.70%	3.90%
3-5 Years	-7.40%	8.00%
5-10 Years	-13.30%	15.60%
10-20 Years	-24.90%	33.50%
Over 20 Years	-38.00%	61.90%

C. Calculation of Measured Exposure

If the net risk-weighted position is positive under the specified interest rate scenario(s), the measured exposure would be equal to zero. If the net risk-weighted position is negative under the specified interest rate scenario(s), the measured exposure would be equal to the larger decline in the net economic value of the bank.

D. Calculation of Excess Measured Exposure

1. The dollar amount of the supervisory threshold would be subtracted from the absolute dollar amount of the measured exposure. The positive difference would equal the excess measured exposure.

Measured Exposure - (.01 x Total Assets) = Excess
Measured Exposure

2. If the amount of the supervisory threshold were greater than the measured exposure, the excess measured exposure would be zero.

E. Interest Rate Scenario

Measured exposure will be estimated for a uniform increase and decrease of 2 percentage points (200 basis points) in market interest rates at all maturities.

IV. **Reporting Requirements**

Assets, liabilities and off-balance-sheet positions will be reported within the appropriate category and time band based upon their remaining maturities, nearest repricing dates, average life or other means as directed below.

A. Summary of Assets, Liabilities and Off-Balance-Sheet Categories

1. Adjustable-Rate Assets. Adjustable-rate mortgage loans and adjustable-rate mortgage securities.

2. Fixed-Rate Assets. Fixed-rate mortgage securities and asset-backed securities; fixed-rate mortgage loans, consumer loans and other instruments that have scheduled periodic amortization of principal.

3. Zero- or Low-Coupon Assets. Securities with either no periodic interest payments or with stated coupons of 2 percent or lower.

4. Trading Account Assets. Trading account assets and related off-balance-sheet instruments.

5. High-Risk Mortgage Securities. Mortgage derivative products that, at the time of purchase or at any subsequent time:

(a) Have an expected weighted average life greater than 10.0 years; or

(b) Have an expected weighted average life that:

(i) Extends by more than 4.0 years, assuming an immediate and sustained parallel shift in the yield curve of plus 300 basis points; or

(ii) Shortens by more than 6.0 years, assuming an immediate and sustained parallel shift in the yield curve of minus 300 basis points; or

(c) Has a change in price of greater than 17 percent, assuming an immediate sustained parallel shift in the yield curve of plus or minus 300 basis points.

6. All Other Assets. All other interest-sensitive instruments, which have scheduled periodic payments of interest and the payment of principal at maturity.
7. Liabilities. All deposits and all non-deposit liabilities whose values are sensitive to movements in interest rates.
8. Off-Balance-Sheet Positions. (a) Interest-rate contracts including swaps, forwards, options, and futures.

(b) Mortgage-related fixed-rate commitments and other off-balance-sheet derivative instruments whose value depends on the value of an underlying asset or index with amortizing characteristics.

B. Summary of Time Bands for Maturity and Repricing

Assets, liabilities and off-balance-sheet items are assigned (in part or in total) to one of seven maturity ranges:

- Up to 3 months,
- 3 to 12 months,
- 1 to 3 years,
- 3 to 5 years,
- 5 to 10 years,
- 10 to 20 years,
- Greater than 20 years.

C. Summary of Maturity and Repricing Instructions

1. Maturity and Repricing for Assets.

Liabilities and Off-Balance-Sheet Positions.

Remaining time before maturity, or next actual or potential repricing date, associated with outstanding principal or notional balances as specified in a contract or agreement with the exception of:

- (a) Maturity and Repricing for Mortgage Derivative Products. Mortgage derivative products are defined as

stripped mortgage-backed securities, tranches of collateralized mortgage obligations (CMOs) and real estate mortgage investment conduits (REMICs), CMO and REMIC residual securities and other instruments having the same characteristics as these securities.

For mortgage derivative products, other than those which may be deemed as a "high-risk mortgage security" by the FDIC, current average life will be reported in lieu of maturity or repricing dates in the "All Other Securities" category.² The carrying value of "high-risk mortgage securities" will be reported in the "High-Risk Mortgage Securities" category.³ If not, maturity and repricing of high-risk

²All underlying assumptions used in calculating the average life of these instruments must be reasonable and available for examiner review. For example, if an institution's prepayment assumptions differ significantly from the median prepayment assumptions of several major dealers as selected by examiners, the examiners may use these median prepayment assumptions in determining the appropriate average life of the instrument.

³The interest rate sensitivity of high-risk mortgage securities purchased after February 10, 1992 must be reported in the memorandum items. The interest rate sensitivity of "high-risk mortgage securities" purchased prior to February 10, 1992 can be reported as a memorandum item.

mortgage securities will be as if the entire balance were a zero or low coupon instrument in the longest time band.

(b) Maturity and Repricing for Non-Maturity Deposits.

(i) Non-maturity deposits are defined as Demand Deposit Accounts (DDAs), Money Market Deposit Accounts (MMDAs), savings accounts, and Negotiable Order of Withdrawal accounts (NOWs).

(ii) Management determination of repricing and maturity. Repricing and maturity for non-maturity deposits are determined by bank management based on its own assumptions and experience, subject to the following constraints:

(1) Repricing and maturity for Demand Deposit Accounts (DDAs) and Money Market Deposit Accounts (MMDAs) may not exceed three years, with a maximum of 40 percent of these balances in the "1-3 year" time band; and

(2) Repricing and maturity for savings and Negotiable Order of Withdrawal (NOW) account balances may not exceed five years, with a maximum of 40 percent of the total of these balances in the "3-5 year" time band.

(iii) Maturity and Repricing for Off-Balance-Sheet Positions. Off-balance-sheet positions with option characteristics (e.g., options, caps, floors) are reported separately from those representing firm commitments (e.g., swaps, futures, and forward-rate agreements). Mortgage-related fixed rate commitments and other off-balance-sheet derivative instruments whose value depends on the value of an underlying asset or index with amortizing characteristics are reported separately.

D. Example of the Interest Rate Risk Measure

Tables 2 and 3 are interest rate risk worksheets that illustrate the method by which a bank's Net Risk-Weighted Position is calculated.

Interest Rate Risk Worksheet (200 Basis Point Rising Rate Scenario)

DRAFT

Table 2

REPORTING INSTITUTION: Sample Bank

Date: 12/31/92

\$ Thousands

I. INTEREST-SENSITIVE ASSETS

1. ARMs, FRMs, asset-backed securities, consumer loans

	(A)	(B)	(C)	(D)
	TOTAL	Risk Weights	Risk Weighted Position	Total Risk Weighted Position
			(A) x (B)	
(a) Up to 3 months	\$5,500	-0.10%		(55)
(b) 3 to 12 months	\$4,950	-0.50%		(247)
(c) 1 to 3 years	\$4,050	-1.60%		(648)
(d) 3 to 5 years	\$4,166	-3.00%		(1,250)
(e) 5 to 10 years	\$6,020	-5.30%		(3,191)
(f) 10 to 20 years	\$6,454	-8.80%		(5,680)
(g) Greater than 20 years	\$10,430	-9.20%		(9,597)

2. Zero or low coupon securities

(a) Up to 3 months	\$1,000	-0.25%		(25)
(b) 3 to 12 months	\$1,000	-1.20%		(120)
(c) 1 to 3 years	\$1,000	-3.70%		(370)
(d) 3 to 5 years	\$0	-7.40%	\$0	\$0
(e) 5 to 10 years	\$0	-13.30%	\$0	\$0
(f) 10 to 20 years	\$0	-24.90%	\$0	\$0
(g) Greater than 20 years	\$0	-31.00%	\$0	\$0

3. "All other" securities, loans, & trading account

(a) Up to 3 months	\$76,674	-0.25%		(1,917)
(b) 3 to 12 months	\$73,432	-1.20%		(8,812)
(c) 1 to 3 years	\$31,136	-3.50%		(1,095)
(d) 3 to 5 years	\$19,728	-6.40%		(1,263)
(e) 5 to 10 years	\$10,564	-10.20%		(1,076)
(f) 10 to 20 years	\$8,837	-14.90%		(1,317)
(g) Greater than 20 years	\$9,463	-17.60%		(1,663)

4. High-risk mortgage securities

(a) Self-reporting	\$2,000			\$160
(b) Risk weighting	\$1,000	-31.00%		(310)

5. Total Interest-Sensitive Assets

	\$183,000			(9,190)
	\$1,000			
	\$184,000			

II. ALL OTHER ASSETS

III. TOTAL ASSETS

IV. INTEREST-SENSITIVE LIABILITIES

1. Non-maturity deposits, time deposits and "all other"

(a) Up to 3 months	\$73,081	0.25%		\$18
(b) 3 to 12 months	\$74,512	1.20%		(894)
(c) 1 to 3 years	\$51,321	3.70%		(1,899)
(d) 3 to 5 years	\$17,090	6.90%		(1,179)
(e) 5 to 10 years	\$64	11.60%		(7)
(f) 10 to 20 years	\$0	18.70%	\$0	\$0
(g) Greater than 20 years	\$0	24.00%	\$0	\$0

2. Total Interest-Sensitive Liabilities

V. NONINTEREST-SENSITIVE LIABILITIES

VI. TOTAL LIABILITIES

VII. EQUITY CAPITAL

VIII. OFF-BALANCE-SHEET POSITIONS

1. Interest rate contracts

(a) Up to 3 months	\$4,000	-0.20%		(80)
(b) 3 to 12 months	\$500	-1.20%		(60)
(c) 1 to 3 years	(4,050)	-3.50%		\$154
(d) 3 to 5 years	(4,500)	-6.40%		\$292
(e) 5 to 10 years	\$0	-10.20%	\$0	\$0
(f) 10 to 20 years	\$0	-14.90%	\$0	\$0
(g) Greater than 20 years	\$0	-17.60%	\$0	\$0

2. Mortgage and other amortizing contracts

(a) Up to 3 months	\$1,000	-0.10%		(10)
(b) 3 to 12 months	\$0	-0.50%	\$0	\$0
(c) 1 to 3 years	(1,000)	-1.60%		\$16
(d) 3 to 5 years	\$0	-3.00%	\$0	\$0
(e) 5 to 10 years	\$0	-5.30%	\$0	\$0
(f) 10 to 20 years	\$0	-8.80%	\$0	\$0
(g) Greater than 20 years	\$0	-9.20%	\$0	\$0

3. Total Off-Balance-Sheet Positions

Net Risk Weighted Position

Net Position/ Assets

	(A)	(B)	(C)	(D)
	TOTAL	Risk Weights	Risk Weighted Position	Total Risk Weighted Position
			(A) x (B)	
1. ARMs, FRMs, asset-backed securities, consumer loans				
(a) Up to 3 months	\$5,500	-0.10%		(55)
(b) 3 to 12 months	\$4,950	-0.50%		(247)
(c) 1 to 3 years	\$4,050	-1.60%		(648)
(d) 3 to 5 years	\$4,166	-3.00%		(1,250)
(e) 5 to 10 years	\$6,020	-5.30%		(3,191)
(f) 10 to 20 years	\$6,454	-8.80%		(5,680)
(g) Greater than 20 years	\$10,430	-9.20%		(9,597)
2. Zero or low coupon securities				
(a) Up to 3 months	\$1,000	-0.25%		(25)
(b) 3 to 12 months	\$1,000	-1.20%		(120)
(c) 1 to 3 years	\$1,000	-3.70%		(370)
(d) 3 to 5 years	\$0	-7.40%	\$0	\$0
(e) 5 to 10 years	\$0	-13.30%	\$0	\$0
(f) 10 to 20 years	\$0	-24.90%	\$0	\$0
(g) Greater than 20 years	\$0	-31.00%	\$0	\$0
3. "All other" securities, loans, & trading account				
(a) Up to 3 months	\$76,674	-0.25%		(1,917)
(b) 3 to 12 months	\$73,432	-1.20%		(8,812)
(c) 1 to 3 years	\$31,136	-3.50%		(1,095)
(d) 3 to 5 years	\$19,728	-6.40%		(1,263)
(e) 5 to 10 years	\$10,564	-10.20%		(1,076)
(f) 10 to 20 years	\$8,837	-14.90%		(1,317)
(g) Greater than 20 years	\$9,463	-17.60%		(1,663)
4. High-risk mortgage securities				
(a) Self-reporting	\$2,000			\$160
(b) Risk weighting	\$1,000	-31.00%		(310)
5. Total Interest-Sensitive Assets	\$183,000			(9,190)
II. ALL OTHER ASSETS	\$1,000			
III. TOTAL ASSETS	\$184,000			
IV. INTEREST-SENSITIVE LIABILITIES				
1. Non-maturity deposits, time deposits and "all other"				
(a) Up to 3 months	\$73,081	0.25%		\$18
(b) 3 to 12 months	\$74,512	1.20%		(894)
(c) 1 to 3 years	\$51,321	3.70%		(1,899)
(d) 3 to 5 years	\$17,090	6.90%		(1,179)
(e) 5 to 10 years	\$64	11.60%		(7)
(f) 10 to 20 years	\$0	18.70%	\$0	\$0
(g) Greater than 20 years	\$0	24.00%	\$0	\$0
2. Total Interest-Sensitive Liabilities	\$166,140			\$4,038
V. NONINTEREST-SENSITIVE LIABILITIES	\$860			
VI. TOTAL LIABILITIES	\$167,000			\$4,038
VII. EQUITY CAPITAL	\$19,001			
VIII. OFF-BALANCE-SHEET POSITIONS				
1. Interest rate contracts				
(a) Up to 3 months	\$4,000	-0.20%		(80)
(b) 3 to 12 months	\$500	-1.20%		(60)
(c) 1 to 3 years	(4,050)	-3.50%		\$154
(d) 3 to 5 years	(4,500)	-6.40%		\$292
(e) 5 to 10 years	\$0	-10.20%	\$0	\$0
(f) 10 to 20 years	\$0	-14.90%	\$0	\$0
(g) Greater than 20 years	\$0	-17.60%	\$0	\$0
2. Mortgage and other amortizing contracts				
(a) Up to 3 months	\$1,000	-0.10%		(10)
(b) 3 to 12 months	\$0	-0.50%	\$0	\$0
(c) 1 to 3 years	(1,000)	-1.60%		\$16
(d) 3 to 5 years	\$0	-3.00%	\$0	\$0
(e) 5 to 10 years	\$0	-5.30%	\$0	\$0
(f) 10 to 20 years	\$0	-8.80%	\$0	\$0
(g) Greater than 20 years	\$0	-9.20%	\$0	\$0
3. Total Off-Balance-Sheet Positions	\$0			\$170
Net Risk Weighted Position				(4,918)
Net Position/ Assets				-2.68%

Interest Rate Risk Worksheet (200 Basis Point Declining Rate Scenario)

151

Table 3

REPORTING INSTITUTION: Sample Bank

Date 12/31/92

\$ Thousands

I. INTEREST-SENSITIVE ASSETS

1. ARMs, FRAs, asset-backed securities, consumer loans

- (a) Up to 3 months
- (b) 3 to 12 months
- (c) 1 to 3 years
- (d) 3 to 5 years
- (e) 5 to 10 years
- (f) 10 to 20 years
- (g) Greater than 20 years

2. Zero or low coupon securities

- (a) Up to 3 months
- (b) 3 to 12 months
- (c) 1 to 3 years
- (d) 3 to 5 years
- (e) 5 to 10 years
- (f) 10 to 20 years
- (g) Greater than 20 years

3. "All other" securities, loans, & trading account

- (a) Up to 3 months
- (b) 3 to 12 months
- (c) 1 to 3 years
- (d) 3 to 5 years
- (e) 5 to 10 years
- (f) 10 to 20 years
- (g) Greater than 20 years

4. High-risk mortgage securities

- (a) Self-reporting
- (b) Risk weighting

5. Total Interest-Sensitive Assets

II. ALL OTHER ASSETS

III. TOTAL ASSETS

IV. INTEREST-SENSITIVE LIABILITIES

1. Non-maturity deposits, time deposits and "all other"

- (a) Up to 3 months
- (b) 3 to 12 months
- (c) 1 to 3 years
- (d) 3 to 5 years
- (e) 5 to 10 years
- (f) 10 to 20 years
- (g) Greater than 20 years

2. Total Interest-Sensitive Liabilities

V. NONINTEREST-SENSITIVE LIABILITIES

VI. TOTAL LIABILITIES

VII. EQUITY CAPITAL

VIII. OFF-BALANCE-SHEET POSITIONS

1. Interest rate contracts

- (a) Up to 3 months
- (b) 3 to 12 months
- (c) 1 to 3 years
- (d) 3 to 5 years
- (e) 5 to 10 years
- (f) 10 to 20 years
- (g) Greater than 20 years

2. Mortgage and other securitizing contracts

- (a) Up to 3 months
- (b) 3 to 12 months
- (c) 1 to 3 years
- (d) 3 to 5 years
- (e) 5 to 10 years
- (f) 10 to 20 years
- (g) Greater than 20 years

3. Total Off-Balance-Sheet Positions

	(A)	(B)	(C)	(D)
	TOTAL	Risk Weights	Risk Weighted Position (A) x (B)	Total Risk-Weighted Position
I. INTEREST-SENSITIVE ASSETS				
1. ARMs, FRAs, asset-backed securities, consumer loans				
(a) Up to 3 months	\$5,500	0.10%	\$6	
(b) 3 to 12 months	\$4,950	0.62%	\$30	
(c) 1 to 3 years	\$4,050	1.70%	\$69	
(d) 3 to 5 years	\$4,166	3.10%	\$129	
(e) 5 to 10 years	\$6,600	3.40%	\$224	
(f) 10 to 20 years	\$6,424	5.20%	\$334	
(g) Greater than 20 years	\$10,420	3.60%	\$375	
2. Zero or low coupon securities				
(a) Up to 3 months	\$1,000	0.25%	\$3	
(b) 3 to 12 months	\$1,000	1.20%	\$12	
(c) 1 to 3 years	\$1,000	3.20%	\$32	
(d) 3 to 5 years	\$0	1.00%	\$0	
(e) 5 to 10 years	\$0	15.40%	\$0	
(f) 10 to 20 years	\$0	21.50%	\$0	
(g) Greater than 20 years	\$0	61.20%	\$0	
3. "All other" securities, loans, & trading account				
(a) Up to 3 months	\$26,671	0.25%	\$67	
(b) 3 to 12 months	\$21,421	1.20%	\$257	
(c) 1 to 3 years	\$31,126	3.20%	\$997	
(d) 3 to 5 years	\$19,728	7.00%	\$1,381	
(e) 5 to 10 years	\$10,564	11.20%	\$1,183	
(f) 10 to 20 years	\$8,827	19.00%	\$1,676	
(g) Greater than 20 years	\$9,462	24.60%	\$2,328	
4. High-risk mortgage securities				
(a) Self-reporting	\$1,000		\$200	
(b) Risk weighting	\$1,000	-31.00%	(\$310)	
5. Total Interest-Sensitive Assets	\$113,000		\$1,871	\$1,871
II. ALL OTHER ASSETS	\$3,000			
III. TOTAL ASSETS	\$116,000			
IV. INTEREST-SENSITIVE LIABILITIES				
1. Non-maturity deposits, time deposits and "all other"				
(a) Up to 3 months	\$38,283	-0.25%	(\$96)	
(b) 3 to 12 months	\$77,282	-1.20%	(\$927)	
(c) 1 to 3 years	\$22,821	-3.20%	(\$732)	
(d) 3 to 5 years	\$10,090	-7.50%	(\$757)	
(e) 5 to 10 years	\$64	-13.50%	(\$9)	
(f) 10 to 20 years	\$0	-24.50%	\$0	
(g) Greater than 20 years	\$166,140	-36.00%	(\$60,010)	
2. Total Interest-Sensitive Liabilities	\$950		(\$3,269)	
V. NONINTEREST-SENSITIVE LIABILITIES	\$167,000			
VI. TOTAL LIABILITIES	\$167,950		(\$3,269)	(\$3,269)
VII. EQUITY CAPITAL	\$19,000			
VIII. OFF-BALANCE-SHEET POSITIONS				
1. Interest rate contracts				
(a) Up to 3 months	\$4,000	0.25%	\$10	
(b) 3 to 12 months	\$500	1.20%	\$6	
(c) 1 to 3 years	(\$4,050)	3.20%	(\$130)	
(d) 3 to 5 years	(\$4,500)	7.00%	(\$315)	
(e) 5 to 10 years	\$0	11.20%	\$0	
(f) 10 to 20 years	\$0	19.00%	\$0	
(g) Greater than 20 years	\$0	24.60%	\$0	
2. Mortgage and other securitizing contracts				
(a) Up to 3 months	\$1,000	0.10%	\$1	
(b) 3 to 12 months	\$0	0.62%	\$0	
(c) 1 to 3 years	(\$1,000)	1.70%	(\$17)	
(d) 3 to 5 years	\$0	3.10%	\$0	
(e) 5 to 10 years	\$0	3.40%	\$0	
(f) 10 to 20 years	\$0	5.20%	\$0	
(g) Greater than 20 years	\$0	3.60%	\$0	
3. Total Off-Balance-Sheet Positions	\$0		(\$11)	(\$11)
Net Risk Weighted Position				\$5,344.31
Net Position/ Assets				2.87%

V. Use of Internal Measures

A. Supervisory Measure

Except as provided in paragraph B, a bank's measured exposure to interest rate risk will be calculated pursuant to the supervisory measure set forth in section III of this appendix.

B. Use of Internal Measure

During an examination or at the request of a bank, the FDIC will evaluate any internal measure of interest rate risk exposure. If the bank's internal measure is acceptable to the FDIC, in its sole discretion, then the bank's measure may be used in place of the supervisory model in determining the bank's excess measured exposure.

C. Acceptable Internal Measure

In determining whether a bank's internal measure of exposure to interest rate risk is acceptable, the FDIC will consider:

1. Whether the assumptions and structure of the supervisory measure accurately reflect the actual

positions, and whether the internal measure provides a more precise measurement of the change in economic value of the bank;

2. Whether the internal measure makes use of generally accepted techniques in estimating measured exposure;

3. Whether the internal measure is appropriate to the nature and scope of the bank's activities; and

4. Whether the internal measure provides an adequate indication of the exposure of the bank to interest rate risk in all material respects.

D. Requirement to Use Internal Measure

The FDIC may require that a bank use an existing internal measure for purposes of determining interest rate risk exposure if:

1. The supervisory measure does not adequately characterize the interest rate risk of the bank's positions; or

2. Use of the supervisory measure would materially misrepresent the bank's actual interest rate risk exposure.

The excess measured exposure determined by the internal measure would then be utilized to determine the risk-based capital requirement.

E. Reporting Requirements

In addition to completing the reporting requirements associated with the supervisory measure, a bank utilizing the internal measure would also report the interest rate sensitivity of its assets, liabilities and off-balance-sheet positions, as determined by its internal measure, on a separate reporting schedule.

F. Interest Rate Scenario(s)


The interest rate scenario(s) specified for the supervisory model (as set forth in section III.E.

of this appendix) should also be utilized in conjunction with a bank's internal measure.

By order of the Board of Directors.

Dated at Washington, D.C., this 9th day of June, 1993.

FEDERAL DEPOSIT INSURANCE CORPORATION



Hoyle K. Robinson
Executive Secretary

(SEAL)



Supplementary Material

Item

Risk Based Capital Guidelines

Basle Committee on Bank Supervision: Consultive Papers on Netting, Market Risks, and Interest Rate Risk	3
---	---

THE PRUDENTIAL SUPERVISION
OF NETTING, MARKET RISKS AND
INTEREST RATE RISK

Preface to
Consultative proposal by the
Basle Committee on Banking Supervision

Basle

April 1993

PREFACE

1. The Basle Committee on Banking Supervision¹ under the Chairmanship of Mr. E. Gerald Corrigan, President of the Federal Reserve Bank of New York, is today issuing for comment a package of supervisory proposals dealing with netting and market risks, together with an interim approach for the measurement of interest rate risk. Although each of these papers represents a discrete proposal, there are linkages in the implications they would have for banks' adherence to supervisory standards and requirements. The Committee has therefore decided to issue all three papers simultaneously.

2. The issue of the papers has been undertaken with the agreement of the central-bank Governors of the G-10 countries. Comments on the proposals are invited by end-December 1993.

3. The principal objective of the consultative process is to solicit the insights and judgement of private sector institutions and practitioners on the substance of the proposals, particularly in so far as they apply to the dual objectives of meaningful prudential standards and further movement towards regulatory convergence and competitive equality. The Committee recognises that some institutions may face problems in the application of the proposals. One of the objectives of the consultative procedure is to identify the nature and cause of these difficulties and any resulting compliance problems.

4. The package contains proposals for certain modifications to the Basle Capital Accord² of July 1988 which will affect institutions' capital

1 The Basle Committee on Banking Supervision is a Committee of banking supervisory authorities which was established by the central-bank Governors of the Group of Ten countries in 1975. It consists of senior representatives of bank supervisory authorities and central banks from Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, Netherlands, Sweden, Switzerland, United Kingdom, and the United States. It usually meets at the Bank for International Settlements in Basle.

2 In July 1988 the Basle Committee established a common measurement system and a minimum standard for the capital adequacy of international banks in the Group of Ten countries. These arrangements, commonly referred to as the Basle Accord, came into full force at the end of 1992 and have been adopted by numerous other countries.

requirements. The market risk proposals could result in a higher or lower aggregate capital requirement, depending on the risk profile of the individual institution. This is because some of the requirements will substitute for existing credit risk requirements. Moreover, banks may have reduced overall capital charges under the netting proposal to the extent that they have legally valid netting arrangements governing their trading in certain financial instruments. The proposals for interest rate risk do not involve capital charges because they address only the measurement of interest rate risk.

I. Netting

5. The proposal on netting defines the precise conditions under which banks would be permitted to net the credit risks arising from trading in certain financial instruments under the Basle Capital Accord of July 1988. The conditions laid down extend and define more clearly the present netting arrangements in the Accord (these conditions are consistent with the principles laid down in the Lamfalussy report by the Committee on Interbank Netting Schemes published in November 1990). The paper contains a proposed text to amend the Accord in order to recognise certain bilateral netting arrangements. The paper also indicates the Committee's preliminary thinking on the conditions under which multilateral netting might be recognised for capital measurement purposes at some future date.

6. Following the consultation period, it is expected that the proposals for bilateral netting would be implemented relatively rapidly.

II. Market risks

7. The work by the Basle Committee on market risks has been in progress for several years, having started in earnest when the Basle Capital Accord was finalised in July 1988. It was clear at that time that banks' trading activities were expanding rapidly, particularly in the derivative markets, and that the Accord's focus on credit risk would need to be widened, in due course, to encompass market risks. The Committee is now proposing that specific capital charges should be applied to open positions (including derivative positions) in debt and equity securities in banks' trading portfolios and in foreign exchange. Securities held in banks' investment accounts would continue to be covered by the counterparty credit risk requirements of the present Accord and would also become

subject to the measurement of interest rate risk described in the third paper in the package.

8. Parallel work in two other fora have interacted with and influenced the development of capital requirements for banks' market risks. One has been the European Community's attempts to establish a single market in banking and finance. Because of the need perceived in Europe to create a level playing-field between banks and non-banks operating in the same securities markets, the Community has enacted a Capital Adequacy Directive which applies to both banks and securities firms. The coverage of this Directive is rather wider than the Basle Committee's present proposals but in general the methodology and much of the detail in the Capital Adequacy Directive is similar to the approach favoured by the Basle Committee since the outset of its work. Where there are significant differences, notably in the treatment of foreign exchange risk and position risk in equities, the Basle Committee favours a stricter prudential standard for banks. Banks are invited to comment on any problems that may arise from the need to comply with two regimes. The Committee is resolved to collaborate with its colleagues in Brussels with a view to achieving closer convergence.

9. The second forum in which parallel work has been in progress is the Technical Committee of the International Organisation of Securities Commissions, which began to discuss the possibility of common minimum standards for securities firms at that Committee's first meeting in July 1987. The Basle Committee was naturally interested in this project and joint work was undertaken with a view to developing common minimum charges for banks' and securities firms' positions in traded debt securities and equities and related derivative instruments. Unfortunately, these discussions have not led to a successful result because IOSCO has been unable to reach agreement within its own group.

10. While regretting the inability of IOSCO to associate itself with these specific proposals, the Basle Committee has decided to proceed with publication of the proposals because of the urgency of obtaining systematic input from banking institutions and practitioners. The banking industry is the focus of the consultation process. However, in anticipation of broader-based convergence, the overall approach has been designed with a view to its ultimate application to a wider spectrum of institutions.

III. Interest rate risk

11. The market risk proposals to apply capital requirements to debt securities in banks' trading portfolios do not address the overall interest rate risks run by banks, i.e.: the risk that a change in interest rates might adversely affect a bank's financial condition through its effect on all interest-related assets, liabilities and off-balance-sheet items, including the securities which are not held in the trading account. Interest rate risk for a bank is a much wider issue and raises many difficult measurement problems. At the same time, it is a significant risk which banks and their supervisors need to monitor carefully. Analytical work has been going on for a number of years to measure interest rate risk and the progress of this work is described in the third paper in the package.

12. This paper clearly indicates that it is the intention of the Basle Committee to develop a measurement system rather than an explicit capital charge for interest rate risk. Recognising that a certain degree of interest rate mismatching is a normal feature of the business of banking, the Committee holds the view that the existing capital requirements can be regarded as providing adequate protection against interest rate risk exposure in most situations. The measurement system is designed to identify institutions that may be incurring extraordinarily large amounts of interest rate risk. Within that context, it would be left to national authorities to determine what if anything might be done. The range of responses by national authorities might include an explicit capital charge on a case-by-case basis, but the situation could also be dealt with by a number of other supervisory remedies.

13. Following consultation on this paper, it is the intention of the Committee to seek to establish a common reporting framework for interest rate risk as a basis for developing, over time, a common approach to the measurement of the risk.

* * * * *

14. Members of the Basle Committee are issuing these papers in their respective countries. The consultative process will be handled at national level in the first instance and the Committee will coordinate the comments and responses made to its members individually.

THE SUPERVISORY RECOGNITION
OF NETTING FOR
CAPITAL ADEQUACY PURPOSES

Consultative proposal by the
Basle Committee on Banking Supervision

Basle

April 1993

PROPOSAL FOR A CHANGE IN THE SUPERVISORY RECOGNITION
OF NETTING UNDER THE 1988 CAPITAL ACCORD

I. INTRODUCTION AND OVERVIEW

One of the most significant advances of the 1988 Capital Accord was its coverage of the credit risks arising from off-balance-sheet items, including foreign exchange and interest rate related transactions. Careful consideration was given to the possibility of recognising various forms of netting, i.e., for risk weighting the net rather than the gross claims arising out of swaps and similar contracts with the same counterparties. However, at that time, only one particular and rather restrictive form - bilateral netting by novation for the same currency and same value date - was found to be sufficiently robust to be given supervisory recognition.

In November 1990 the BIS published the Lamfalussy Report on interbank netting schemes. It recognised that netting arrangements for both interbank payment orders and forward-value contractual commitments such as foreign exchange contracts have the potential to improve both the efficiency and the stability of interbank settlements, by not only reducing costs but also credit and liquidity risks, provided that certain conditions are met. It concluded that some form of bilateral netting was likely to be legally effective in each G-10 country. The report also concluded that multilateral netting of forward foreign exchange contracts through a central counterparty was likely to be legally enforceable in those countries.¹

The Basle Committee on Banking Supervision agrees with the analysis in the Lamfalussy Report. In this consultative report it proposes that the 1988 Capital Accord should be revised to recognise, in addition to netting by novation, other forms of bilateral netting of credit exposures to the extent that such arrangements are effective under relevant laws and comply with the other minimum standards set forth in the Lamfalussy Report. The minimum standards for netting schemes set out by the Lamfalussy Report are listed in Annex 1. Specific language to amend the Accord is proposed in Annex 2. The revisions would recognise bilateral netting where the

¹ With the exception only of those contracts entered into on the date of a participant's closure in those countries with a "zero-hour" bankruptcy rule.

appropriate national supervisors are mutually satisfied that agreed minimum legal requirements are met.² For banks using the current exposure method, the credit exposure on bilaterally netted forward transactions would be calculated as the sum of the net marked-to-market replacement cost, if positive, plus an add-on based on the notional underlying principal. For banks now using the original exposure method, a reduction in the credit conversion factors applied to bilaterally netted transactions would be permitted on a temporary basis until the market risk-related capital requirements are implemented. At that time the original exposure method would cease to be available for netted transactions.

The Committee also has considered what might guide its future assessment of credit risk in multilateral netting arrangements. It is premature to make proposals for the treatment of multilateral netting schemes, which must await a further analysis when the operational workings particular to the various schemes under development become clearer. However, a discussion of the issues which might provide a basis for a possible approach at some future date appears in Annex 3.

II. LEGAL REQUIREMENTS FOR THE RECOGNITION OF NETTING

The Committee starts from the Lamfalussy Report's observation that no single form of netting arrangement can be identified as appropriate in all jurisdictions. It is also conscious that it is not possible to be absolutely certain that netting in all cases does reduce risk in the absence of experience with successful defence against litigation. For these reasons, the Committee's proposals are deliberately cautious in respect of their legal requirements.

The Committee's role will be to lay down minimum standards which national supervisors would apply. One such standard would require that a particular form of netting contract be sufficiently robust legally. The language proposed in Annex 2 clarifies this standard.

The Committee has examined the issue of walkaway clauses very carefully. A walkaway clause is a provision which permits a non-defaulting counterparty to make only limited payments, or no payment at all, to the

2 When implementing this proposal, it would, of course, be for supervisory authorities to determine how to treat banks that are not internationally active.

estate of a defaulter, even if the defaulter is a net creditor. It is argued that this provision is in practice rarely enforced but that it may provide a useful bargaining tool for counterparties dealing with a defaulter. However, walkaway clauses introduce an element of instability and uncertainty which the Committee sees as unsuitable in a netting environment.³ Therefore, any netting arrangement that contains walkaway clauses would not be considered a qualifying arrangement for the purpose of this proposal.

The criteria set out in Annex 2 represent the minimum legal requirements for internationally-active banks to receive the benefit of net treatment under the Accord; individual national authorities would be permitted, as always, to impose additional requirements or more restrictive conditions. One case where this might happen is the range of instruments which would be entitled to a supervisory benefit from netting, especially in respect of cross-product netting. Cross-product netting might add technical complexity and raise legal issues requiring careful consideration, especially in those jurisdictions where different legal rules apply for different types of contracts. However, the Committee is not aware of any fundamental legal impediments which would necessitate a general ban.

The Committee will promote consultation between national supervisors to facilitate monitoring of adherence to these minimum standards.

III. THE TREATMENT OF BILATERAL NETTING FOR THE PURPOSE OF CAPITAL MEASUREMENT

(a) Under the current exposure method

The present rules in the Accord permit a choice between two methods of calculating the credit exposure on forward obligations. The method used by most major banks (the current exposure method) is to mark each instrument to market, sum the values of all instruments with positive

3 This view is to some extent shared by the market itself since the two existing projects for multilateral clearing houses would not accept in their systems contracts with walkaway clauses, and the International Swap Dealers Association has recently excluded such clauses as a standard feature of its master agreements, although they can still be used as an option by counterparties.

values⁴ to establish the current replacement cost and add to this an amount (an add-on) for potential future exposure that is based on the notional underlying principal of each contract.

(i) The calculation of replacement costs for netted contracts

The replacement cost for those individual transactions subject to each bilateral netting arrangement will be recorded for capital purposes on a net basis to produce a single credit or debit position for each counterparty. Of course, such treatment does not eliminate management's responsibility for having adequate risk management and control systems in place. For example, the current exposure method does not capture "roll-off" exposures arising from the change over time of the net mark-to-market exposure that can result when some of the contracts mature or are settled early, regardless of any movements in interest or exchange rates. Banks should carefully monitor such changes.

The calculation of replacement costs on a net basis will permit a considerable alleviation of the capital charge on portfolios under a netting agreement. According to a review of the relative proportion of replacement cost and add-ons in the capital charge for a sample of swaps or foreign exchange contracts portfolios in different countries, the replacement cost can often amount to 50% to 80% of the total capital charge (replacement cost plus add-on). Assuming that bilateral netting reduces replacement cost by up to 50%, this could represent an alleviation of 25% to 40% in the capital charge.

(ii) The calculation of add-ons for netted contracts

For netted transactions, the Committee favours retaining the Accord's present approach to calculating add-ons for potential future exposure, i.e., multiplying the total notional amount of each transaction by the appropriate percentage. Various methods have been considered for calculating add-ons in a bilateral netting environment. However, the Committee has not yet identified any evidence suggesting that the need for add-ons declines appreciably in such an environment. Generally, netting would be expected to reduce the level of exposure, but it may not have much of an effect on the likely changes in exposure, leaving potential future exposure essentially unchanged. Although the Committee is open to the

⁴ Instruments with positive value are those that have a market value greater than zero.

continuing exploration of alternative easy-to-understand approaches that might achieve better results, the current lack of a compelling case for any of the alternative approaches weighs heavily against their adoption. The Committee recognises some imperfections in the present methodology. For example, netting can reduce potential changes in exposure in particular portfolios, in which case the present approach could be considered too conservative, and it can increase potential changes in exposure in other portfolios, which would suggest the present approach sometimes might not be conservative enough. Nevertheless, the Committee favours retaining the general approach of the Accord unless demonstrably superior alternatives are put forth.

(b) Under the original exposure method

Under the original exposure method of calculating the credit exposure on forward obligations there is no separate assessment of the current and potential future exposure. It is therefore not possible to measure the amounts by which credit exposures can be netted. A large majority of the Committee feels this fact makes the original exposure method inherently unsuitable for assessing credit risk in a netting environment. As a result, this majority believes no internationally active bank should be permitted to receive supervisory recognition of netting contracts if it uses this method. A small minority believes supervisory recognition can be given relying on the expectation that credit risk will be reduced by netting even if it is not precisely measured. The Committee has agreed that supervisory recognition can be given on a temporary basis in the form of lower credit conversion factors. The suggested reductions in credit conversion factors are specified in Annex 2.

Minimum standards for netting schemes
set out by the Lamfalussy report

- I. Netting schemes should have a well-founded legal basis under all relevant jurisdictions.
- II. Netting scheme participants should have a clear understanding of the impact of the particular scheme on each of the financial risks affected by the netting process.
- III. Multilateral netting systems should have clearly-defined procedures for the management of credit risks and liquidity risks which specify the respective responsibilities of the netting provider and the participants. These procedures should also ensure that all parties have both the incentives and the capabilities to manage and contain each of the risks they bear and that limits are placed on the maximum level of credit exposure that can be produced by each participant.
- IV. Multilateral netting systems should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single net-debit position.
- V. Multilateral netting schemes should have objective and publicly-disclosed criteria for admission which permit fair and open access.
- VI. All netting schemes should ensure the operational reliability of technical systems and the availability of back-up facilities capable of completing daily processing requirements.

Proposed amendment to the 1988 Capital Accord for bilateral netting

In the last sentence of the first paragraph on page 28 (Annex 3) of the 1988 Capital Accord the word "are" would be replaced with "may be".

The language below would replace page 30 (Annex 3) of the 1988 Capital Accord in respect of the recognition of bilateral netting for the purpose of calculating capital requirements. The footnote numbers are as they would appear in the revised Capital Accord.

"Careful consideration has been given to the issue of bilateral netting, i.e., weighting the net rather than the gross claims arising out of swaps and similar contracts with the same counterparties.⁶ The Committee is concerned that if a liquidator of a failed counterparty has (or may have) the right to unbundle netted contracts, demanding performance on those contracts favourable to his client and defaulting on unfavourable contracts, there is no reduction in counterparty risk.

Accordingly, it has been agreed that:

- (a) Banks may net transactions subject to novation under which any obligation between a bank and its counterparty to deliver a given currency on a given value date is automatically amalgamated with all other obligations for the same currency and value date, legally substituting one single amount for the previous gross obligations.
- (b) Banks may also net transactions subject to any legally valid form of bilateral netting not covered in (a), including other forms of novation.
- (c) In both cases (a) and (b), a bank will need to satisfy its national supervisor that it has:⁷

6 Payments netting, which is designed to reduce the operational costs of daily settlements, will not be recognised in the capital framework since the counterparty's gross obligations are not in any way affected.

7 In cases where an agreement as described in (a) has already been recognised prior to the effect of this amendment to the Accord, the supervisor will determine whether any additional steps consistent with the requirements below are necessary to satisfy itself of the legal validity of the agreement.

- (1) a netting contract or agreement with the counterparty which creates a single legal obligation, covering all included transactions, such that, in the event of a counterparty's failure to perform due to default, bankruptcy or liquidation, the bank would have a claim or obligation, respectively, to receive or pay only the net value of the sum of unrealised gains and losses on included transactions;
- (2) written and reasoned legal opinions that, in the event of a legal challenge, the relevant courts and administrative authorities would find the bank's exposure to be such a net amount under:
 - the law of the jurisdiction in which the counterparty is chartered and, if the counterparty is a branch of a foreign bank, then also under the law of the jurisdiction in which the branch is located;
 - the law that governs the individual transactions; and
 - the law that governs any contract or agreement necessary to effect the netting.

The national supervisor, after consultation when necessary with other relevant supervisors, must be satisfied that the netting is enforceable under the laws of each of the relevant jurisdictions⁸;

- (3) procedures in place to ensure that the legal characteristics of netting arrangements are kept under review in the light of possible changes in relevant laws.

Contracts containing walkaway clauses will not be eligible for netting for the purpose of calculating capital requirements pursuant to this Accord.

For banks using the current exposure method, credit exposure on bilaterally netted forward transactions will be calculated as the sum of: the net marked-to-market replacement cost, if positive, plus an add-on

8 Thus, if any of these supervisors is dissatisfied about enforceability under its laws, the netting contract or agreement will not meet this condition and neither counterparty could obtain supervisory benefit.

- 3 -

based on the notional underlying principal.⁹ The scale of add-ons to apply will be the same as those for non-netted transactions as set out in this Annex. The Committee will continue to review the scale of add-ons to make sure they are appropriate. In the case of foreign exchange contracts and other similar contracts, in which notional principal is equivalent to cash flows, total notional principal would be determined by reference to the pays or receipts with the netting counterparty on each value date, after taking account of netting of amounts falling due on each value date in the same currency. The reason for this is that offsetting contracts in the same currency maturing on the same date will have lower potential future exposure as well as lower current exposure.

The original exposure method may also be used for transactions subject to netting agreements which meet the above legal requirements until market risk-related capital requirements are implemented, at which time the original exposure method will cease to be available for netted transactions. The conversion factors to be used during the transitional period when calculating the credit exposure of bilaterally netted transactions will be as follows:

Maturity	Interest rate contracts	Exchange rate contracts
Less than one year	0.35%	1.5%
One year and less than two years	0.75%	3.75%
		(i.e. 1.5% + 2.25%)
For each additional year	0.75%	2.25%

These factors represent a reduction of approximately 25% from those on page 29 of the Accord."

⁹ Supervisors will take care to ensure that the add-ons are based on effective rather than apparent notional amounts.

Multilateral nettingPossible approach for supervisory treatment at some future date(a) General considerations

Multilateral netting is designed to extend the benefits of netting to cover contracts which originate with any of a group of counterparties that participate in the netting arrangement, instead of with just a single counterparty as in bilateral netting. This can be achieved in practice by netting all transactions that originate bilaterally through a central counterparty - a clearing house. The legal techniques for achieving this netting may vary, but the result will be that for every eligible transaction agreed by a pair of members, the clearing house would be interposed as the common legal counterparty to each member, and the members would have no obligations towards each other under the deal. For each member, the clearing house would maintain a running, legally binding net position in each currency and each value date eligible for netting, all subject to a binding netting agreement between the member and the clearing house. Thus, for each member of the clearing house, multiple transactions that originate with many counterparties can be amalgamated and netted. As a result, in a well-designed multilateral netting scheme, exposures would generally be a fraction of those that would arise in a non-netting environment.¹

If a clearing house member defaults, a foreign exchange clearing house would have to replace the cash flows that the defaulting member's portfolio of foreign exchange contracts would have produced. It would establish immediately how much it should pay to, or claim from, the

1 For example, according to market participants, simulations suggest that multilateral foreign exchange netting would reduce replacement costs by about 80% to 85% for a given set of transactions conducted in the absence of netting, and would reduce settlement flows by about 75% compared with the payments that would be needed to settle the corresponding gross obligations. (Estimates of the benefits of multilateral netting can vary somewhat depending on the specific aspects of the simulations, such as the nature of the transactions netted, the number of clearing-house members and the patterns of trading.) Consistent with the Accord, this paper is concerned only with capital requirements for exposures related to replacement costs.

defaulting member, which would be the replacement value of the member's portfolio. In the event of a claim on the defaulter, clearing house members would have to cover the shortfall, since the clearing house may have very limited resources of its own.

Losses could be recovered from the membership in different ways. In a defaulter-pays (or centralised) clearing house, each member would be obliged to post collateral equal to its own net debit with the clearing house. In the event of a member's default, the clearing house would seize the defaulting member's collateral to cover the amount in default. In a survivors-pay (or decentralised) clearing house, a loss allocation rule would apply to the non-defaulting, surviving members. For example, losses could be allocated in proportion to a measure of the surviving members' bilateral relationship to the defaulting member, such as notional bilateral exposures to the defaulting member.²

However, as a practical matter, it could be misleading to make a strong distinction between the survivors-pay and the defaulter-pays models. In practice, multilateral netting schemes could be a hybrid of these models. That is, members would be obliged to reimburse the clearing house for losses according to a predetermined loss allocation rule, but losses to be allocated to survivors would be reduced in the first instance by collateral posted by the defaulting member. In addition, even nominal defaulter-pays schemes must include an allocation rule for losses in the event that a defaulter's posted collateral is inadequate to cover its net debit, for whatever reason.

The Lamfalussy Report sets out six minimum standards for netting schemes (see Annex 1). For example, multilateral netting arrangements will be expected to have, among other things, safeguards to address settlement risk in a responsible manner, including risk controls such as internal limits, adequate and reliable liquidity support, and appropriate technical back-up facilities. The adherence of multilateral schemes to these standards will be monitored by central banks and other relevant

2 Notional bilateral exposures arise from the bilateral transactions that originating members submit to the clearing house for netting, and represent the bilateral positions that would have resulted in the absence of multilateral netting. They are notional (and have no legal standing) since once the transaction is accepted for netting by the clearing house, it becomes the legal counterparty to each member.

authorities. However, each national supervisor whose banks belong to a multilateral netting arrangement should be satisfied that the standards are met before extending supervisory recognition to the netting performed under the scheme.

(b) Capital requirements under multilateral netting

(i) Capital requirements for current exposure

Under any multilateral netting arrangement, there must be an agreed formula whereby any losses suffered by the clearing house from the default of any of the members would be allocated to other members, even if the possibility of loss for the clearing house is remote as a result of comprehensive collateral arrangements. This formula will provide the current exposure for each member. It appears that the multilateral foreign exchange netting arrangements now being developed will rely on procedures that would allocate the sharing of a loss pro rata according to the pattern of notional bilateral claims on the defaulting member. That is, if a member's default (or close-out) caused a replacement loss to the clearing house, a bank would be allocated a loss share in proportion to its notional bilateral exposure to the defaulting (or closed-out) member. If the clearing house requires collateral the loss to be allocated would be the residual loss (the amount by which the replacement loss exceeded the value of the collateral).

A starting-point would be to regard a bank's current exposure as the sum of the loss shares that it would be allocated in the event of the default (or close-out) of each clearing house member to which it had a notional bilateral exposure, after factoring in the use of collateral available to the clearing house.³ The sum of the loss shares provides an analogous treatment with non-netted contracts. In the case of non-netted contracts, the exposure is the sum of the exposure to the potential default

3 In the case of a clearing house that on a daily basis marks all outstanding contracts to market and collects from its members daily losses and pays out to its members daily gains (i.e., collects and pays variation margin), the capital treatment would be consistent with that of exchange-traded instruments in footnote 3 of Annex 3 of the Accord. Specifically, no capital would be required. In cases where a clearing house requires its members to collateralise fully or partially potential losses, but does not collect or pay variation margin, the present treatment of collateral in Section II(iv) of the Accord would apply.

of each counterparty. Of course, the effect of multilateral netting will tend to lower this exposure.

At this time, the Committee has not reached conclusions about the level of the capital requirements that should be attached to this measure of current exposure. This question will be kept under review in the light of the continuing development of the multilateral foreign exchange netting initiatives and their oversight by central banks and other relevant authorities. In due course, further consultation will be needed.

(ii) Capital requirements for potential future exposure

The capital requirements under consideration by the Committee would also require a charge for potential future exposure. However, potential future exposure for a member of a multilateral netting facility would be determined by a combination of the evolution of underlying rates and prices, the changing pattern of clearing house exposure to other members, and the loss allocation procedure in place. A highly simplified approximation will be required to determine the add-ons needed to cover the resulting exposure.

(c) Risk weights for the clearing house

Banks will have exposure to the clearing house for example through funding and liquidity back-up, to which a risk weight would need to be applied. Consistent with the Accord, the weight applicable to claims on a clearing house would be the normal 100% private-sector weighting, unless the clearing house is incorporated as a bank and becomes subject to bank supervisors' rules, in which case a 20% weight would be appropriate, or the host government or central bank has given a clear and unequivocal guarantee for all of its obligations, in which case a zero weight would be justified.

(d) Summary questions

- (i) If multilateral netting arrangements are recognised, the Committee would intend to apply the same legal requirements as is proposed for the recognition of bilateral netting arrangements. If market participants think different standards should apply, please explain why.
- (ii) The Committee would welcome comments and suggestions regarding the capital requirements for current exposure under multilateral netting discussed in Section (b)(i) above.

- (iii) The Committee would welcome comments and suggestions regarding the capital requirements for potential future exposure under multilateral netting discussed in Section (b)(ii) above.

THE SUPERVISORY TREATMENT
OF
MARKET RISKS

Consultative proposal by the
Basle Committee on Banking Supervision

Basle

April 1993

CONTENTS

	<u>Page</u>
<u>Introduction</u>	1
Section 1 <u>Framework for applying capital requirements to market risks</u>	
I. Rationale for the proposals	4
II. The application of the framework	6
III. Consolidated supervision of market risk	12
Section 2 <u>Debt securities</u>	
I. Specific risk	14
II. General market risk	17
III. Debt derivatives	21
Section 3 <u>Equities</u>	
I. Specific and general market risk	27
II. Equity derivatives	29
Section 4 <u>Foreign exchange risk</u>	
I. Measuring the exposure in a single currency	33
II. Measuring the foreign exchange risk in a portfolio of foreign currency positions and setting the capital requirement	37
Annexes	
1. Glossary	43
2. Debt securities: risk weights	48
3. Debt securities: horizontal offsetting	49
4. Debt securities: sample calculation	50
5. Debt securities and equities: alternative treatment for options	52
6. Summary of proposed treatment of interest rate derivatives	55
7. Equities: illustration of x plus y methodology	57
8. Summary of proposed treatment of equity derivatives	58
9. Example of the shorthand measure of foreign exchange risk	59

THE SUPERVISORY TREATMENT OF MARKET RISKSINTRODUCTION

1. The Basle Committee on Banking Supervision ("the Committee") is issuing the attached proposals for the supervisory treatment of market risks incurred by banks. Market risk is the risk of losses in on and off-balance-sheet positions arising from movements in market prices, including interest rates, exchange rates and equity values. The basic thrust of the proposals is to require capital requirements for open positions in debt securities, equities and foreign exchange. It is intended that, following a comment period, the proposed new capital requirements would be integrated with the Basle Capital Accord ("the Accord").
2. The primary objective of the Accord, adopted in July 1988, was to establish minimum capital standards designed to protect against credit risk. Credit risk was and remains the major risk facing banking institutions. At the time, however, it was recognised that in due course the capital adequacy framework would have to be broadened to take direct and explicit account of market risk. In the intervening period, changes in technology, in market practices and in the nature of many "banking" activities have made it even more important that the 1988 Accord be broadened to take into account market risk.
3. In these circumstances the Committee has set out to develop a framework for integrating into the 1988 Accord an approach to assessing explicit capital charges for market risk that would satisfy two principal objectives; first, the framework for estimating the amount of such capital charges and the manner in which such capital charges could be satisfied should constitute a minimum prudential standard relative to the potential for losses that might be incurred for a given portfolio of open positions in debt and equity securities in the trading portfolio and in foreign exchange; second, the framework should be one in which the capital charges for each class of instruments (i.e. debt, equities and foreign exchange) would be roughly equivalent in economic terms so as not to create artificial incentives favouring one class of instrument over others.
4. The Committee recognises fully that achieving these dual objectives represents something of a challenge, especially in a setting

- 2 -

in which innovation and change in banking and financial markets continue at a very rapid pace. However, the very fact of this extraordinarily rapid pace of change underscores the Committee's belief that the time has come to solicit the views of market participants on the approaches to this task which the Committee has in mind.

5. Accordingly, with the consent of the Governors of the Group of Ten central banks, the Committee is inviting comments on the proposals described in this paper to apply capital requirements to banks for the market risks arising from position-taking in debt and equity securities in the trading portfolio and in foreign exchange. The framework would also encompass positions in many of the derivative instruments used in each of these three principal lines of activity. Section 1 describes the rationale for the framework and considers what changes might be needed to the 1988 Capital Accord. Sections 2, 3 and 4 propose methodologies for computing capital charges for open positions in debt securities, equities and foreign exchange respectively.

6. The Committee is well aware of the discussions in the European Community which have resulted in the adoption of a Capital Adequacy Directive which covers much of the same ground. The proposals contained herein are in many cases identical to the Capital Adequacy Directive. Article 14 of that Directive provides for the possibility of revision, in the light of market innovation and developments in international regulatory fora, within a period of three years. The Committee believes it is essential that the proposals developed in different fora be as consistent as possible and is therefore keen to develop an international agreement which would apply to all the major market players, both inside and outside the EC. However, because the consultative process will, of necessity, be long and the phased implementation even longer, it is the Committee's judgement that its internal deliberations cannot proceed further without the benefit of market participants' reactions to the overall approach.

7. The primary purpose of the consultative process is to seek market reactions to the specific methodologies proposed in Sections 2-4. The proposals in Sections 2 and 3 for debt and equity securities in the trading portfolio have been designed in such a way that eventually they may be applied to both banks and securities firms. These proposals contain certain features which bank supervisors acting on their own would not necessarily favour but are prepared to adopt in the hope that further

convergence with securities regulators will be achieved at some future date. Thus, while the focus of the consultative process is the banking industry, the overall approach has been designed with a view toward its ultimate application to a wider spectrum of institutions.

8. Members of the Basle Committee are issuing these proposals in their respective countries. The consultative process will be handled at national level in the first instance and the Committee will coordinate the comments and responses made to its members individually. Eight months will be the maximum period envisaged for consultation (i.e. to end-December 1993).

9. After careful consideration of all the comments received, the Committee will review the proposals with the intention of issuing a formal amendment to the Capital Accord. It is envisaged that an extended transitional period to implementation (i.e. to end-1996 at the earliest) would be needed to enable market participants to develop the necessary reporting and control systems.

FRAMEWORK FOR APPLYING CAPITAL REQUIREMENTS TO MARKET RISKSI. Rationale for the proposals

1. The 1988 Accord sets out an agreed framework for measuring capital adequacy and a minimum standard to be achieved by banks engaged in international business. That framework has been progressively implemented in the national supervisory arrangements not only of G-10 member countries but also of a large number of other countries including all the world's major banking centres. The Accord came into full effect on 31st December 1992.

2. While the Accord was mainly directed towards the assessment of capital in relation to credit risk (the risk of counterparty failure¹), it also stated that the Committee was examining other risks which need to be taken into account by supervisors in assessing overall capital adequacy. Deregulation of interest rates and capital controls, the liberalisation of banks' permitted range of activities and the rapid development of financial markets have all increased the opportunities for banks to incur market risks. In particular, banks' trading in derivative products has continued to grow at a rapid rate. Although the recent survey of foreign exchange market activity issued by the BIS reported a slowing-down in the growth of activity between April 1989 and April 1992, foreign exchange trading remains at a high level. Recent experience in the financial markets, particularly in relation to the ERM, has heightened sensitivity to trading risks and reinforced the Committee's belief that supervisors of international banks need to update their supervisory methods to ensure that adequate capital is available to cover banks' exposure to market-related risks.

3. The current proposals are necessarily more complex than existing capital requirements and focus on a somewhat shorter time horizon, commensurate with the difference in perspective between banking

1 For a definition of 'counterparty risk and some other technical terms used in this paper, a glossary is supplied in Annex 1.

and trading activities. They are not, however, intended to substitute for banks' own internal control and risk management procedures. The management of risk remains the task of banks and not the task of supervisors.

4. Although the prudential objective is similar for each of the three risks, the particular methodologies used to measure risks, the reporting frameworks, and some of the assumptions used in tabulating open positions vary. This reflects the differing characteristics of the foreign exchange, traded debt, and equity markets. The Committee has undertaken substantial statistical research to ensure that the capital charges calculated according to the varying methodologies broadly satisfy a common economic criterion. The test applied was that the capital required should cover adequately a high proportion of the losses that would have been experienced in any two-week holding period in a range of representative portfolios over the last five years.

5. There is no methodology that can fully anticipate price movements of assets or classes of asset based on historical experience. These are therefore minimum standards. As with existing capital requirements, national supervisors would be free to apply higher minimum standards than those indicated to individual banks in their jurisdictions or to their banking systems generally.

6. The Committee favours capital requirements in preference to limits as the appropriate instrument for international convergence in the treatment of market risk. Unlike limits, capital requirements give banks added incentives to use hedging techniques, while ensuring that a prudent capital cushion remains available to cover possible losses. They also enable bank managements to retain flexibility in managing their risks by assessing the risk/reward profile and allocating capital accordingly. Nonetheless, the Committee believes limits have an appropriate place in national supervisory arrangements. Individual national supervisors are encouraged to maintain limits where they judge it appropriate to do so, both as a means of imposing absolute ceilings on banks' exposures and of reinforcing internal controls. For example, supervisors who use limits to restrain position-taking in foreign exchange markets would be free to continue to use limits in conjunction with the proposed capital requirements on open positions.

II. The application of the framework

7. Two issues need to be addressed in determining a capital standard. The first is to calculate how much capital would be required to support varying portfolios of open positions in debt securities, equities and foreign exchange. The second is to define how these capital charges should be met.

(a) Capital requirements

8. The capital charges proposed for debt securities and equities would apply to the current market value of items in banks' trading books.² Trading positions are understood to mean the bank's proprietary positions in financial instruments³ which are taken on with the intention of benefiting in the short term from actual or expected differences between their buying and selling prices or of hedging other elements of the trading book, or which are held for short-term resale, or in order to execute a trade with a customer. Inclusion in or exclusion of items from the trading book would be in accordance with objective procedures including, where appropriate, accounting standards in the institution concerned, such procedures and their consistent implementation being subject to review by the relevant supervisory authority.

9. Items not covered by these criteria, for example those reverse sale and repurchase agreements which are not integral to the trading book, would continue to be subject to the present capital requirements for credit risk as set out in the 1988 Accord, along with other banking assets.⁴ It would also seem reasonable to allow banks to exclude from their trading books derivative products which are taken on explicitly to hedge positions in the banking book. The members of the Committee intend to monitor carefully the way in which banks allocate financial instruments between the trading book and other accounts and will seek to

2 The proposals in respect of foreign exchange risk are designed to apply to banks' total currency positions, some of which would be reported at book value.

3 Including positions in derivative products and interest rate instruments.

4 All interest rate related on and off-balance-sheet positions would fall within the measure of interest rate risk described in the third paper in the present package.

ensure through the examination process or other means that no abusive switching designed to minimise capital requirements occurs. In particular, they will be vigilant in seeking to prevent "gains trading" in respect of securities which are not marked to market, through which banks improve their short-term profitability by realising accrued profits and deferring the realisation of losses. The Committee will seek to clarify over time the appropriate distinction between the trading book and the other business of banks.

10. The proposals for debt securities and equities are based upon the so-called "building block" approach which differentiates specific risk requirements from those for general market risk.⁵ Specific risk is the risk of loss caused by an adverse price movement of a security (or a derivative product linked to it) due principally to factors related to the issuer of the security. Specific risk has some parallels with, but is broader than, credit risk in the sense that it exists whether the position is long or short. General market risk is the risk of loss caused by an adverse market movement unrelated to any specific security. This dual approach has been chosen because it provides a sound conceptual and practical basis for permitting offsetting of matched (i.e. long and short) positions.

11. The proposals for foreign exchange risk are intended to apply specifically to banks, but they could equally well be used by other institutions. There is a two-step approach to the measurement of the risk. The first task is to measure the exposure in each currency, where the main challenge is to decide how to treat derivatives involving foreign currency risk, especially options. The second task is to measure the risks inherent in a mix of long and short positions in different currencies. It is proposed that banks should have a choice between measuring this in a relatively rough broadbrush manner or using computer simulations based on past exchange rate relationships.

12. While the present proposals cover the position risk in foreign exchange, debt securities and equities, they do not address counterparty

5 In discussions with the securities regulators, several have indicated a wish to retain their existing comprehensive measures for equities. This could be acceptable subject to the conditions laid down in paragraph 5 of Section 3.

or settlement risk. However, the 1988 Accord already covers the counterparty risk in some over-the-counter⁶ derivatives by calculating the replacement cost of the contract, measured as the current mark-to-market value (if positive) plus an "add-on" to reflect the potential increase in the exposure over the remaining life of the contract.

13. Each bank affected by these proposals would be expected to monitor and report the position outstanding for each category of risk against which a capital requirement would be applied. The bank's overall minimum capital requirement would be:

- the existing credit risk requirements for the banking business, e.g. loans, investments and the counterparty risk on over-the-counter derivatives;
- the capital charges for debt and equity securities in the trading portfolio, as described in Sections 2 and 3;
- the charges for foreign exchange risk described in Section 4.

14. The market risk proposals could result in a higher or lower aggregate capital requirement than those to which banks are already subject under the present credit risk framework, depending on the risk profile of the individual institution. In the case of debt securities and equities held in the trading book, the proposed market risk charges would substitute for the credit risk weights presently applied to the balance-sheet assets. Whether this would lead to higher capital charges on balance would depend on the pattern of each bank's book and on the category of issuer. A bank with well-hedged positions or with significant holdings of high grade corporate debt securities could well have a lower capital requirement than at present.

15. The measure in respect of foreign exchange risk would in principle be additive in the sense that no compensating reduction in credit risk is being proposed. However, in the simplified approach described in Section 4 on foreign exchange risk, it is proposed to apply a de minimis exemption which would enable those banks with negligible business in foreign currency to escape any capital charge.

6 Instruments traded on approved exchanges which require daily receipt and payment of cash variation margin, where the counterparty risk is in essence an intra-day one, are exempt from counterparty risk weightings in the Accord.

16. Although regular reporting would in principle take place only at intervals (in most countries quarterly), banks would be expected to manage the market risk in their trading portfolio in such a way that the capital requirements would be met on a continuous basis, i.e. at the close of each business day. Supervisors have at their disposal a number of effective measures to ensure that banks do not "window-dress" by showing significantly lower market risk positions on reporting dates. Banks would also, of course, be expected to maintain strict risk management systems to ensure that intra-day exposures are not excessive.

17. In the belief that all risks should be captured when they arise, it is proposed that all transactions, including forward sales and purchases, should be reported on a trade date basis. If, however, its use would not produce a material difference, it is suggested that national authorities could choose to allow settlement date reporting, so long as this was on a continuous basis.

(b) Satisfying the capital charges

18. Once the capital charges have been calculated as described in the preceding paragraphs, the second step is to define how those requirements can be satisfied. The definition of capital for banks set out in the 1988 Accord differs from the definition of capital commonly used for securities firms and from the definition of capital in the EC's Capital Adequacy Directive. This can be justified by the nature of the risks stemming from traditional banking activities and the nature of those arising from trading activities. In particular, bank assets are often illiquid and not easily marked to market, and therefore are typically reported at book value. This treatment is consistent with the inherent going-concern nature of banking, in which recognising short-term fluctuations in the value of assets held for the long run is generally inappropriate. In contrast, trading positions are marked to market frequently, reflecting the shorter-term nature of these positions and the market risk to which they are exposed. Capital requirements for market risk thus tend to be far more volatile than those for credit risk and a more flexible source of capital may be considered appropriate. For example, securities firms are customarily permitted to include in eligible capital a high proportion of short-term subordinated debt, often subject to lock-in provisions, a facility not currently available to banks.

19. Were the proposals to be designed for banks alone, the Basle Committee would favour the retention of the present definition of capital in the Basle Accord to cover all banks' capital requirements. However, it is still hopeful that over time it may be possible to move towards meaningful convergence in the capital requirements of banks and securities houses. It is also aware that many banks affected by these proposals will be operating under the provisions of the Capital Adequacy Directive.⁷ It therefore proposes⁸ that banks be permitted, at the discretion of their national supervisors, to employ an additional form of subordinated debt for the sole purpose of meeting a part of the capital requirements for market risks up to certain limits described in paragraph 21. For such instruments to be eligible, they need, if circumstances demand, to be capable of becoming part of an institution's permanent capital and thus be available to absorb losses. They should, therefore, at a minimum:

- be unsecured, subordinated and fully paid up;
- have an original maturity of at least two years;
- not be repayable before the agreed repayment date unless the supervisor agrees;
- be subject to a lock-in clause which stipulates that neither interest nor principal may be paid (even at maturity) if such payment would mean that the capital allotted to the trading-book for debt securities and equities would fall below a threshold 20% above the required capital laid down in these proposals.

20. For banks, any such debt would form a third tier of capital, supplementary to the existing tiers 1 and 2. There are three principal

7 However, Article 14 of this Directive requires an examination and, if necessary, a revision of the Directive within three years of its implementation in the light of the experience acquired in applying it "taking into account market innovation and, in particular, developments in international fora of regulatory authorities".

8 One member country objects to the inclusion of tier 3 capital. That country would have been prepared to accept tier 3 if harmonisation had been achieved with securities regulators. It believes, however, that the divergences that currently exist, at both national and international levels, are of such magnitude that it would be inappropriate to widen the definition of capital at this time.

differences between this and the subordinated debt currently permitted as a subset of tier 2 in the 1988 Accord. First, the minimum original maturity is significantly shorter (two years as opposed to five years). Second, the debt is valued at par while in the 1988 Accord it is amortised over the last five years of life. Third, and most important, tier 3 has the lock-in feature which means that, because of the restriction on payment, the debt is effectively available to absorb losses if allotted capital falls below an early-warning level 20% above the minimum. The distinction drawn between tier 2 and tier 3 subordinated debt is not due to judgements about relative quality but to the fact that short-term debt with a lock-in is more appropriate for trading activities whereas longer term debt is more appropriate to normal banking business.

21. The Committee proposes that the following limitations should be applied to the use of tier 3 by banks:

- banks would be entitled to use such debt solely to support the market risks in the trading book for equities and debt securities (including the specific risk in the trading book). This means that any capital requirement arising in respect of banks' foreign exchange risk, or in respect of credit and counterparty risk, would need to be met by the existing definition of capital in the 1988 Accord;
- tier 3 capital would be limited to 250% of tier 1 capital allocated to support securities trading-book risks, which is consistent with the EC's Capital Adequacy Directive applicable to both banks and securities firms. This means that a minimum of about 28½% of trading-book risks would need to be supported by tier 1 capital not required to support risks in the remainder of the book;
- tier 2 elements could be substituted for tier 3 insofar as the overall limits in the 1988 Accord were not breached, that is to say total tier 2 capital could not exceed total tier 1 capital, and long-term subordinated debt could not exceed 50% of tier 1 capital;
- since several members of the Committee do not favour the use of tier 3 capital for banks at all, the Committee is also contemplating, pending further developments in the convergence process more generally, retaining the principle in the present accord that tier 1 capital should represent at least half of

total capital, i.e. that the sum total of tier 2 plus tier 3 capital should not exceed total tier 1.

National supervisors would have discretion to refuse the use of short-term subordinated debt for individual banks or for their banking systems generally.

III. Consolidated supervision of market risk

22. The Committee has for some years strongly supported the concept of consolidated supervision of risk on the grounds that problems in one affiliate could well have a contagion effect on the group as a whole. Consolidated supervision reduces the scope for risks to escape measurement by being held in unsupervised locations and ensures banking groups have group capital to support all their risks, so preventing excessive gearing up on the same capital base. Consistent with the principle of consolidated supervision, it is proposed that supervisors have discretion to permit banking and financial entities in a group which is running a global consolidated book and whose capital is being assessed on a global basis to report short and long positions in exactly the same instrument (e.g. currencies, equities or bonds), on a net basis, no matter in which location they are booked.⁹

23. Nonetheless, because such reporting might well lead to a reduction in the capital charge for market risks by allowing positions in different affiliates to offset, supervisors need to be alert to the possible understatement of risk. This may occur, for example, where there are obstacles to the repatriation of profits from a foreign subsidiary, where there are potential tax liabilities or where a bank's ownership is less than 100%. In such circumstances, supervisors would be expected to demand that the individual positions be taken into the measurement system without any offsetting against positions in the remainder of the group. Moreover, all supervisory authorities would retain the right to continue to monitor the market risks of individual entities on a non-consolidated

⁹ The positions of less than wholly-owned subsidiaries would be subject to the generally accepted accounting principles in the country where the parent company is supervised.

basis to ensure that significant imbalances within a group do not escape supervision.

24. The Committee is well aware that banks can reduce positions at the close of business by engaging in a transaction with an affiliate in a later time zone (i.e. "passing" its position). This may be a perfectly legitimate device to enable banks to manage their positions continuously or to reduce intra-group imbalances. If all positions were measured at the same moment in time no problem would arise. In practice, however, reporting is likely to take place on the basis of accounts drawn up at the end of a business day and it is possible, by passing a position continuously west and over the date-line, for an exposure to escape reporting altogether. Supervisors will, therefore, be especially vigilant in ensuring that banks do not pass positions on reporting dates to affiliates whose positions escape measurement or across the international date-line.

DEBT SECURITIES

1. This section describes a framework for measuring the risk of holding or taking positions in debt securities in the trading account. The instruments covered would include all fixed-rate and floating-rate debt securities and instruments that behave like them, including non-convertible fixed-rate preference shares.¹⁰ The basis for dealing with derivative products is considered in III below.

2. The minimum capital requirements would be expressed in terms of two separately calculated charges, one applying to the "specific risk" of each security, whether it is a short or a long position, and the other to the interest rate risk in the portfolio (termed "general market risk") where long and short positions in different securities or instruments could be offset.

I. Specific risk

3. The capital charge for specific risk would be designed to protect against an adverse movement in the price of an individual security. In measuring the risk, offsetting would be restricted to matched positions in the identical issue (including positions in derivatives). Even if the issuer is the same, no offsetting would be permitted between different issues since differences in coupon rates, liquidity, call features, etc. mean that prices may diverge in the short run.

4. In establishing appropriate capital charges for specific risk the Committee has sought to classify debt securities into a number of broad categories of issuer in a manner similar to that used by both

¹⁰ Traded mortgage securities and mortgage derivative products possess unique characteristics because of the risk of pre-payment. Accordingly, for the time being, no common treatment is proposed for these securities, which would be dealt with at national discretion. A security which is the subject of a repurchase or securities lending agreement would be treated as if it were still owned by the lender of the security, i.e. it would be treated in the same manner as other securities positions.

banking and securities regulators in their present capital regimes. It is proposed that the specific risk would be graduated in five broad categories as follows:

government	0.00%
qualifying	0.25% (residual maturity 6 months or less)
	1.00% (residual maturity between 6 and 24 months)
	1.60% (residual maturity exceeding 24 months)
other	8.00%

5. The category "government" would include all forms of government¹¹ paper including bonds, Treasury bills and other short-term instruments, but national authorities would reserve the right to apply a specific risk weight to securities issued by certain foreign governments, especially to securities denominated in a currency other than that of the issuing government.

6. "Qualifying" would apply to issues which meet the criteria set out in the following paragraph.¹² Three different weights are proposed depending on the residual maturity of the issue in question. This is because the uncertainty about creditworthiness increases with the life of the security, as reflected in the fact that spreads between corporate and government securities tend to widen along the maturity spectrum.

7. Qualifying items would include securities issued by public sector entities and multilateral development banks, plus other securities that are:

- rated investment-grade¹³ by at least two credit rating agencies specified by the relevant supervisor; or
- rated investment-grade by one rating agency and not less than investment-grade by any other rating agency specified by the supervisor (subject to supervisory oversight); or

11 Including, at national discretion, local and regional governments subject to a zero credit risk weight in the Basle Accord.

12 One country has expressed a general reserve on the definition of the qualifying category.

13 e.g. rate Baa or higher by Moodys and BBB or higher by Standard and Poors.

- unrated, but deemed to be of comparable investment quality by the bank or securities firm, and the issuer has securities listed on a recognised stock exchange (subject to supervisory approval).

The supervisors would be responsible for monitoring the application of these qualifying criteria, particularly in relation to the last criterion where the initial classification is essentially left to the reporting institutions.

8. National authorities would also have discretion to include within the qualifying category debt securities issued by banks in countries which are implementing the Basle Accord, subject to the express understanding that supervisors in such countries would undertake prompt remedial action if a bank fails to meet the capital standards set forth in the Accord. Similarly, national authorities would have discretion to include within the qualifying category debt securities issued by securities firms that are subject to equivalent rules.

9. The "other" category would receive the same specific risk charge as a private-sector borrower under the Basle Accord, i.e. 8%. No maturity breakdown is proposed within this category of specific risk.

10. Consideration has been given to the possibility of determining a specific risk charge higher than 8% for high-yield debt securities, which often have equity-like characteristics. Such securities are commonly traded in only a few markets and their characteristics would not be easy to define, so no standard treatment is proposed. However, it is proposed that either:

- a specific risk charge higher than 8% would be applied to such securities (the precise charge and the criteria being at national discretion); and/or
- offsetting for the purposes of defining the extent of general market risk (see paragraph 18 below) would not be allowed between such securities and any other debt securities.

11. Convertible bonds, i.e. debt issues or preference shares that are convertible, at a stated price, into common shares of the issuer, would be treated as debt securities if they trade like debt securities and as equities if they trade like equities.

II. General market risk

12. Capital requirements for general market risk would be designed to capture the risk of loss arising from changes in market interest rates. A choice between two methods of measuring the risk would be permitted.

(a) The standard method

13. Long or short positions in debt securities and debt related derivative instruments (see III below) would be slotted into a maturity ladder comprising thirteen maturity bands. Fixed rate instruments would be allocated according to the residual term to maturity and floating-rate instruments according to the next repricing date.¹⁴ Opposite positions of the same amount in the same issues (but not different issues by the same issuer), whether actual or notional, incur no interest rate risk and could therefore be omitted from the reporting framework, as could closely matched swaps, forwards, futures and FRAs which meet the conditions set out in paragraphs 32 and 33 below.

14. The first stage in the proposed calculation would be to weight the positions in each time-band by a factor designed to reflect the price sensitivity of those positions to changes in interest rates. The weights proposed have two components: the modified duration¹⁵ of a bond with a maturity equal to the mid-point of the respective time-band, assuming an 8% interest rate environment and an 8% coupon; and an assumed change in yield which is designed to cover about two standard deviations of one month's yield volatility in most major markets.¹⁶ The two numbers are

14 In the case of callable bonds, if a bond is trading above par it would be slotted according to its first call date. If priced below par (making a call unlikely) it would be slotted according to its residual term to maturity.

15 Duration is a mathematical concept designed to measure the price sensitivity of debt securities to changes in interest rates. Modified duration is duration divided by a factor of one plus the interest rate. The term duration used throughout the text refers to modified duration.

16 Since in most countries long-term rates are less volatile than short-term rates, the protection sought diminishes progressively along the yield curve, from a 1% change in interest rates at the short end to a 0.6% change at the long end.

multiplied to give a weighting factor for each time-band, as set out in Annex 2.

15. The duration of a bond, although primarily influenced by its maturity, is also influenced by its coupon. Zero-coupon and deep-discount¹⁷ bonds are much more volatile than coupon bonds; for example, in an 8% interest rate environment, the price of a 30-year zero-coupon bond is more than twice as volatile as that of a 30-year 8% bond. Slotting such bonds according to residual maturity would underestimate risk and allow offsetting between positions where substantial risk is still present. Some adjustments therefore need to be made to slot zero-coupon bonds and deep-discount bonds (which it is proposed to define as bonds with a coupon of less than 3%) into the maturity ladder. This treatment, which in effect converts zero-coupons into the equivalent of 8% bonds, is set out in the second column of Annex 2. At the far end of the maturity ladder, there are two time-bands with higher weights for zero-coupon bonds whose maturities exceed twelve years.

16. The next step in the calculation is to offset the weighted longs and shorts in each time-band, resulting in a single short or long position for each band ("vertical offsetting"). However, each band would include positions whose maturities are not identical as well as different instruments with the same maturity, exposing the bank to basis risk. The Committee does not believe it would be consistent with its prudential objective to permit full offsetting of longs and shorts and favours a compensating adjustment. The nature of the adjustment would be to disallow some fraction of the offset by applying a "vertical disallowance" factor to the smaller of the offsetting positions, be it long or short. It is proposed that a 10% "vertical disallowance" be applied to one side of the weighted matched positions within each time-band.¹⁸ For example, if the sum of the weighted longs in a time-band is \$100 million and the sum of the weighted shorts \$90 million, the vertical

17 Where the coupon of a debt security appears to be "low coupon" but the coupon and principal are linked to movements in a consumer price index, the securities should be treated as normal coupon debt securities.

18 Several countries would prefer to have a 15% vertical disallowance for the time-bands in zone 1 (see Annex 3), while accepting 10% for the other zones.

disallowance for that time-band would be 10% of \$90 million (i.e. \$9 million).

17. The result of the above calculations is to produce two sets of weighted positions, the net long or short positions in each time-band (\$10 million in the example above) and the vertical disallowances, which have no sign. The net short and long positions in different time-bands might also be regarded as offsettable to the extent that interest rates at different points in the maturity spectrum tend to move in step. Observed correlations suggest that the likelihood of divergent movements is lower for nearer segments of the yield curve and higher for more distant segments. It is therefore proposed that there should be two rounds of partial "horizontal" offsetting, first between the net positions in each of the three zones (zero to one year, one year to four years and over four years), and subsequently between the net positions in the different zones. At each stage, the offsetting of opposite positions would be subject to a disallowance (expressed, in the same way as the vertical disallowance, as a fraction of the smaller of the offsetting positions), based on observed correlations of interest rate movements. The disallowances proposed, which are set out in Annex 3, would result in a greater recognition of hedging for offsets taking place within the same zone than for offsets between different zones. The resulting disallowances would be added to the disallowances for vertical offsetting referred to above, and to the absolute amount of the residual net short or long position within the whole book. The total would be the market risk charge for the portfolio which, together with the specific risk charges for each issue referred to in Section I above, would be the institution's overall capital requirement under the standard measurement method. A simplified example of the calculations required is set out in Annex 4.

18. In accordance with the concerns about high-yield debt securities expressed in paragraph 10 above, it is intended that no vertical or horizontal offsetting between such securities and any other debt securities would be permitted unless high-yield debt securities were made subject to a higher specific risk weight than 8%.

19. It is proposed that separate reporting ladders be used for each currency, except for those in which business is insignificant, and that capital charges be calculated for each currency separately with no offsetting between positions of opposite sign. It is recognised that such

treatment would be rather harsh since it assumes a worst-case scenario in the movements of interest rates in different currencies. On the other hand, the purpose of the proposals is to provide protection against movements in interest rates over relatively short periods and while some correlation across currencies is observable circumstances quite frequently occur in which interest rates in different countries move in opposite directions. It might be possible to devise a practical method of recognising such partial correlation between the interest rates in different countries¹⁹ and comment is invited on this aspect.

(b) The alternative method

20. It is proposed that institutions with the necessary capability could, with their supervisors' consent, use a more accurate method of measuring duration by calculating the price sensitivity of each position separately. This would involve taking into account the exact coupon of each bond, rather than an assumed 8% rate, and calculating duration according to the precise residual maturity of the instrument rather than the mid-point of a time-band. Recognising that the alternative method is similar to and more accurate than the standard method, the Committee would be content for this method to be used so long as those who use it demonstrate that it produces results which are consistently equivalent with the standard method.²⁰ Institutions would be required to elect and

19 A possible approach favoured by one delegation would be to allow partial offsetting of the final residual unmatched position in all currencies by taking the larger of the sum of shorts and longs.

20 In order to be certain of producing equivalent results, i.e. those that do not result in any systematic bias, the following processes would need to be followed:

- the institution would first calculate the price sensitivity of each instrument in terms of a change in interest rates of between 0.6 and 1.0 percentage points depending on the maturity of the instrument (using the same scale as in column B of Annex 2);
- the resulting sensitivity measures would then be slotted into a duration-based ladder with fifteen time-bands as set out at the foot of the table in Annex 2;
- long and short positions in each time-band would be subject to the 10% vertical disallowance;
- the net positions in each time-band would be carried forward for horizontal offsetting subject to the disallowances set out in Annex 3.

use the method on a continuous basis (unless a change in method is approved by the national authority) and subject to supervisory monitoring of the systems used.

21. Certain members of the Committee believe that there is some justification for using a lower vertical disallowance than 10% for the alternative method, in recognition of the greater accuracy which makes it no longer necessary to account for maturity mismatches within each time-band.²¹ Comment is invited on this matter, bearing in mind that the vertical disallowance is also designed to capture basis risk, which would still be present.

III. Debt derivatives

22. It is proposed to include in the measurement system those debt derivatives and off-balance-sheet instruments which react to changes in interest rates and thus affect the reporting institution's exposure to market risk. This would include forward rate agreements (FRAs), futures and options on debt instruments, interest rate and cross-currency swaps and forward foreign exchange positions. A similar methodology would apply to other option-like products, such as caps, floors, and options on futures or swaps.

23. In principle, all derivatives (except for those held outside the trading book) would be converted into positions in the relevant underlying and become subject to the proposals for applying specific and general market risk under the building-block methodology. There would, however, be the possibility of alternative treatments for options which are considered in Annex 5. A summary of the proposals for dealing with debt derivatives is attached at Annex 6.

1. Reporting of positions

24. In order to calculate the standard building-block formula described above, positions in derivatives would need to be converted into notional security positions. Thus the amounts reported would be the

21 One country sees no need for time-bands at all since the alternative method is maturity-specific. Other delegations, however, insist on the need for time-bands in order to calculate the horizontal disallowances.

market value of the principal amount of the underlying or notional underlying.

(a) Futures and forward contracts, including forward rate agreements

25. These instruments would be treated as a combination of a long and a short position in a notional government security. The maturity of a future or an FRA would be the period until delivery or exercise of the contract, plus - where applicable - the life of the underlying security. For example, a long position in a June three month interest rate future (taken in April) would be reported as a long position in a government security with a maturity of five months and a short position in a government security with a maturity of two months. Where a range of deliverable instruments may be delivered to fulfil the contract, the institution would be free to elect which deliverable security goes into the maturity ladder. In the case of a future on a corporate bond index, positions would be included at the market value of the notional underlying portfolio of securities.

26. A few members believe that a two-legged treatment for futures and forwards would be a needless complexity which only captures a small financing cost. In particular, there would be very little difference for a short-term future when the instruments deliverable against the future have long maturities. These members would prefer an approach that slots in the value of the securities that are deliverable against the futures contract. In at least some cases, the two-legged approach would require less capital because the financing leg would be allowed to hedge other unrelated positions in the underlying itself when the deliverable is short-term in nature.

(b) Swaps

27. Swaps would be treated as two notional positions in government securities with relevant maturities. For example, an interest rate swap under which a firm is receiving floating rate interest and paying fixed would be treated as a long position in a floating rate instrument of maturity equivalent to the period until the next interest fixing and a short position in a fixed-rate instrument of maturity equivalent to the residual life of the swap. For swaps that pay or receive a fixed or floating interest rate against some other reference price, e.g. an equity index, the interest rate component would be slotted into the appropriate

repricing maturity category, with the equity component being included in the equity framework. The separate legs of cross-currency swaps would be reported in the relevant maturity ladders for the currencies concerned.

(c) Exchange-traded and OTC options

28. The treatment of options poses problems because of the asymmetrical risk and the inherent complexity of the products. The proposals on this topic are therefore less definitive than for most other elements of the framework and comments from practitioners would be especially welcome. It is proposed that there should be a choice between two or perhaps more methods at the discretion of the individual supervisor. Only one of the methods identified in this paper would be compatible with the building-block methodology and the reporting procedure is described below. Two other possible methods are referred to in Annex 5.

29. The approach to be used for the treatment of options within the building-block methodology would be for institutions to report their options positions on a delta-weighted²² basis (such deltas to be calculated according to an approved exchange model or the institution's proprietary options pricing model subject to oversight by the supervisor). Options would thus be reported as a position equal to the market value of the underlying multiplied by the delta. Annex 5 invites comment on the appropriateness of some additional capital requirement for those using the delta-based approach.

30. In slotting deltas into the time-bands, a two-legged approach could be used as for other derivatives, requiring one entry at the time the underlying contract takes effect and a second at the time the underlying contract matures. For instance, a bought call option on a June three-month interest-rate future would in April be considered, on the basis of its "delta" equivalent value, to be a long position with a maturity of five months and a short position with a maturity of two months. The written option would be similarly slotted as a long position with a maturity of two months and a short one with a maturity of five months.

22 This treatment would also encompass a simplified proxy of delta.

31. Floating rate instruments with caps or floors would be treated as a combination of floating rate securities and a series of European-style options. For example, the holder of a three-year floating rate bond indexed to six month LIBOR with a cap of 15% would treat it as:

- (1) a debt security that reprices in six months; and
- (2) a series of five written call options on a FRA with a basis of 15%, each with a negative sign at the time the underlying FRA takes effect and a positive sign at the time the underlying FRA matures.

2. Calculation of capital charges under the standard building-block methodology

(a) Allowable offsetting of matched positions

32. Long and short positions (both actual and notional) in identical instruments with exactly the same issuer, coupon, currency and maturity would be offsettable and thus fully matched positions would be excluded from the reporting framework altogether (for both specific and general market risk). A matched position in a future and its corresponding underlying could be offset except when the future comprises a range of deliverable instruments. No offsetting would be allowed between positions in different currencies.²³ Thus the separate legs of cross-currency swaps or forward foreign exchange deals would be treated as notional positions in the relevant instruments and entered on the appropriate currency reporting form.

33. In addition, opposite positions in the same category of instruments could in certain circumstances be regarded as matched and allowed to offset fully. This would have the effect of removing, for example, closely matched swap positions from the need to apply a 10% disallowance to the matched long and short positions in each time-band. To qualify for this treatment the positions would need to relate to the same underlying instruments, be of the same nominal value and denominated in the same currency. In addition:

- (i) for futures: offsetting positions in the notional or underlying instruments to which the futures contract relates

23 But see paragraph 19.

would need to be for identical products and mature within seven days of each other;

- (ii) for swaps, FRAs: the reference rate (for floating rate positions) would need to be identical and/or the coupon (for fixed-rate positions) closely matched (i.e. within 10 - 15 basis points);
- (iii) for swaps, FRAs and forwards: the next interest fixing date or, for fixed coupon positions or forwards, the residual maturity would need to correspond within the following limits:
 - less than one month hence: same day;
 - between one month and one year hence: within seven days;
 - over one year hence: within thirty days.

34. The Committee invites comment on an alternative approach for sophisticated institutions with large swap books which could use sensitivity models to calculate the positions to be included in the maturity ladder. These models would take all cash flows on swaps discounted using zero coupon rates and convert them into a portfolio of bonds (with the same interest rate sensitivities at the appropriate maturities), which would then be subject to the building-block approach. This procedure would capture more closely the true risk in large swap books.

Such models could, however, only be allowed if:

- the supervisor were fully satisfied with the accuracy of the systems being used;
- the positions calculated were fully to reflect the sensitivity of the cash flows to interest rate changes;
- the positions were denominated in the same currency.

Once slotted into the maturity ladder, the net position produced by these models would be subject to the usual disallowance factors.

(b) Specific risk

35. Specific risk is intended to address the credit-related and liquidity risks associated with the underlying instrument. The majority of interest-rate sensitive off-balance-sheet instruments relate to an underlying or notional underlying security which does not bear an identifiable specific risk, e.g. currencies or market interest rates. Thus interest rate and currency swaps, FRAs, forward foreign exchange

contracts and interest rate futures and options would not be subject to a specific risk charge. This exemption would also apply to futures and options on a short-term (e.g. LIBOR) interest rate index. However, in the case of futures and options contracts where the underlying is a debt security, or an index representing a basket of debt securities, a specific risk charge would apply according to the credit risk of the issuer as set out in I above. This would require separate reporting outside the maturity schedule referred to below. For governments, specific risk would be zero.

(c) General market risk

36. General market risk would apply to positions in all derivative products referred to in this section in the same manner as for cash positions, subject only to an exemption for fully or very closely matched positions in identical instruments as defined in paragraphs 32 and 33. The various categories of instruments would be slotted into the maturity ladder according to the reporting rules identified earlier. As with cash securities, offsetting would be permitted for opposite positions within each maturity band, subject to a 10% vertical disallowance, and also between different maturity bands and zones according to the scale of horizontal disallowances set out in Annex 3.

EQUITIES

1. This section proposes a minimum capital standard to cover the risk of holding or taking positions in equities in the trading account. Comment on this aspect of the proposals is especially invited in view of the difficulty of structuring common rules that would adequately cover the price risk in different equity markets. This is a matter on which securities regulators have different views according to national perspectives in their own markets. The treatment proposed below represents the Basle Committee's preferred approach, but it could be modified in further discussions with securities regulators.

2. The proposed treatment for equities would be applied to long and short positions in all instruments that exhibit market behaviour similar to equities, but would not apply to non-convertible preferred shares.²⁴ It is envisaged that long and short positions in the same issue could be netted. Instruments covered would include common stocks, whether voting or non-voting, warrants that give the holder the right to purchase equity securities, those convertible securities that behave like equities, options on equity securities, commitments and other rights to buy or sell equity securities and limited partnership interests. The proposed treatment of derivative products, equity indices and index arbitrage is described in II below.

I. Specific and general market risk

3. As with debt securities, it is proposed that the minimum standard for equities should be expressed in terms of the so-called "building-block approach". This means that the overall capital requirement would consist of separately calculated charges for the "specific" risk of holding a long or short position in an individual equity, and for the "general market risk" of holding a long or short position in the market as a whole. Specific risk has some parallels with,

²⁴ Non-convertible preferred shares are covered by the debt securities requirements described in section 2.

but is broader than, credit risk in the sense that it exists whether the position is long or short. General market risk is the risk of a broad market movement unrelated to any specific securities. The long and short position in the market would be calculated on a market-by-market basis, i.e. a separate calculation would have to be carried out for each national market in which the firm held equities.

4. It is proposed that the building-block approach should apply in the following manner. The minimum standard would be expressed in terms of an "x plus y" formula, in which "x", denoting specific risk, would apply to the reporting institution's gross equity positions (i.e. the sum of all long equity positions and of all short equity positions) and "y", or general market risk, would apply to the difference between the sum of the longs and the sum of the shorts (i.e. the overall net position in an equity market).

5. If, in the future, wider convergence with securities regulators can be achieved, it is proposed that individual national authorities should have discretion to continue to apply a comprehensive approach, i.e. one that combines specific and general market risks in a single risk charge. To use such an approach, the individual regulator would be required to demonstrate to the satisfaction of his fellow regulators that such an approach would produce, in all circumstances, capital charges equal to or greater than those produced by the minimum "building-block" approach. This demonstration could be made by showing that the authority's rule, by its very nature, required capital charges equal to or greater than the building-block methodology.

6. In setting appropriate charges for the x plus y formula, the Committee proposes that the charge for y (general market risk) should be 8% of the net open position. This number was reached on the basis of analysis in collaboration with securities regulators of the price volatility of the principal equity indices in the major markets.

7. The criteria for determining the x factor for specific risk need to reflect the diversification of the portfolio and the extent to which it contains liquid and marketable stocks. It is important to ensure that a relatively high "x" factor applies unless the portfolio is both liquid and well-diversified. It is proposed that an appropriate x factor in the absence of any such assurances should be 8%.

8. Although the Committee accepts that a lower x factor should apply for major institutions whose portfolios are liquid and diversified,

it has proved extremely difficult to define liquidity and diversification in a sufficiently tight manner to be used for establishing a common minimum standard. Criteria for liquidity could include turnover, the number of market-makers or belonging to a major index. Diversification could be established by portfolio methodology or by some simple rule requiring concentrations above a certain threshold to carry a higher charge or requiring a minimum number of evenly spread holdings. However, national market characteristics are crucial. Comment is invited on adequate common criteria for liquidity and diversification.

9. In the light of these difficulties, all members of the Basle Committee are content to allow national regulators discretion to determine their own criteria for liquid and diversified portfolios so long as x is not set lower than 4% and on the understanding that a minimum of 8% would apply to portfolios of stocks that fail to meet the liquidity and diversification test. Annex 7 illustrates the capital required for a range of hypothetical portfolios which qualify for 4% (i.e. a 4 plus 8 formula).

II. Equity derivatives

10. It is proposed to include in the measurement system equity derivatives and off-balance-sheet positions which are affected by changes in equity prices. This would include futures and options on both individual equities and on equity indices, as well as instruments with option-like characteristics such as options on futures and warrants.

11. In principle, all derivatives (except for those held outside the trading book) would be converted into positions in the relevant underlying and become subject to the proposals described. There would, however, be the possibility of alternative treatments for options which are considered in Annex 5. A summary of the proposals for dealing with equity derivatives is attached at Annex 8.

1. Reporting of positions

12. In order to calculate the standard $x + y$ formula, positions in derivatives would need to be converted into notional equity positions.

(a) Futures and forward contracts relating to individual equities

13. These instruments would in principle be reported at current market prices.

(b) Futures relating to equity indices

14. These instruments would be reported as the marked-to-market value of the notional underlying equity portfolio.

(c) Equity swaps

15. Equity swaps would be treated as two notional positions. For example, an equity swap in which an institution is receiving an amount based on the change in value of one particular equity or equity index and paying a different index would be treated as a long position in the former and a short position in the latter. Where one of the legs involves receiving/paying a fixed or floating interest rate, that exposure should be slotted into the appropriate repricing maturity band in the reporting form covering debt securities. The stock index would be covered by the equity treatment.

(d) Exchange-traded and OTC options²⁵

16. The proposed treatment of equity options would be exactly the same as for options whose underlying is a debt instrument. One method, therefore, would be for options to be reported as a position equal to the market value of the underlying multiplied by the delta (or a simplified proxy of delta). Alternative treatments are described in Annex 5.

2. Calculation of capital charges

(a) Measurement of specific and general market risk

17. In calculating the x and y factors referred to in Part I, matched positions in each identical equity in each market may be fully offset, resulting in a single net short or long position on which the x and y charge will apply. Thus a future in a given equity may be offset against an opposite cash position in the same equity.

(b) Specific risk in relation to an index

18. Where the underlying is an index representing a diversified portfolio of equities, the specific risk (i.e. the risk of divergence from the general market level) would be less than for a random sample of equities and a lower x factor than that applied to ordinary equities might be justified. However, even an index which closely matches the main stocks traded can move against the market so a nil weight is not favoured by most supervisors. It is proposed that a standard x factor of 21 should

25 Warrants would be treated in the same manner as options.

apply to the net position in an index comprising a diversified portfolio of equities. The national supervisory authorities would take care to ensure that this treatment applies only to well-diversified indices and not, for example, to sectoral indices.

(c) Arbitrage

19. Consideration needs to be given to the possibility of partial offsetting for futures-related arbitrage strategies where the full specific risk charge may seem unduly harsh. Two such circumstances are:

- when an institution takes opposite positions in exactly the same index at different dates (in which case the indices will move in price very closely, the difference between the prices being mainly the cost of carry);
- when an institution has opposite positions in different but similar indices at the same date (subject to supervisory oversight that the two indices contain sufficient common components to justify offsetting).

Comment is invited on the proposition that in these two circumstances the 2% factor proposed in paragraph 18 above should apply to only one index and not both.

20. Consideration also needs to be given to situations in which institutions have taken opposite positions in their cash book and in an index future or option. This can be done either to hedge a cash position or to arbitrage between prices in the cash and futures (or options) market (known as equity index arbitrage). While such strategies probably involve lower specific risk than having opposite positions in two unrelated equities, there are still two risks that arise: divergence risk (the risk of imperfect portfolio tracking) and execution risk (the risk of imperfect synchronisation, which at its worst may involve an inability to deal).

21. Since applying the full "x plus y" treatment to cash and futures (or options) positions that are closely matched would be relatively onerous, some favour allowing firms to carve out the arbitrage and apply a special treatment outside the "x plus y" system. For such deliberate arbitrage strategies, in which a futures or options contract on a broadly-based index matches a basket of securities, the Committee proposes that institutions be allowed to remove these positions from the building-block methodology on condition that:

- (i) the trade has been deliberately entered into and separately controlled;
- (ii) the basket of stocks represents at least 90% of the market value of the index;
- (iii) there is a minimum capital requirement of 4%, i.e., 2% of the gross value of the positions on each side to reflect divergence and execution risks. This would apply even if all of the securities comprising the index were held in identical proportions;
- (iv) any excess value of the securities comprising the basket over the value of the futures contract or excess value of the futures contract over the value of the basket is treated as an open long or short position.

22. Other common arbitrage strategies which would appear to merit concessionary treatment under the standard x plus y methodology include position-taking in depository receipts, warrants or convertibles against opposite positions in the underlying equity. The proposed treatment of these strategies would be to permit full offsetting against the underlying equity provided that capital is required to cover any loss on conversion (or exercise in the case of warrants). The regulators would also be vigilant in ensuring that where a short position is taken in a warrant or a convertible, no offsetting would be permitted unless its market is sufficiently liquid and its price moves directly in line with the price of the underlying.

FOREIGN EXCHANGE RISK

1. Exchange rates are volatile and open short or long currency positions can lead to sizeable losses. Capital thus needs to be held to cover such possibilities. This section describes proposed capital requirements on open foreign exchange positions. It does not propose supervisory requirements for defining and limiting undue concentrations of currency positions or counterparty exposures, which national supervisors are nonetheless encouraged to address.

2. There are three distinct tasks in the process of setting capital requirements on banks' open currency positions. The first is to measure the exposure in a single currency position. The second is to measure the risks inherent in a bank's mix of long and short positions in different currencies. The third is to determine an appropriate capital charge.

I. Measuring the exposure in a single currency

3. The bank's net open currency position in each currency would be calculated by summing the following elements:

- the net spot position (i.e. all asset items less all liability items, including accrued interest, denominated in the currency in question);
- the net forward position (i.e. all amounts to be received less all amounts to be paid under forward foreign exchange transactions, including currency futures and the principal on currency swaps not included in the spot position);
- guarantees (and similar instruments) that are certain to be called and are likely to be irrecoverable;
- net future income/expenses not yet accrued but already fully hedged (at the discretion of the reporting institution);

- 34 -

- the net delta (or delta-based) equivalent of the total book of foreign currency options;²⁶
- depending on particular accounting conventions in different countries, any other item representing a profit or loss in foreign currencies.

4. Trading by banks in gold and precious metals is often regarded as an extension of foreign exchange trading. However, the price volatility of precious metals is significantly greater than most exchange rates and closer to that of other commodities. If specific capital requirements were to be developed to cover commodity positions, some or all precious metals could be included. For the time being and in the absence of such requirements it is proposed that precious metal positions be included within the scope of foreign exchange capital requirements. Where this is done, long positions presently subject to the existing credit risk related requirements in the Basle Accord would cease to be so.

5. Positions in composite currencies, such as the ECU, would need to be separately reported but, for measuring banks' open positions, may be either treated as a currency in their own right or split into their component parts on a consistent basis.

6. Four aspects call for more specific comment: the treatment of interest, other income and expenses; the measurement of forward currency positions; the treatment of currency options; and the treatment of "structural" positions.

(a) The treatment of interest, other income and expenses

7. Interest accrued (i.e. earned but not yet received) would be included as a position. Accrued expenses would also be included. Unearned but expected future interest and anticipated expenses would usually be excluded unless the amounts are certain and banks have taken the opportunity to hedge them. If reporting institutions include future income/expenses they should do so on a consistent basis, and not be permitted to select only those expected future flows which reduce their position.

26 If the alternative treatments described in paragraphs 11 and 13 are used, the option together with related open and forward positions would be treated separately.

(b) The measurement of forward currency positions

8. Forward currency positions would normally be valued at current spot market exchange rates. Using forward exchange rates would result in the measured positions reflecting current interest rate differentials, which would normally be taken into account in measuring a bank's interest rate exposure.

9. For some banks an alternative method would be to discount forward positions to net present value. This recognises that cash flows occurring at different future dates have different values if measured in terms of their present value to the bank. Where this is the basis of the bank's normal management accounting, using net present values would be an acceptable way of measuring currency positions for supervisory purposes.

(c) The treatment of currency options

10. The most difficult instruments to fold into a risk measurement system are options. The main complication is that the price of an option does not move in a one-for-one relationship with the spot rate of the deliverable currency, since an option's value is a complex function of the spot rate of the underlying currency, its volatility, interest rate differentials, the strike price and the option's remaining term.

11. Nevertheless, the purchase of an option can be a useful means of hedging other positions, since it provides the holder with a form of insurance, the cost of which is represented by the option premium. For institutions which do not trade a portfolio of options but which find it convenient to use purchase options as hedges, it is proposed that both the options and the hedged positions would be carved out of the foreign exchange book and that the following treatment would be applied:

- for a long position (spot or forward) hedged by a long put; or a short position hedged by a long call, the capital charge would be 8% of the position being hedged less the amount by which the option is in the money (if any);²⁷

27 e.g. if a German bank has a long forward position of US\$ 100 million hedged by a corresponding put option with a strike price of 1.45 DM/dollar, with the current exchange rate being 1.40 DM/dollar the capital charge would be:

$$8\% \times \text{DM } 140 \text{ million} - [\text{DM } 145 \text{ million} - \text{DM } 140 \text{ million}] = 11.2 - 5 = \text{DM } 6.2 \text{ million.}$$

- where a long call/long put is held outright (i.e. not held as a hedge), the capital charge would be the lesser of (1) 8% of the market value of the underlying and (2) the market value of the option.

12. For institutions which are actively trading options and will therefore wish to manage their risk on a portfolio basis, a measure in general use is the net delta (or delta-based) equivalent of the total book of foreign currency options. However, delta hedging is effective only for small changes in spot rates and there are other variables, notably volatility, not captured in the delta. It is proposed that the net delta value will be used as the measure of exposure for major option players, the deltas being calculated according to an exchange model or internal pricing model approved by the supervisor. In addition, managements would be expected to apply additional internal safeguards to deal with the other option risks, for instance by simulating the performance of portfolios over ranges of possible levels of spot rates, volatilities and interest rate differentials.

13. National supervisors would be ready to consider more advanced approaches for capturing the risks in option positions and related spot or forward positions which sophisticated trading institutions may wish to propose. The criteria for the acceptance of such methods as alternatives to the delta measure would be that they should provide a more reliable estimate of possible loss according to parameters set by the regulators, and that they allow supervisory oversight in a cost-effective manner. For example, these parameters could be designed to cover the highest loss in the bank's foreign exchange options (and related spot or forward positions) portfolio assuming certain changes (on a currency pair by currency pair basis) in foreign exchange rates and implied volatilities. Comments and suggestions on what such parameters should be would be welcomed.

(d) The treatment of structural positions

14. A matched currency position will protect a bank against loss from movements in exchange rates, but will not necessarily protect its

If the dollar appreciates to over 1.45 DM/dollar the option would be out of the money and the capital charge would just be 8% of the dollar forward position.

capital adequacy ratio. If a bank has its capital denominated in its domestic currency and has a portfolio of foreign currency assets and liabilities that is completely matched, its capital/asset ratio will fall if the domestic currency depreciates. By running a short position in the domestic currency the bank can protect its capital adequacy ratio, although the position would lead to a loss if the domestic currency were to appreciate.

15. It is proposed that supervisors should be free to allow banks to protect their capital adequacy ratio in this way. Thus, any positions which a bank has deliberately taken in order to hedge partially or totally against the adverse effect of the exchange rate on its capital ratio could be excluded from the calculation of net open currency positions, subject to each of the following conditions being met:

- such positions would need to be of a "structural", i.e. of a non-dealing, nature (the precise definition to be set by national supervisors according to national accounting standards and practices);
- the national supervisor would need to be satisfied that the "structural" position excluded does no more than protect the bank's capital adequacy ratio;
- any exclusion of the position would need to be applied consistently, with the treatment of the hedge remaining the same for the life of the assets or other items.

16. The same treatment could be applied to positions related to items that are deducted from a bank's capital when calculating its capital base.

II. Measuring the foreign exchange risk in a portfolio of foreign currency positions and setting the capital requirement

17. Any risk measurement framework involves a trade-off between simplicity and accuracy. To take account of correlations between exchange rate relationships and their differing volatilities would require a complex measure, which might be unduly burdensome. However, a simpler measure based on an assumption about the composition of an average portfolio of currency assets and liabilities may require a conservative bias if portfolios of higher than average risk are not to be undercharged.

18. It is proposed to resolve this by allowing a choice between two alternative measures at supervisory discretion; a "shorthand" method; and a more complex "simulation" method, in which capital requirements would be determined by simulating the likely outcome from holding the bank's actual portfolio. The simulation method would only be available to banks which can satisfy their national supervisors of the adequacy of their measurement and control systems and of their access to the necessary data. It is intended that the two methods should deliver broadly equivalent capital requirements for a well diversified portfolio of foreign exchange positions of average riskiness.

A. The shorthand method

19. Under this method the nominal amount²⁸ of the net position in each currency and of the net position in each precious metal would be converted at spot rates into the reporting currency.²⁹ The net open position would be measured by aggregating:

- the sum of the short positions or the sum of the long positions, whichever is the greater;³⁰ plus
- the total of each net position (short or long) in any precious metal, regardless of sign.

Annex 9 shows a simplified example of the shorthand measure.

28 Or net present value in the case of those banks using net present value for measuring currency positions (see paragraph 9).

29 Where the bank is assessing its foreign exchange risk on a consolidated basis, it may be technically impractical in the case of some marginal operations to include the currency positions of a foreign branch or subsidiary of the bank. In such cases it is suggested that the internal limit in each currency be used as a proxy for the positions. Provided there is adequate ex post monitoring of actual positions against such limits, the limits would be added, without regard to sign, to the net option position in each currency. One country is in favour of allowing the substitution of limits only up to a maximum threshold expressed as a percentage of capital.

30 An alternative calculation, which produces an identical result, would be to include the reporting currency as a residual and to take the sum of all the short (or long) positions.

20. The shorthand method assumes some, but not perfect, correlation between the movements of different exchange rates. Cross currency position taking would neither be unduly penalised nor given undue preference. However, the method would not recognise cross-hedging in the case of precious metals, the price volatility of which seems to justify a more conservative treatment.

21. The Committee proposes a capital requirement of 8% of the net open position as calculated above. This would ensure an adequate level of protection against losses for most portfolios, and be broadly in line with that proposed for interest rate and equity position risks in average portfolios.

22. The Committee sees merit in permitting a "de minimis" exemption for banks with negligible business in foreign currency and which do not take foreign exchange positions for their own account. Accordingly, national supervisors would have discretion to exempt a bank from capital requirements on its foreign exchange positions provided that:

- its foreign currency business (defined as the greater of the sum of its gross longs and the sum of its gross shorts, including precious metals) does not exceed 100% of its capital as defined in the 1988 Accord; and
- its net open position as defined in paragraph 18 above does not exceed 2% of its capital.³¹

Comments are invited as to whether the increase in a bank's capital charge which would result from its crossing of one of the two thresholds is significant enough to raise problems and, if so, on possible ways to alleviate them.

B. The simulation method

23. The simulation method is conceptually simple: the actual exchange rates experienced in a defined past observation period would be

31 Two countries have reservations about expressing a de minimis exemption in this manner, and, pending further discussion and more thorough consideration of the issue, are in favour of a free zone approach exempting 2% of a bank's capital base from the net open position.

used to revalue the bank's present foreign exchange³² positions and - from those revaluations - to calculate "simulated" profits and/or losses which would have arisen if those positions had remained fixed for a defined holding period. The capital requirement would be set in relation to the worst or near to the worst simulated loss which would have arisen during that period.

24. In practice, however, it is a demanding exercise. A continuous run of exchange rates over the period for all the currencies in which significant positions are held would be needed. The consistency of data used by different banks would be important and each national supervisor would need to monitor closely the data used in the simulation process. This could be achieved either by defining a common and precise specification of the rates to be applied, leaving the banks with the responsibility of collating the actual rates, or by providing them with exchange rates data series.

25. Policy decisions would have to be taken on four parameters if the simulation method were to be used as a measure of risk:

- the period for which a bank is assumed to hold a position, and during which losses could accumulate;
- the period of observation of exchange rates necessary to be sure of capturing sufficient evidence of currency volatility;
- the level of confidence required in measuring the risk for the purpose of setting a capital requirement;
- the scaling factor used to set the toughness of a capital charge, depending on what is seen as an appropriate buffer against possible losses.

26. The choice of holding period depends on the speed with which banks can be expected to close out loss-making positions. Banks may argue that they are able to cover positions within a single day, but in periods of high exchange rate volatility and thin markets it may well not be possible to close sizeable positions so quickly. Moreover, banks may decide to run loss-making positions in the expectation that they will

32 Precious metals positions would also be eligible for treatment under the simulation method. Option positions in currencies or precious metals would be included on the basis of their net delta (or delta-based equivalent).

become profitable. Since exchange rates often move in one direction for some time, the longer the holding period the larger the losses could be. A holding period of two weeks (i.e. ten working days) is proposed. It would be rolled on daily, so that with each succeeding day the holding period would cease to include the earliest day included in the last holding period.

27. The next step is to determine the length of the observation period which adequately captures relationships between currencies. This depends on how confident one is that future currency volatility will mirror that exhibited in the recent rather than more distant past. A five-year period has been chosen as sufficiently long to avoid over-reliance on recent exchange rate movements while still being practical and not too burdensome to run. It is less necessary that the observation period rolls on daily, but at a minimum it should be updated at regular reporting dates. There would thus be some 1,300 observations for the value of each currency position (i.e. 5 working days x 52 weeks x 5 years).

28. It is then necessary to identify the level of confidence required in measuring the risk for the purposes of setting capital requirements. This could be the worst loss, or be expressed in terms of loss quantiles, for example the level which includes 95% of the hypothetical losses that would have arisen from the bank's current set of open positions. It is important not to confuse the required level of confidence in measuring the risk with the toughness of the capital requirement. They are quite independent.

29. Setting the required level of confidence as the worst loss appears simple and prudentially appealing, but it has conceptual and practical drawbacks. From a conceptual point of view, in placing complete weight on the most extreme situation, it is very sensitive to the choice of observation period. In emphasising the importance of the abnormal event, it would also maximise the problem of the asymmetry of result that the simulation method could deliver depending on whether a short or a long position is held in one particular currency whose exchange rate has consistently appreciated or depreciated in the past. From a practical point of view, it has the disadvantage of putting a very high stress on data series quality. These disadvantages progressively lessen if the level of confidence required is lower, but that benefit is offset by the greater chance of missing an exchange rate movement which may

recur in the future. The 95% quantile, which corresponds to the sixty-fifth largest loss out of 1,300 observations, is proposed.

30. The final step is to select the scaling factor which determines the toughness of the capital requirement. The first three parameters having been fixed, adding to the 95% quantile a scaling factor of somewhere between 2% and 4% of the overall net open position as measured under the shorthand method would deliver approximate equivalence in terms of toughness of the capital requirement for a portfolio of average riskiness between the shorthand and the simulation methods. The Committee is continuing to test bank portfolios to help it come to a final view, but at present inclines towards 3%. Setting the scaling factor in this way would mean that the minimum capital requirement would never be less than 3%.

Glossary

At-the-money: an option is at-the-money when the price of the underlying instrument is equal to the option's exercise price.

Basis risk: the risk that the relationship between the prices of two similar, but not identical, instruments will change. Thus, even if maturities are perfectly matched, basis risk could remain.

Building-block approach: a method for measuring price risk which disaggregates risk specific to a security/issuer and general market risk.

Confidence level: the degree of protection observed against price movements judged appropriate in setting a capital requirement.

Convertible bond: a bond which gives the investor the option to switch into equity at a fixed conversion price.

Counterparty risk: the risk that the counterparty to a financial contract will not meet the terms of the contract.

Currency swap: a transaction involving an initial exchange of principal of two different currencies. Interest payments are exchanged over the life of the contract and the principal amounts are repaid either at maturity or according to a predetermined amortisation schedule.

Deep discount bonds: all interest-earning assets with coupon rates of 3% or less (see zero-coupon bonds).

Delta: the expected change of an option's price as a proportion of a small change in the price of the underlying instrument. An option whose price changes by \$1 for every \$2 change in the price of the underlying has a delta of 0.5. The delta rises toward 1.0 for options that are deep in-the-money and approaches 0 for deep out-of-the-money options.

Delta hedging: a method option traders use to hedge risk exposure of options by the purchase or sale of the underlying asset in proportion to the delta. A delta-neutral position is established when the option trader strictly delta-hedges so as to leave the combined financial position in options and underlying instruments unaffected by small changes in the price of the underlying.

Duration: a mathematical concept designed to measure the price sensitivity of debt securities to small parallel changes in interest rates. Specifically, duration is the weighted average maturity of all payments of a security, coupons plus principal, where the weights are the discounted present values of the payments. Modified duration is duration divided by a factor of one plus the interest rate.

European-style option: an option which may be exercised only on the expiration date. An alternative to an American option, which can be exercised at the holder's initiative prior to expiration.

Exercise price (also Strike price): the fixed price at which an option holder has the right to buy, in the case of a call option, or to sell, in the case of a put option, the financial instrument covered by the option.

Forward: a commitment to buy (sell) an asset at a future date for a price determined at the time of commitment, usually reflecting the net cost of carry. May be applied to currencies, equities, commodities or other assets.

Forward rate agreement (FRA): a contract in which two counterparties agree on the interest rate to be paid on a notional deposit of specified maturity at a specific future time. Normally, no principal exchanges are involved, and the difference between the contracted rate and the prevailing rate is settled in cash.

Futures contract: an exchange-traded contract generally calling for delivery of a specified amount of a particular grade of commodity or financial instrument at a fixed date in the future.

Gamma: the sensitivity of an option's delta to small changes in the price of the underlying; alternatively, the sensitivity of a delta-hedged position to large unit changes in the price of the underlying.

General market risk: the risk of a general market movement arising from, for example, a change in interest rates or official policy.

Hedge: to reduce risk by taking a position which offsets existing or anticipated exposure to a change in market rates or prices.

Holding period: the length of time that a financial institution is assumed to hold a given financial instrument for the purpose of calculating price volatility.

Interest rate risk: the risk that changes in market interest rates might adversely affect an institution's financial condition.

Interest rate swap: a transaction in which two counterparties exchange interest payment streams of differing character based on an underlying notional principal amount. The three main types are coupon swaps (fixed rate to floating rate in the same currency), basis swaps (one floating rate index to another floating rate index in the same currency) and cross-currency interest rate swaps (fixed rate in one currency to floating rate in another).

In-the-money: option contracts are in the money when there is a net financial benefit to be derived from exercising the option immediately. A call option is in the money when the price of the underlying instrument is above the exercise price and a

put option is in the money when the price of the underlying is below the exercise price.

Investment-grade: securities which are rated at or above Baa by Moody's Investors Services or BBB by Standard & Poor's Corporation.

LIBOR: London Interbank Offered Rate. The rate at which banks offer to lend funds in the international interbank market.

Lock-in clause: a clause in a subordinated loan contract stipulating that neither principal nor interest may be paid, even at maturity, if such payment would bring the issuer's capital below a given regulatory level.

Long option position: the position of a trader who has purchased an option regardless of whether it is a put or a call.

Margin: in this report, margin refers to a good-faith deposit (of money, securities or financial instruments) required by a futures or commodity exchange to assure performance. Futures and options exchanges often require traders to post initial margin when they enter into new contracts. Margin accounts are debited or credited to reflect changes in the current market prices on the positions held. Members must replenish the margin account if margin falls below a minimum.

Market risk: the risk of losses in on and off-balance-sheet positions arising from movements in market prices, including interest rates, exchange rates and equity values.

Marking-to-market: the process of revaluing a portfolio on the basis of prevailing market prices.

Observation period: the period over which it is judged appropriate to review historical data in setting a capital requirement. For example, the requirement might be set according to observed price changes over the past five years.

Off-balance-sheet activities: banks' business that does not generally involve booking assets or liabilities. Examples include trading in swaps, options, futures and foreign exchange forwards, and the granting of standby commitments and letters of credit.³³

Option: the contractual right, but not the obligation, to buy or sell a specified amount of a given financial instrument at a fixed price before or at a designated future date. A call option confers on the holder the right to buy the financial instrument. A put option involves the right to sell the financial instrument.

33 In certain countries, some of these instruments may be on the balance sheet.

OTC (over-the-counter): trading in financial instruments transacted off organised exchanges. Generally the parties negotiate all details of the transactions, or agree to certain simplifying market conventions.

Out-of-the-money: an option contract is out of the money when there is no benefit to be derived from exercising the option immediately. A call option is out of the money when the price of the underlying is below the option's exercise price. A put option is out of the money when the price of the underlying is above the option's exercise price.

Repurchase agreement (RP or repo): a holder of securities sells securities to a counterparty with an agreement to repurchase them at a fixed price on a fixed date.

Settlement: the completion of a transaction, wherein the seller transfers securities or financial instruments to the buyer and the buyer transfers money to the seller.

Settlement risk: the risk that a counterparty to whom a firm has made a delivery of assets or money defaults before the amounts due or assets have been received; may also in certain contexts refer to the risk that technical difficulties interrupt delivery or settlement even if the counterparties are able to perform.

Short option position: the position of a trader who has sold or written an option. The writer's maximum potential profit is the premium received.

Simulation: a mathematical technique for measuring the likely performance of a given portfolio for changes in certain parameters such as market interest rates or foreign exchange rates.

Specific risk: the risk that the price of a given instrument will move out of line with similar instruments, due principally to factors related to its issuer.

Subordinated loans: debt issued by financial institutions which in liquidation is subordinated to claims by general creditors but which ranks above ordinary and preferred shares.

Swap: a financial transaction in which two counterparties agree to exchange streams of payments over time according to a predetermined rule.

Trading book: an institution's proprietary positions in financial instruments which are taken on with the intention of benefiting in the short term from actual or expected differences between their buying and selling prices or of hedging other elements of the trading book, or which are held for short-term resale, or in order to execute a trade with a customer.

Volatility: a measure of the variability of the price of an asset, usually defined as the annualised standard deviation of the natural log of asset prices.

- Warrant: tradeable instrument with the character of an option whose holder has the right to purchase from, or sell to, the warrant issuer a quantity of financial instruments under specified conditions for a specified period of time.
- Writer: the party that sells an option. The writer is required to carry out the terms of the option at the choice of the holder.
- Zero coupon bonds: securities which do not make periodic interest payments and are redeemed at face value at a specified maturity date. These securities are sold at a deep discount, and the return accrues to the buyer as the security gradually appreciates.

ANNEX 2Debt securities: risk weights

The table below sets out the general risk weights which are proposed for the net open positions (long or short) in each time-band under the standard method described in paragraphs 13 to 19 of Section 2.

<u>Coupon 3% or more</u>	<u>Coupon less than 3%</u>	<u>Duration weight (A)</u>	<u>Assumed change in yields (B)</u>	<u>Risk weight (A) x (B)</u>
up to 1 mo.	up to 1 mo.	0.00	1.00	0.00%
1 to 3 mos	1 to 3 mos	0.20	1.00	0.20%
3 to 6 mos	3 to 6 mos	0.40	1.00	0.40%
6 to 12 mos	6 to 12 mos	0.70	1.00	0.70%
1 to 2 yrs	1.0 to 1.9 yrs	1.40	0.90	1.25%
2 to 3 yrs	1.9 to 2.8 yrs	2.20	0.80	1.75%
3 to 4 yrs	2.8 to 3.6 yrs	3.00	0.75	2.25%
4 to 5 yrs	3.6 to 4.3 yrs	3.65	0.75	2.75%
5 to 7 yrs	4.3 to 5.7 yrs	4.65	0.70	3.25%
7 to 10 yrs	5.7 to 7.3 yrs	5.80	0.65	3.75%
10 to 15 yrs	7.3 to 9.3 yrs	7.50	0.60	4.50%
15 to 20 yrs	9.3 to 10.6 yrs	8.75	0.60	5.25%
over 20 yrs	10.6 to 12 yrs	10.00	0.60	6.00%
	12 to 20 yrs	13.50	0.60	8.00%
	over 20 yrs	21.00	0.60	12.50%

For those who wish to apply the alternative method described in paragraphs 20 and 21 of Section 2, slightly different time-bands based on duration would apply:

<u>Zone 1</u>	<u>Zone 2</u>	<u>Zone 3</u>
up to 1 mo.	1.0 to 1.8 yrs	3.3 to 4.0 yrs
1 to 3 mos	1.8 to 2.6 yrs	4.0 to 5.2 yrs
3 to 6 mos	2.6 to 3.3 yrs	5.2 to 6.8 yrs
6 to 12 mos		6.8 to 8.6 yrs
		8.6 to 9.9 yrs
		9.9 to 11.3 yrs
		11.3 to 16.6 yrs
		over 16.6 yrs

Debt securities
Horizontal offsetting

The proposal groups time-bands into three zones as indicated below.

Partial offsetting would be permitted between weighted long and short positions in each zone, subject to the matched portion attracting a disallowance factor that is part of the capital charge. The disallowance proposed within zone 1 is 40%, applied to one side of the matched amount. Within zones 2 and 3 the disallowance would be 30%.

The remaining net position in each zone would be carried over and offset against opposite positions in other zones, where the process is repeated. The proposed disallowance factor between adjacent zones is 40%. The disallowance between non-adjacent zones would be 150%, meaning that 25% of a matched position would be regarded as hedged.

	<u>Time-band</u>	<u>within</u> <u>the zone</u>	<u>between</u> <u>adjacent zones</u>	<u>between</u> <u>zones 1 and 3</u>
	0 - 1 mo.			
Zone 1	1 - 3 mos	40%		
	3 - 6 mos			
	6 - 12 mos		40%	
	1 - 2 yrs			
Zone 2	2 - 3 yrs	30%		150%
	3 - 4 yrs			
	4 - 5 yrs		40%	
	5 - 7 yrs			
Zone 3	7 - 10 yrs			
	10 - 15 yrs	30%		
	15 - 20 yrs			
	over 20 yrs			

Debt securities
Sample market risk calculation

Time-band	Issuer	Position	Specific risk		General market risk		
			Weight (Z)	Charge	Weight (Z)	Charge	
0- 1 mo.	Treasury	5,000	0.00	0.00	0.00	0.00	
1- 3 mos	Treasury	5,000	0.00	0.00	0.20	10.00	
3- 6 mos	Qual Corp	4,000	0.25	10.00	0.40	16.00	
6-12 mos	Qual Corp	(7,500)	1.00	75.00	0.70	(52.50)	
1- 2 yrs	Treasury	(2,500)	0.00	0.00	1.25	(31.25)	
2- 3 yrs	Treasury	2,500	0.00	0.00	1.75	43.75	
3- 4 yrs	Treasury	2,500	0.00	0.00	2.25	56.25	
3- 4 yrs	Qual Corp	(2,000)	1.60	32.00	2.25	(45.00)	
4- 5 yrs	Treasury	1,500	0.00	0.00	2.75	41.25	
5- 7 yrs	Qual Corp	(1,000)	1.60	16.00	3.25	(32.50)	
7-10 yrs	Treasury	(1,500)	0.00	0.00	3.75	(56.25)	
10-15 yrs	Treasury	(1,500)	0.00	0.00	4.50	(67.50)	
10-15 yrs	Non Qual	1,000	8.00	80.00	4.50	45.00	
15-20 yrs	Treasury	1,500	0.00	0.00	5.25	78.75	
> 20 yrs	Qual Corp	1,000	1.60	16.00	6.00	60.00	
Specific risk				229.00			
Residual general market risk						66.00	

Calculation of capital charge1. Specific Risk

Charge
229.00

2. Vertical offsets WITHIN SAME TIME-BANDS

Time-band	Longs	Shorts	Residual*	Offset	Disallowance	Charge
3-4 yrs	56.25	(45.00)	11.25	45.00	10.00Z	4.50
10-15 yrs	45.00	(67.50)	(22.50)	45.00	10.00Z	4.50

3. Horizontal offsets WITHIN SAME TIME-ZONES

	Longs	Shorts	Residual*	Offset	Disallowance	Charge
<u>Zone 1</u>						
0-1 mo.	0.00					
1-3 mos	10.00					
3-6 mos	16.00					
6-12 mos		(52.50)				
Total						
Zone 1	26.00	(52.50)	(26.50)	26.00	40.00Z	10.40
<u>Zone 2</u>						
1-2 yrs		(31.25)				
2-3 yrs	43.75					
3-4 yrs	11.25					
Total						
Zone 2	55.00	(31.25)	23.75	31.25	30.00Z	9.38

* Residual amount carried forward for additional offsetting as appropriate.

	<u>Longs</u>	<u>Shorts</u>	<u>Residual*</u>	<u>Offset</u>	<u>Disallowance</u>	<u>Charge</u>
<u>Zone 3</u>						
4-5 yrs	41.25					
5-7 yrs		(32.50)				
7-10 yrs		(56.25)				
10-15 yrs		(22.50)				
15-20 yrs	78.75					
> 20 yrs	60.00					
Total						
Zone 3	180.00	(111.25)	68.75	111.25	30.00%	33.38

4. Horizontal offsets BETWEEN TIME-ZONES

	<u>Longs</u>	<u>Shorts</u>	<u>Residual*</u>	<u>Offset</u>	<u>Disallowance</u>	<u>Charge</u>
Zone 1 & Zone 2	23.75	(26.50)	(2.75)	23.75	40.00%	9.50
Zone 1 & Zone 3	68.75	(2.75)	66.00	2.75	150.00%	4.12

5. Total capital charge

Specific risk						229.00
Vertical disallowances						9.00
Horizontal disallowances						
(offsets within same time-zones)						53.16
(offsets between time-zones)						13.62
Residual general market risk after all offsets						<u>66.00</u>
Total						370.78

* Residual amount carried forward for additional offsetting as appropriate.

Debt securities and equities
Alternative treatment for options

1. The Committee believes that there needs to be both a simplified approach for institutions which use purchased options largely to hedge other positions and a more sophisticated approach to be used by those who write options and the major players in the market.

2. It is proposed that institutions doing a limited amount and range of options business could use a simplified approach, as set out below, for particular trades.

Cash position	Option position	Treatment
Long	Long put	Position risk would be the market value of the underlying security multiplied by the sum of specific and general market risk charges for the underlying less the amount the option is in the money (if any) ³⁴
	or	
Short	Long call	
None	Long call	Position risk would be the lesser of:
		(i) the market value of the underlying security multiplied by the sum of specific and general market risk charges for the underlying
	or	
	Long put	(ii) the market value of the option

3. The more sophisticated approach for use by institutions involved in more complex strategies than those set out above would give

34 For example, if a holder of 100 shares currently valued at \$10 each holds an equivalent put option with a strike price of \$11, the capital charge would be: $\$1,000 \times 16\%$ (e.g. 8% specific plus 8% general market risk) = \$160, less the amount the option is in the money $(\$11 - \$10) \times 100 = \$100$, i.e. the capital charge would be \$60.

allowance for options-hedging for a variety of different trading book instruments. Comments from market participants would be especially welcome on how this can be done in a manner which is both sufficiently accurate and acceptable to supervisors and market participants for the purposes of minimum international standards. Two possible methods are being considered.

4. In the first of these, described in paragraph 29 of Section II and paragraph 16 of Section III, options positions would be delta weighted to convert them into positions in the underlying, which would then be treated as normal positions in the basic building-block approach. However, because this would neglect the gamma and volatility risk it is proposed that there should be an additional capital charge. One possibility would be to have a fixed add-on for open options positions and/or higher disallowances than assumed in the building-block methodology for hedged positions, for example a 60% disallowance. However, consideration would be given to alternative proposals from the industry.

5. In the second approach, approved options pricing models could be used to calculate the risks in options positions and related positions in the underlying or other derivatives, according to parameters set by the regulators. For example, these parameters would be designed to cover interest rate changes up to 1% at the short end and 0.6% at the long end (in line with the scale set out in Column B of Annex 2) and changes in implied volatility of +/- 25% from the current level. This approach would not be consistent with the building-block methodology and would mean institutions having discretion to "carve out" positions from the framework.

6. Currently, for measuring the overall market risk in exchange-traded options,³⁵ some securities regulators set the capital requirement at a level equal to the margin set by exchange in circumstances where the supervisor is fully satisfied that this accurately reflects the risk. On most exchanges participants are required to put up initial or original margin (typically in the range 5% to 10% of the contract price) plus any

35 The same would also apply to exchange-traded futures

variation margin which results from marking to market the firm's position daily. The margin requirements are explicitly based on price risk measured according to historic volatility and are reassessed daily or sometimes more frequently with a view to covering expected market exposure over the subsequent trading day.

7. The Committee has concerns about tying a capital standard intended for prudential purposes to margin requirements designed to protect exchanges from member defaults. It notes that this would not ensure equal treatment and could lead to pressure on exchanges to soften their margining rules. It also wonders what effects might result from using different systems for OTC and exchange-traded products, and from applying different capital charges to different exchanges. Finally, some Committee members are concerned about the systemic effects if capital requirements are free to rise sharply in periods of high market volatility, expressing a strong preference for setting capital at a level which is considered adequate for all market situations.

Summary of proposed treatment of interest rate derivatives

<u>Instrument</u>	<u>Specific risk charge</u>	<u>General market risk charge</u>	<u>Possible alternative treatments</u>
Exchange-traded future			
- Government security	No	Yes, as two positions ³⁶	Margin set by exchange
- Corporate debt security	Yes	Yes, as two positions ³⁶	Margin set by exchange
- Index on short-term interest rates (e.g. LIBOR)	No	Yes, as two positions ³⁶	Margin set by exchange
OTC forward			
- Government security	No	Yes, as two positions ³⁶	
- Corporate debt security	Yes	Yes, as two positions ³⁶	
- Index on short-term interest rates	No	Yes, as two positions ³⁶	
FRAs	No	Yes, as two positions ³⁶	
Swaps	None	Yes, as two positions	Sensitivity models

36 Or as a single position in the underlying.

<u>Instrument</u>	<u>Specific risk charge</u>	<u>General market risk charge</u>	<u>Possible alternative treatments</u>
Exchange-traded option			
- Government security	No	Yes	Either (a) Simple strategy requiring carve-cut of purchased options and their hedges
- Corporate debt security	Yes	Yes	(b) The use of options pricing models to be applied to the whole options book and associated positions
- Index on short-term interest rates	No	Yes	(c) Margin set by exchange
OTC options			
- Government security	No	Yes	Either
- Corporate debt security	Yes	Yes	(a) Simple strategy requiring carve-out of purchased options and their hedges
- Index on short-term interest rates	No	Yes	(b) The use of options pricing models to be applied to the whole options book and associated positions

EquitiesIllustration of x plus y methodology

Under the proposed two-part calculation described in Section 3 there would be separate requirements for the position in each individual equity (i.e. the gross position) and for the net position in the market as a whole. The table below illustrates how the system would work for a range of hypothetical portfolios, assuming a capital charge of 4% for the gross positions and 8% for the net positions.

<u>Sum of long positions</u>	<u>Sum of short positions</u>	<u>Gross position (sum of cols 1 & 2)</u>	<u>4% of gross</u>	<u>Net position (Difference between cols 1 & 2)</u>	<u>8% of net</u>	<u>Capital required (gross + net)</u>
100	0	100	4	100	8	12
100	25	125	5	75	6	11
100	50	150	6	50	4	10
100	75	175	7	25	2	9
100	100	200	8	0	0	8
75	100	175	7	25	2	9
50	100	150	6	50	4	10
25	100	125	5	75	6	11
0	100	100	4	100	8	12

Summary of proposed treatment of equity derivatives

<u>Instrument</u>	<u>Specific risk(x)</u>	<u>General market risk (y)</u>	<u>Possible alternative treatments</u>
Exchange-traded future			
- Individual equity	Yes	Yes, as underlying	Margin set by exchange
- Index	2I	Yes, as underlying	Margin set by exchange
OTC forward			
- Individual equity	Yes	Yes, as underlying	
- Index	2I	Yes, as underlying	
Exchange-traded option			
- Individual equity	Yes	Yes	Either
- Index	2I	Yes	(a) Simple strategy requiring carve-out of purchased options and their hedges (b) The use of options pricing models to be applied to the whole options book and associated positions (c) Margin set by exchange
OTC option			
- Individual equity	Yes	Yes	Either
- Index	2I	Yes	(a) Simple strategy requiring carve-out of purchased options and their hedges (b) The use of options pricing models to be applied to the whole options book and associated positions

Example of the shorthand measure of foreign exchange risk

Once a bank has calculated its net position in each foreign currency, it would convert each position into its reporting currency and calculate the shorthand measure as in the following example, in which the position in the reporting currency has been excluded:

<u>YEN</u>	<u>DM</u>	<u>GB£</u>	<u>FFR</u>	<u>US\$</u>	<u>GOLD</u>	<u>PLATINUM</u>
+ 50	+ 100	+ 150	- 20	- 180	- 30	+ 5
-----			-----		-----	
	+ 300			- 200		35

The capital charge would be 8% of the higher of the longs and shorts (i.e. 300) plus gross positions in precious metals (35) = $335 \times 8\% = 26.8$

MEASUREMENT OF BANKS'
EXPOSURE TO
INTEREST RATE RISK

Consultative proposal by the
Basle Committee on Banking Supervision

Basle

April 1993

CONTENTS

	<u>Page</u>
<u>Introduction</u>	1
Section I <u>Background</u>	4
Section II <u>Measurement concepts</u>	8
Section III <u>Measurement issues</u>	13
A. <u>Slotting items into the appropriate maturity band</u>	13
(a) Amortising items	13
(b) Uncertain reset date	14
(c) Uncertain maturity	14
(d) Derivatives	15
B. <u>Weighting and offsetting</u>	16
(a) Open position weights	16
(b) Offsetting within and across time-bands	18
C. <u>Integrating different reporting forms</u>	19
(a) Interest rate risk in different currencies	20
(b) Treatment of positions in different affiliates	21
Section IV <u>Development of a reporting framework</u>	22
(a) Amortising items	22
(b) Divergent contractual and behavioural maturities	22
(c) Non-interest-rate sensitive items	23
(d) Derivatives	23
(e) Trading book items	24
Section V <u>Consultation</u>	25
Annex 1 Weights for interest rate risk in the market risk proposals	30
Annex 2 Horizontal offsetting of debt securities in the market risk proposals	31
Annex 3 Glossary	32

MEASUREMENT OF BANKS' EXPOSURE
TO INTEREST RATE RISK:
A PROPOSED MEASUREMENT FRAMEWORK

INTRODUCTION

1. The purpose of the attached paper is to report on the work by the Basle Committee to measure the interest rate risk run by internationally-active banks. It sets out a number of issues relating to the analysis of the risk and indicates the proposals that are being considered to address them. On several issues the Committee has not yet come to a conclusion and the pros and cons of different alternatives are set out for the industry's consideration. The questions on which comment is specifically invited are put forward in Section V.

2. All members of the Basle Committee regard interest rate risk as a significant risk which banks and their supervisors need to monitor carefully. They believe that there would be merit in pursuing a common approach to measuring this risk, even though differences in banking product, customer behaviour and regulatory approach would necessitate a degree of national discretion.

3. The measurement of interest rate risk would follow a fairly straightforward approach. Banks would categorise interest rate sensitive assets, liabilities, and off-balance-sheet instruments according to their maturities or certain repricing characteristics. This paper sets out a number of proposed methods for "slotting" various instruments into their maturity bands. In the main proposal, duration-based weights are applied to the on- and off-balance-sheet positions in the different maturity bands (duration being a measure of price sensitivity for unit changes in interest rates).

4. The next step is to compute the difference between the duration-weighted assets and liabilities, subject to certain adjustments. The resulting number is an estimate of the change in the value of a bank as a result of a specified change in interest rates. This number for a bank with long-lived (high duration) assets relative to short-lived liabilities provides an indicator of the degree to which the bank's value would be adversely affected by, say, a rise in interest rates. Such a bank would find that its value, if sold as a going concern, would be less than it was

before the rise in rates. This paper also points out that a similar exercise could be used to determine the likely reaction of earnings to changes in interest rates.

5. Recognising that a fair amount of interest rate mismatching is a normal feature of the business of banking, the Committee holds the view that existing capital requirements can be regarded as covering a certain amount of interest rate risk. The purpose of the framework is to develop an approach to measuring how much risk banks are taking as a basis for then identifying those taking a considerable amount of interest rate risk, the so-called "outliers". Just what constitutes an outlier must be interpreted against a norm, a process involving substantial supervisory judgement. The supervisory response to outliers would, for now, be left to national discretion. For example, supervisors could take action through the examination process, by imposing absolute limits on positions, by applying capital requirements, or by some combination of these approaches.

6. Information derived from gap reports can be analysed from different perspectives. The methodology described above is designed to estimate the sensitivity of the economic value of the bank to future changes in interest rates. However, accounting differences suggest the need to consider other aspects of interest rate risk, for example the sensitivity of reported earnings to future changes in interest rates. It is also important to monitor the embedded losses caused by past movements in interest rates but not yet recognised in accounts that are carried at historic cost.

7. As described in the early part of the paper, the Basle Committee is concurrently issuing proposals for applying capital requirements for market risk to debt securities in the trading portfolio. It is the view of the Committee that, in seeking to measure interest rate risk for the purpose of identifying outliers, it is reasonable to take account of the risk over the whole bank, including those trading positions on which capital would have been levied. However, it is by no means clear that integrating the trading and non-trading books to the extent of allowing full offsetting between opposite positions in the two books is always appropriate. Ideas on whether and if so how the trading book should be integrated with the remainder of the book for the purpose of identifying "outliers" would be valuable.

8. Comment is invited on all aspects of this paper, including the measurement principles envisaged, by end-December 1993. Specific questions on a number of unresolved issues are set out in Section V. It is recognised that, at least for major banks, the system envisaged is relatively simple and would not be intended to supplant other more precise methods of determining interest rate risk that banks may currently be using. However, before implementing any common system on an international scale, the Committee would again wish to canvass opinion from the industry on the suitability of the approach ultimately chosen.

MEASUREMENT OF BANKS' EXPOSURE
TO INTEREST RATE RISK:
A PROPOSED MEASUREMENT FRAMEWORK

I. BACKGROUND

1. In July 1988 the Basle Committee concluded an agreement establishing risk-based minimum capital standards for internationally active banks. The Basle Accord, as that agreement has come to be known, entered into full effect at end-1992 and has been adopted in all the major financial centres, both in and outside the G-10. However, it focuses primarily on credit risk, i.e. the risk of a deterioration in the ability of a borrower or other counterparty to meet its obligations. It does not impose explicit capital charges tied to other banking risks, such as those related to changes in market interest rates (interest rate risk), or to changes in foreign exchange rates. Nonetheless, the Accord stated that the Committee would continue to study these risks and, where appropriate, would incorporate them in the risk-based framework.

2. Following adoption of the Accord, representatives from Committee member countries have been working to develop ways of assessing a bank's overall exposure to changing interest rates and to a variety of other so-called "market risks". In addressing market risks, a number of factors dictated that the Committee direct much of its efforts toward convergence between the capital standards of securities firms and the trading activities of commercial banks. These factors include the continuing integration of world financial markets, the growing securitisation of financial instruments, and the harmonisation process within the European Community. Proposals for applying capital requirements to positions in traded equities and debt securities are contained in the present package.

3. The market risk proposals relate to trading activities valued at current market prices and do not address interest rate risk arising from the more traditional activities of banks, which is the focus of the present paper. These other activities, primarily lending and deposit taking, raise different and difficult issues regarding the measurement of interest rate risk of banks because of the uncertain maturities and uncertain sensitivity to market rates of many of their assets and liabilities.

4. Interest rate risk is the risk that changes in market interest rates might adversely affect a bank's financial condition. Banks are

exposed to interest rate risk whenever the interest sensitivity of their assets does not match the sensitivity of their liabilities or off-balance-sheet positions. For a bank whose liabilities reprice faster than its assets, a rise in interest rates can reduce net interest income by increasing the institution's cost of funds relative to its yield on assets, and vice versa.

5. Changes in interest rates may affect not only an institution's current earnings but also its future earnings and the economic value of its capital, reflecting changes in the value of the institution's financial instruments. For the bank with liabilities carrying interest rates which change faster than those on its assets, its net present value will decline if interest rates rise. Measuring that risk is the main focus of this paper.

6. As with other risks, there are two separate stages in determining the appropriate supervisory approach. The first is to decide how to measure the risk. The second is to decide what action, if any, supervisors should take to discourage excessive risk-taking. Such action could, for example, be limits, capital requirements or discretionary supervisory measures. Given the number of outstanding issues which arise in measuring interest rate risk, the Committee is not proposing a common international capital standard for interest rate risk. Rather, its efforts are being focused on the development of a measurement system which supervisors could use for observation purposes as a means of identifying "outliers",¹ leaving each authority free to decide how to respond in the case of institutions identified as high risk. Individual supervisors may, of course, decide that capital requirements would be appropriate to their own national circumstances. However, a range of other possible responses could also be envisaged.

7. So far as the measurement framework is concerned, the Committee has developed proposals for addressing many of the issues. The recent work with securities regulators has been useful in enhancing understanding of price risk. However, the nature and analysis of interest rate risk in the banking book differs, in some respects, from that in the trading book. In

1 This is the approach the US authorities have taken in recent proposals to incorporate interest rate risk into the risk-based capital framework.

addition, the degree of detail and accuracy required in order to set capital requirements for the trading book is greater than is necessary or possible for what is intended to be principally an observation framework for the banking book.

8. In measuring interest rate risk, there are a number of complex issues which could well merit different solutions depending on the purpose of the analysis and on particular national circumstances.

9. There is, for example, no consensus about the extent to which offsetting should be allowed between the interest rate risk arising from different positions or types of business in the banking book, and between banking and trading activities. But the principal difficulties are associated with the treatment of items common to banking whose actual maturities may be uncertain, or can differ from their contractual terms. Examples include pre-payable mortgages or hire purchase (instalment) loans and instruments such as savings deposits and demand deposits on which the interest rate paid tends to be less responsive to changes in market interest rates and which allow individual banks some discretion in the timing and extent of changes to the rates they pay. The way in which these items are treated is crucial to the measurement of interest rate risk. However, extensive discussion has not revealed a consensus on a standard approach or common set of assumptions which could be applied across all classes of instrument and across all countries.

10. Despite these difficulties, the Committee would like to introduce some form of interest rate risk measure on a regular and consistent basis. The Committee also feels that experience in collecting and analysing such information from their banks, and discussing its implications with them as part of the ongoing supervisory process, will help to reveal the practical effect of the analytical problems more fully. That process, in turn, could facilitate the development of a consensus and lead to further refinement of the measurement system. It is recognised that there will be costs to banks in this process and care is needed to ensure that the value of the information sought is sufficient to justify these costs.

11. As a first step, the Committee is seeking to develop a consensus on a common reporting framework which would allow national supervisory authorities to collect consistent information and from which various measures of interest rate risk could be considered and ultimately constructed. An outline of the type of framework which would be needed is

described in Section IV. Initially at least, discretion would be given to supervisors in the way in which they analyse and interpret the information they would receive. But, recognising the costs involved to banks in changes to reporting systems, the framework is designed to facilitate changes to the measurement of risk as a consensus emerges as to which measure or measures are to be preferred.

II. MEASUREMENT CONCEPTS

12. Banks are potentially exposed to interest rate risk on all their interest-rate related assets and liabilities, whether they are held for trading and are marked to market or are held for a longer time horizon and carried at nominal or book value. When interest rates change, the price of items that are marked to market will change to bring yields into line. However, the economic value² of the assets and liabilities held at book value will also change in the same way, although the effect on the reported balance sheet will be much more gradual, since it will be spread over the remaining life of the assets and liabilities.

13. The extent to which the economic value of a bank is exposed to changes in interest rates depends upon the extent to which it is running mismatches. If a bank is funding five-year fixed rate loans with short-term deposits, it is exposed to changes in interest rates. But if it funds these loans with deposits having the same maturity and cash-flow characteristics, it is not exposed, since any change in the economic value of the loans would be offset by a change in the economic value of the deposits. Banks often do not match their loans and deposits directly in this way because they can take a variety of other steps to hedge their interest rate risk.

14. While accepting that there could be different focuses for the measurement system (see paragraphs 19 to 24), the Committee has concluded that the principal objective should be to assess the extent to which the economic value of a bank is exposed to future changes in interest rates, using the following processes:

- all interest-rate sensitive asset, liability and off-balance-sheet positions would be placed into one of thirteen time-bands based on the instrument's maturity or repricing characteristics. The positions within each time-band would be

2 The term "economic value" used in this paper refers to the going-concern value of the bank. The objective is to capture the change in an institution's net economic value attributable to interest rate risk. This change would be computed as the change in the present value of the institution's assets minus the change in the present value of its liabilities plus the net change in the present value of its off-balance-sheet positions for an assumed change in market interest rates.

netted and the resulting net position for each time-band would then be weighted by an estimate of its duration³ (see Annex 1);

- the duration weights would be adjusted to reflect the relative volatility of interest rates across the term structure;
- the net balance of these individual weighted positions would form the principal basis for evaluating an institution's interest rate risk;
- it may be appropriate to add to this measure "disallowance factors" to full offsetting referred to in paragraphs 43 to 48.

15. Applying this methodology to all assets and liabilities, irrespective of whether they are marked to market or held at book value, raises, however, several problems.

16. Some imprecision will be introduced into the measure of exposure to future changes in rates because the duration weights would be applied in many cases to book values rather than to market values. But it is not evident that this imprecision will be significant: in aggregate, book values may generally be a reasonable approximation to market values for these purposes - particularly if current interest rates are close to the average rates paid and received on banking book positions.

17. Another difficult question is the extent to which interest rate risk should be viewed on a whole book basis or whether the trading book, which is marked to market, and the banking book, which is often not, should be treated separately. It is clear that from an economic perspective the effect of a change in interest rates on any given financial instrument is the same, regardless of whether the instrument is held in a trading portfolio or in a banking book. A case could be made that banks which manage the interest rate risk of their banking and trading books in a fully integrated manner should be allowed to offset positions for risk management purposes.

18. There are, nonetheless, practical effects which may justify separate treatment of the trading and the banking books for the purpose of measuring interest rate risk. If a bank has an exposure in a trading book asset that is offset by a banking book liability and rates change, creating

3 Duration is a mathematical concept designed to measure the price sensitivity of fixed-rate instruments with different maturities to changes in interest rates.

a market value loss in the trading book and an (economic value) gain in the banking book, the bank will take an immediate hit on its profits and capital but may not be able to realise the gain in the banking book at the same time. Furthermore, unlike the banking book, the composition of the trading portfolio often changes significantly from week to week or even day to day. This means that a hedge that is present on the reporting date may disappear a few days later. In such cases, complete offsetting may not be justified. Of course, the issue of separating the trading and banking books has to be evaluated in the context of the market risk proposal for traded debt. Under this proposal, the trading book becomes subject to explicit capital charges.

19. The existence of different accounting rules for different categories of assets and liabilities suggests the need to consider measuring two other aspects of interest rate risk. One is the sensitivity of a bank's earnings (profit and loss) over the short-term to a given change in rates, the so-called current earnings perspective. The other is the possibility of embedded losses, for example where banks have in the past made loans at fixed or inflexible rates which now fall short of current funding costs.

20. Under the current earnings perspective, the main focus is the sensitivity of the profit and loss account in the short term (e.g. one year) against a given change in interest rates (say 1%). The objective is to identify those banks which are especially vulnerable to fluctuations in recorded profits, irrespective of whether any losses incurred may be offset, under the economic approach, by larger earnings which, because of accounting conventions, will only emerge gradually over the years.

21. The current earnings approach differs from the economic perspective in two main ways. The first difference is that the effect of interest rate changes is measured in terms of reported profits rather than economic value. This difference may be quite important where marking to market is not predominant. Secondly, the time horizon is shorter since in this case the supervisor is not trying to estimate the capacity of banks to withstand the long-term impact of movements in interest rates. Nonetheless, the supervisor would still wish to look at the whole maturity profile of the bank in seeking to identify outliers.

22. In order to apply the current earnings measure, in terms of the parameters referred to in paragraph 20 above:

- 11 -

- all the positions would be placed in the maturity ladder as described in Section IV. Since this approach does not evaluate the economic effect of interest rate movements, no duration-based weighting factors would be applied;
- the supervisor would focus on the shorter time-bands up to one year;
- gaps in the four shortest time-bands would be calculated. To evaluate the sensitivity of net interest income implied by these gaps, the net position within each time-band would be multiplied by an assumed interest rate change and by the length of time, for the period being evaluated, that the gap would be in effect;⁴
- since the focus is on the shortest time-bands, full offsetting, at this stage, is envisaged;
- for the trading book the duration-based framework provides a measure of the impact of a change in interest rates on the profit and loss of the bank. The current earnings approach complements this by giving an estimate of the effect on the profit and loss of changes in interest rates on the rest of the book.

23. A further dimension of interest rate risk which needs to be addressed is the extent of any embedded losses. Assets and liabilities which are not marked to market⁵ may already contain locked-in losses caused by past movements in interest rates which will not - because of normal accounting conventions - be reflected immediately either in adjustments to balance sheet values or in provisions. These would only have an impact on the accounts over the life of the assets and liabilities. For example, long-term fixed rate lending entered into when interest rates were low and refunded more recently with liabilities bearing a higher interest rate will, over the remaining life on the loans, represent a drain on the bank's

⁴ For example, if a bank had a positive (long) net position of ten million in the first (0 to 1 month) time-band, the annualised net interest income exposure from this net position from a 1% change in interest rates would be: 10 million x 1% x 11.5/12 or approximately 95,833. This assumes that all repricings within the time-band occur at the mid-point of the time-band.

⁵ For trading positions or for other assets and liabilities which are marked to market, this problem would not arise since all losses arising from an adverse interest rate movement would have been immediately reflected in the profit and loss account.

resources; but the full extent of this loss will not be apparent in the current balance sheet, nor in any one year's net interest income. This is, strictly speaking, an exposure to past movements in rates which is not fully reflected in the balance sheet, rather than to possible future movements in rates.

24. To measure the extent of embedded losses in a systematic manner is a significant task since it would be necessary to take account of the average return (i.e. the interest rate or coupon) of both assets and liabilities in the period to repricing. It is not envisaged that the basic measurement system should seek to do this. Nonetheless, the Basle Committee considers it essential that banks be aware of the approximate size of their embedded losses and that supervisors take the extent of such losses into account in their overall assessment of interest rate risk. Banks could, for example, monitor their embedded losses by estimating the net present value of their banking books. Alternatively, they could track weighted average yields on the assets and liabilities in each time-band. Another approach would be to maintain information on the volume of fixed-rate assets at less than current market rates and their financing.

III. MEASUREMENT ISSUES

25. In using a basic duration gap analysis to measure interest rate risk, several sets of issues arise in seeking to arrive at a single measure of risk.⁶ The first of these concerns the manner in which certain items with special characteristics are to be slotted into the maturity ladder. The second covers the actual weighting to be applied and the extent to which offsetting should be permitted between long and short positions.

26. It is proposed that different maturity ladders should be constructed for each currency in which the bank has significant positions. In principle, banks would be expected either to present a comprehensive reporting return covering the positions in all their major branches and subsidiaries or to be in a position to provide information for all units that are subject to consolidated supervision (see paragraphs 53 and 54). This raises a third set of issues, namely the degree of integration between positions in different currencies and in different affiliates.

A. Slotting items into the appropriate maturity bands

(a) Amortising items

27. Because they repay principal on a periodic basis rather than at maturity, amortising items merit special treatment. Two approaches could be adopted: they could either be reported separately and then become subject to lower duration weights based on an assessment of the typical amortisation profile of the items concerned; or - more accurately - they could be broken down into their individual tranches and be included in the maturity ladder together with non-amortising items, on the basis of the relevant amortisation dates. Thus a fixed rate loan of 100, repayable in two equal annual instalments, could either be subject to a lower duration weight or included in the standard maturity ladder as two separate loans of 50, one of one year maturity, the other of two years' maturity. Market comment on the practicability of the latter approach would be particularly welcome.

6 Most of these issues would also apply if a current earnings approach is used.

(b) Uncertain reset date

28. Using a maturity ladder approach presumes that the final maturity date (for fixed rate items) or next interest reset date (for variable rate items) is a known quantity. This is not true of much banking business. Banks will have assets and liabilities where the final maturity is fixed but the interest re-set date is not, because the rates are linked to an underlying reference rate, e.g. a prime or base rate.

29. It is envisaged that those items where the interest rate adjusts to changes in market rates but the precise reset date is uncertain could be placed in either of the first two bands according to the estimated average lag between the change in their interest rates and the change in market rates. Long and short positions with the same reference rate could be netted.

(c) Uncertain maturity

30. For many items in the balance sheets of retail banks, the behavioural (i.e. actual) maturity is very likely to be different from the contractual maturity. For example, some deposit liabilities may remain available to the bank beyond their contractual repayment date without any obligation or need for the bank to adjust the interest rate payable on them. Similarly, some assets of banks tend to be repaid before maturity.

31. Where empirical evidence indicates that the behavioural maturity is relatively stable over time, it is reasonable to place such items in the bands according to their estimated maturities. For example, if three-year hire purchase agreements are typically paid off in two years, they would be assigned to the two-year maturity band rather than to the three-year band. This approach would allow these items to be combined with normal banking business for risk assessment purposes.

32. For savings deposits and non-interest-bearing sight deposits, the issue is more complex. It is not only that these liabilities often remain available to the bank beyond their contractual maturity, but also that the rate is variable at the discretion of the bank or - in the case of non-interest-bearing deposits - set contractually at zero. Banks may have available to them a considerable core of transactions deposits which are largely unresponsive to interest rates and so could perhaps - from an interest rate risk perspective - properly be regarded as long-term in nature even though it would be imprudent to do so from a liquidity perspective.

33. A number of members of the Committee have experience of assessing the "stickiness" of savings deposits and sight deposits. Indeed, estimates can be made of the proportion of such deposits which tend to remain with the bank. However, while these core deposits may not respond quickly to small interest rate differentials, in the case of a significant rise in market rates a bank could not indefinitely postpone adjustment of its rates or conditions without losing the bulk of such accounts.

34. Views differ on how this information should be reflected in the measurement of risk. One alternative is for supervisors to instruct banks how to slot their core deposits according to a formula based on statistical estimates of stickiness, i.e. the proportion likely to be drawn down over a given time period in the absence of interest rate adjustments. An alternative is to allow banks freedom to slot deposits according to their own calculations of stickiness, subject to supervisory oversight, and perhaps also subject to some overall constraints, such as specifying the longest time-bands which could be used to slot each type of core deposit and the maximum amount that could be slotted into that time-band.

35. For some items, additional considerations may be required in that their behavioural maturity may change with changes in interest rates. For example, in the case of a fixed-rate mortgage where the holder can prepay without penalty, a sharp fall in rates can give rise to an increase in prepayments. For such items, estimated cash flows would be slotted based upon expected prepayment behaviour. These prepayment assumptions should reflect current estimates of expected future prepayment rates and would vary as interest rates change. The assumptions used in calculating these expected cash flows would be subject to supervisory approval. In most countries, however, this is not a significant problem either because the vast bulk of mortgages are at floating rates or because the penalties for prepayment are prohibitive.

(d) Derivatives

36. The measurement of interest rate risk in derivative products would be the same as that set out in detail in the consultative paper on market risks. Thus, all debt derivatives and off-balance-sheet instruments which react to changes in interest rates would be converted into positions in the relevant underlying as described in paragraphs 60 to 65. These would include forward rate agreements (FRAs), futures and options on debt

instruments, interest rate and cross-currency swaps and forward foreign exchange positions.

37. The treatment of options poses problems because of the asymmetrical risk and the non-linear relationship with the underlying. The most practical method of measuring the risk in options is to report options on a delta-weighted basis (or a simplified proxy of delta) and simply slot them into the maturity ladders. Although in the market risk proposals it is suggested that a further measure of risk should be added to take account of the fact that deltas do not capture all the risk of loss in trading options, the Committee feels that such complexity is not justified for the purpose of measuring interest rate risk in the banking book. It therefore favours the use of deltas alone.⁷

B. Weighting and offsetting

38. Converting the positions reported in the maturity ladder into a measure of exposure to future movements in interest rates requires assumptions to be made about likely movements in and correlations between different interest rates and the time horizon over which a bank is likely to be exposed to changes in rates before it can take action to protect its position. These assumptions can be used to determine appropriate open position weights (which indicate the riskiness of holding a single long or short position) and rules governing the offsetting of long and short positions within and across the time-bands.

(a) Open position weights

39. Under the market risk proposals described in the first paper in this package, positions in each time-band of the maturity ladder would be weighted by a factor designed to reflect the price sensitivity of those positions to changes in interest rates. The weighting factor is the product of two components, one based on the duration of the position and the other based on assumed changes in market yields. The time-bands and corresponding weighting factors which are being envisaged are shown in Annex 1.

7 For small banks which do not have the capacity to calculate deltas but use options only as hedges, comment is invited on the need for a simplified alternative.

40. Although the impact of a change in interest rates may be less immediate in a bank's traditional banking business than its trading position (which are generally marked to market), it is no less real. Hence, as a starting point, the Committee proposes that the same methodology and duration weights should be applied to open positions in the banking book as to those in the trading book. A few members think that different volatility factors (i.e. the assumed change in yields) might justifiably be used because the time horizon over which the banking book should be judged is longer than that for the trading book. Most, however, believe that the range proposed in the consultative paper (1% at the short end ranging down to 0.6% at the long end) represents a reasonable estimate of the level of protection for which supervisors should be looking. The Committee invites comment on this matter and in particular on the need for a sliding scale of volatility factors.

41. The duration of a fixed-rate security, although primarily influenced by its maturity, is also influenced by its coupon. The lower the coupon, the more volatile the price. For example, in an 8% interest rate environment, the price of a 30-year zero-coupon bond is more than twice as volatile as that of a 30-year 8% bond. Slotting such bonds according to residual maturity would underestimate risk and allow offsetting between positions where substantial risk is still present. The Committee therefore proposes that securities with coupons of less than 3% should be reported separately and made subject to the higher scale of weighting factors set out Annex 1.⁸

42. Alternatively, it is for consideration whether institutions with the necessary capability should be permitted to measure duration by calculating the price sensitivity of each position separately and to prepare the reporting form based on duration, not on residual maturity. This would involve taking into account the exact coupon of each instrument, rather than an assumed 8% rate, and calculating duration according to the precise residual maturity of the instrument rather than the mid-point of a time-band. In principle, the greater accuracy of such a method would be welcome but banks' systems would need to be subject to supervisory oversight to ensure that the risk was being correctly measured. Other

8 This scale in effect converts zero-coupons into the equivalent of 8% bonds.

aspects of the measurement system, for example disallowances for permissible offsetting, would be no different from the standard gap method of calculation.

(b) Offsetting within and across the time-bands

43. A fundamental issue in measuring interest rate risk is the extent to which short and long positions both within time-bands and between time-bands can be regarded as hedging each other. There is strong empirical evidence that long and short positions of equal risk-weighted size are generally less risky as a pair of positions than when considered individually: indeed, for positions of very similar maturity and bearing similar market-related interest rates, interest rate risk can virtually be eliminated. In the part of this package dealing with the treatment of debt securities in the trading book, this hedging effect is captured by permitting offsetting subject to specific disallowance factors: the smaller the disallowance, the more the offsetting of risk is recognised. It is envisaged that, for the trading book, offsetting allowances will be greatest for positions in the same maturity band ("vertical" offsets) but will also be recognised for positions in different maturity bands ("horizontal" offsets) - though as proposed these are progressively less generous as positions in the maturity ladder get further apart.

44. Similar arguments can be applied to the banking book. It is possible for mismatches and basis risk to arise within a maturity band which would not be apparent in the reported information. This suggests that full vertical offsetting might be imprudent, particularly for the shorter maturity bands where deliberate mismatching in banks' treasury operations may be concentrated. On the other hand, assuming that the objective is solely to identify outliers, the added complexity introduced by a system of disallowances may not be warranted. One test of the usefulness of disallowances is how large a role they would play in the measure of risk.

45. Those who favour vertical disallowances believe that there are, nonetheless, circumstances where full offsets might intuitively have some appeal. Mention has already been made in paragraph 29 of reference rate items, where assets and liabilities bear a rate of interest which will automatically adjust at the same time and which, if of equal amount, will be perfectly hedged.

46. There are other cases, perhaps where a bank has deliberately arranged a pair of precisely matched transactions, in which a more generous

treatment of offsetting may also be justified. It would be impractical to include sufficient detail in the reporting framework to allow supervisors to identify such hedges, but it might instead be acceptable to allow banks themselves to net closely hedged positions in the same maturity band before inclusion in the reporting form according to criteria laid down by the supervisor. Criteria could be devised to determine the closeness of maturity and coupon matching which would justify this treatment. It would be necessary, as a safeguard against abuse, to require banks to report both the gross (i.e. before offsetting) and net figures, so that supervisors could monitor the extent to which a bank's book was regarded as fully hedged and, if necessary, make occasional checks on banks' application of the criteria. Comment on the practicability of this approach is invited.

47. Similar questions arise in relation to the appropriate horizontal offsets, i.e. the permitted offsetting of matched weighted positions in different time-bands. If yields always change consistently with the assumptions behind the weights along the yield curve, complete offsetting of matched weighted positions would be appropriate. However, yields along the yield curve may not move together over quite lengthy periods.

48. In the consultative papers for debt securities in the trading book, significant recognition is given to hedging between opposite positions in time-bands that are not widely separated but only limited recognition to hedging between long and short positions at opposite ends of the maturity spectrum (see Annex 2). For the measurement of interest rate risk in the bank as a whole, some Committee members are in favour of full offsetting of equal risk-weighted positions across the maturity spectrum, on the grounds that horizontal disallowances would not have a material effect on the identification of banks most exposed to interest rate risk. A majority, however, takes the view that, as in the trading book, supervisors should not recognise full hedging across the maturity spectrum. There is, however, no consensus that the same horizontal disallowances as proposed for the trading book would necessarily be appropriate for positions in the banking book.

C. Integrating different reporting forms

49. Paragraphs 17 to 18 above addressed the question of whether and to what extent the trading book and the banking book should be integrated for the purpose of measuring interest rate risk. Similar questions arise in

connection with interest rate risk in different currencies and interest rate risk incurred by different affiliates.

(a) Interest rate risk in different currencies

50. The proposed reporting system would require the completion of maturity ladders for each currency,⁹ except for those in which business is not significant.¹⁰ Naturally, there may be positions in some ladders which, if in the same currency as those in others, would be treated as offsetting to a greater or lesser degree. The main issue is whether opposing interest rate positions in different currencies could indeed be regarded as hedging one another.¹¹ Clearly, interest rates of some countries (e.g. ERM currencies) show at least some degree of correlation.

51. This issue has parallels with horizontal offsetting: ideally, the recognition of hedging should reflect the correlation of interest rates. The question in this case is whether different currencies exhibit broadly similar interest rate movements with any degree of regularity. An exact measurement based on correlations of all rates in all currencies would be extremely complicated and difficult to incorporate into a measurement system. One possibility could be to group currencies into blocs that exhibit closely correlated movements. However, this could prove very complex, and the choice of currency blocs could be controversial. Also, parallelism would not be maintained with the proposals for measuring foreign exchange risk in the consultative paper on market risks, which rejects the concept of currency blocs in the context of measuring foreign exchange risk.

52. The most conservative solution would be to permit no offsetting between positions in different currencies, but this "worst case" approach is harsh and does not reflect economic reality. Available evidence suggests that correlations of interest rates in different currencies are generally

9 Composite currencies such as the ECU or SDR could be reported as a separate currency; or at the supervisor's discretion, be disaggregated into the relevant maturity ladders according to the quotas governing the basket.

10 Comment is invited on an appropriate threshold level for "significant".

11 No offsetting of this kind is envisaged in the proposed market risks framework.

positive, but are relatively low compared with correlations for different maturities in the same currency. A majority therefore prefers an intermediate solution that would not imply extreme assumptions on correlations - that is, not as pessimistic as no offsetting, but not as optimistic as permitting full offsetting. It is suggested that comment be invited on workable methods for recognising interest rate correlations across currencies.¹²

(b) Treatment of positions in different affiliates

53. Bank supervisors generally prefer to include all the banking units of a group in a risk measurement system. The Committee believes that, as with any other risk, the interest rate risk banks undertake in subsidiaries and foreign branches should not escape prudential supervision. While banks may not have fully integrated interest rate risk monitoring systems that extend to all their subsidiaries and foreign branches, they should be in a position to provide information for all units that are subject to consolidated supervision, subject perhaps to a de minimis exemption for small units.

54. While, however, it provides a more comprehensive measure of risk, consolidated reporting can underestimate market risk because positions in one affiliate can offset opposite positions in another. There is, for example, no guarantee that a parent bank can withdraw profits from a subsidiary to offset its own losses. This is more crucial in assessing market risk than for credit risk, where a subsidiary's exposure will always be additive to that of the parent. National supervisors would need to be able to satisfy themselves of the legal and practical possibilities for transferring profits before allowing intra-group offsets. Moreover, they might still wish to introduce some type of limits system to avoid the possibility of over-reliance on intra-group transfers of profits.

12 Calculation of interest rate risk for each currency would produce (a) vertical and/or horizontal disallowances which have no sign, and (b) a final residual unmatched position, which has a sign (either long or short). A possible approach favoured by one delegation would be to measure the risk as the disallowances plus the larger of the sum of short and long residual unmatched positions in individual currencies. This would represent partial offsetting and would imply that there is neither positive nor negative correlation between the interest rates in different currencies.

IV. DEVELOPMENT OF A REPORTING FRAMEWORK

55. Following consultation and after carefully reviewing the comments received, the Committee proposes to develop a reporting framework along the lines of the framework used for the treatment of debt securities in the trading book. The market risk proposals require banks to allocate their trading positions in securities and related derivatives to a maturity ladder divided into thirteen time-bands (see Annex 1), according to the remaining period to repricing or, for fixed-rate items, to final maturity. The Committee sees merit in adopting a similar approach for all interest-rate related assets and liabilities¹³ (on and off-balance-sheet) in a series of maturity ladders for each currency.

56. Many positions in the banking book have special features which make them respond distinctively to changes in market interest rates. It is essential for the reliability of the subsequent measurement calculations to be able to distinguish between them in the maturity ladder so that they can be accorded an appropriate treatment.

(a) Amortising items

57. Depending on whether or not the supervisory authority decides to separate amortising items and treat them in a standard manner, there may need to be special breakouts for amortising items in the reporting form. This would not be necessary if institutions break down amortising items and slot them according to the appropriate repayment dates as described in paragraph 27.

(b) Divergent contractual and behavioural maturities

58. For certain items, as explained in paragraphs 30 to 35, while the contractual period until interest rates can be reset or the position matures may be known, there may be reason to believe that the actual term may be different because of the behaviour of depositors or borrowers. For the purposes of the reporting framework, therefore, it is suggested that such items should be separately identified. This would permit different assumptions to be made about their true maturity in assessing the interest rate risk to which the bank is exposed. Demand deposits, which as explained

13 Non-interest-bearing assets and liabilities would be slotted into separate lines in the reporting form.

in paragraphs 32 to 34 may justify special treatment, would be separated from other liabilities.

(c) Non-interest-rate sensitive items

59. Non-interest sensitive assets and liabilities (e.g. equity or property) would be reported in special lines in the reporting form outside specific time-bands. It would seem appropriate to include interest-bearing capital liabilities (for example, subordinated debt) in the ladders alongside other banking positions, but the non-interest sensitive elements of capital (i.e. equity) would be included with non-interest bearing liabilities.

(d) Derivatives

60. Derivatives would be converted into notional on-balance-sheet positions for slotting into the maturity ladder alongside other assets and liabilities. In principle, there would be no particular reason to differentiate between off-balance-sheet items and the regular on-balance-sheet items in the reporting framework. However, for monitoring and statistical purposes, it could well be useful to identify separately the positions taken in the main derivative products, and the pro-forma reporting form makes that distinction.

61. Futures and forward contracts in the same currency, including forward rate agreements, would in principle be treated as a combination of a long and a short position in a notional government security. The maturity of a future or an FRA would be the period until delivery or exercise of the contract, plus - where applicable - the life of the underlying security. For example, if reporting at the end of June, a long position in an August three-month interest rate future would be reported as a long position with a maturity of five months and a short position with a maturity of two months. However, since the two-legged treatment for futures and forwards captures a relatively small financing cost, an alternative may be for banks to slot in the value of the securities that are deliverable against the futures contract.

62. Forward foreign exchange positions would be slotted within their appropriate currency ladders according to the maturity of the individual contracts. Thus a five-month forward contract to sell dollars for Deutsche Mark would be slotted as a short position in the three to six month band of the dollar ladder and as a long position in the three to six month band of the Deutsche Mark ladder.

63. Swaps would be treated as two notional positions in government securities with relevant maturities. For example, an interest rate swap under which a firm is receiving floating rate interest and paying fixed would be treated as a long position in a floating rate instrument of maturity equivalent to the period until the next interest fixing and a short position in a fixed-rate instrument of maturity equivalent to the residual life of the swap. The separate legs of cross-currency swaps would be reported in the relevant maturity ladders for the currencies concerned.

64. As indicated in paragraph 37, options would be reported at delta equivalents. In slotting deltas into the time-bands, a two-legged approach could be used as for other derivatives, requiring one entry at the time the underlying contract takes effect and a second at the time the underlying contract matures.

65. Floating rate instruments with caps or floors can in theory be treated as a combination of floating rate securities and a series of European-style options. For example, the holder of a three-year floating rate bond indexed to six-month LIBOR with a cap of 15% could treat it as:

- (1) a debt security that reprices in six months; and
- (2) a series of five written call options on a FRA with a basis of 15%, each with a negative sign at the time the underlying FRA takes effect and a positive sign at the time the underlying FRA matures.

However, it is recognised that this treatment may be unduly complicated and a simple alternative might be considered. For example, one possibility would be to treat instruments whose caps are more than 1% above current interest rates as floating rate instruments and those whose caps are within 1% of current interest rate levels as fixed rate instruments slotted according to their final maturities. Comments are invited on this or on alternative methodologies.

(e) Trading book items

66. As indicated in paragraphs 17 and 18, questions arise in relation to the integration of the trading and banking books. It is therefore proposed that the reporting framework should have separate lines for trading book positions.

V. CONSULTATION

67. This paper is being circulated widely for public comment both within G-10 member countries and outside. Comments are invited on all aspects, in particular those listed below, with counter-proposals where appropriate.

I. Policy questions

68. Question 1: Is the overall framework for addressing interest rate risk proposed here appropriate? Are there changes that would improve its effectiveness?

Question 2: Is the supervisory focus on outliers, that is, banks with extraordinarily large levels of interest rate risk, appropriate?

Question 3: Are other supervisory methods adequate to deal with banks that have moderate levels of interest rate risk?

II. Methodology questions

69. Question 1: The measurement system favoured by a sizeable majority of Basle Committee members is designed to look at the risk of future changes in interest rates to the economic value of a bank by using a duration-weighted gap methodology.

- (a) Does this represent a satisfactory compromise between simplicity and accuracy?
- (b) Would it be an effective method of identifying outliers and what improvements would you suggest?

Question 2: A minority of Committee members prefer an alternative measurement system focused on current earnings (see paragraphs 20 to 22).

- (a) Would it be useful to supplement the basic measurement system by measuring also the risk to current earnings?
- (b) What are the views of market participants on the use at national discretion of the current earnings approach as an alternative to the economic value approach?

Question 3: Paragraphs 23 to 24 explain that the measurement system envisaged would not identify "embedded losses" caused by earlier interest rate changes but which do not show up because the assets/liabilities are recorded at book value.

- (a) Is it agreed that this is a significant aspect of interest rate risk which should be captured in some way and monitored by the supervisor?
- (b) If so, should it be addressed by the bank being required to:
 - estimate the net present value of its banking book; or to
 - track weighted average yields for its liabilities and assets in each time-band; or to
 - maintain information on the volume of fixed-rate assets at less than current market rates and their financing?

Question 4: Paragraph 18 proposes that trading positions (including off-balance-sheet instruments held for trading purposes) and non-trading positions (including off-balance-sheet instruments used to hedge non-trading positions) should be separated in measuring interest rate risk.

- (a) How far should offsetting positions between the trading and banking books in the same time-band (or overall) in the two books be recognised as hedges or partial hedges?
- (b) Should the recognition of hedges be dependent on a bank consciously managing its interest rate risk in an integrated manner or should marking to market also be an essential ingredient?

Question 5: Paragraph 27 suggests, for amortising items, that lower duration weights or a breakdown by individual repayments would be appropriate. Is this sensible, and if so, which of these reporting methods would be preferable?

Question 6: Paragraphs 30 to 35 explain the difficulties in slotting into the time-bands sight and other deposits whose behavioural and contractual maturities differ.

- (a) What would be an appropriate treatment for such items?

- (b) How can interest-reset behaviour be sensibly factored in, while limiting the potential for unrealistic assumptions?

Question 7: Paragraph 37 proposes the use of delta equivalent values in reporting options and similar instruments (e.g. interest rate caps and floors).

- (a) Is the use of deltas the best one for sophisticated institutions or would it be feasible to use options pricing models?
- (b) Should there be an alternative approach for less sophisticated institutions, similar to the one in the market risk proposals?

Question 8: The duration weights mentioned in paragraph 40 and set out in detail in Annex 1 use as one parameter an assumed 1% change in interest rates at the short end reducing to 0.6% at the long end.

- (a) Is a 1% change in interest rates sufficient protection in the light of historical interest rate volatility?
- (b) Is it appropriate to apply a sliding scale of factors to reflect the declining volatility of interest rates across the term structure or would it be better to maintain 1% protection across the maturity spectrum?
- (c) It is proposed that low-coupon items should be subject to higher duration weights. Is there a better way of dealing with these items?
- (d) Are there good reasons for applying different duration weights for different currency ladders?
- (e) What views are there on the question in paragraph 42 as to whether banks should be free to use a more sophisticated measure of duration, based on the actual coupon and maturity of each position?

Question 9: Paragraphs 44 to 46 question whether offsetting positions within the same time-bands should be regarded as risk free.

- (a) Would introducing some small vertical disallowance to account for basis risk and for mismatches within the same time-band have a material effect on the measure of interest rate risk?
- (b) If so, would it be practical to allow banks to net off closely matched items subject to the same reference rate?

Question 10: Paragraph 48 indicates that there are different views as regards full offsetting between long and short duration-weighted positions in different time-bands.

- (a) To what extent would horizontal disallowance factors add to measurement accuracy?
- (b) Would the horizontal disallowances proposed for the trading book (see Annex 2) be appropriate?

Question 11: Paragraphs 50 to 52 raise the question of recognising hedging between offsetting positions in different currencies.

- (a) Is it right, as proposed, to use different reporting ladders for each currency in which the bank has other than an insignificant position?
- (b) Should full or partial offsetting be allowed for interest rate risk run in different currencies?
- (c) As an alternative, is there a practical method of recognising interest rate correlations between different currencies?

Question 12: Paragraphs 53 and 54 express the intention of the Basle Committee to see that interest rate risk undertaken in foreign branches and subsidiaries does not escape supervision.

- (a) How far should banks be expected to measure interest rate risk on a consolidated basis?
- (b) If consolidated reporting is in operation, is full offsetting appropriate?

Question 13: The reporting framework envisaged in Section IV would comprise thirteen time-bands and may incorporate up to three cash-flow categories (amortising, non-amortising and deep discount).

- (a) Is the number of time-bands appropriate?
- (b) Should there be a smaller or larger number of specific cash-flow categories than the three mentioned?
- (c) Does the extra accuracy justify using a two-legged system to slot derivative products into the time-bands as suggested in paragraphs 61 to 64?

- (d) What simple alternatives are there for the treatment of floating rate instruments subject to caps or floors set out in paragraph 65?

70. Comments on these questions and on any other aspect of the ideas described in the paper should be submitted to national banking supervisory authorities to arrive before end-1993. The responses will be assembled at national level and put forward to the Basle Committee for further consideration of the issues. Depending on the outcome of the consultation process and of progress in the field of market risks more generally, implementation of a consistent reporting framework might then proceed.

Annex 1Weights for interest rate risk in the market risk proposals

The table below sets out the risk weights which are being envisaged for the net open positions (long or short) in each time-band.

<u>Coupon 3% or more</u>	<u>Coupon less than 3%</u>	<u>Duration weight (A)</u>	<u>Assumed change in yields (B)</u>	<u>Risk weight (A) x (B)</u>
up to 1 mo.	up to 1 mo.	0.00	1.00	0.00%
1 to 3 mos	1 to 3 mos	0.20	1.00	0.20%
3 to 6 mos	3 to 6 mos	0.40	1.00	0.40%
6 to 12 mos	6 to 12 mos	0.70	1.00	0.70%
1 to 2 yrs	1.0 to 1.9 yrs	1.40	0.90	1.25%
2 to 3 yrs	1.9 to 2.8 yrs	2.20	0.80	1.75%
3 to 4 yrs	2.8 to 3.6 yrs	3.00	0.75	2.25%
4 to 5 yrs	3.6 to 4.3 yrs	3.65	0.75	2.75%
5 to 7 yrs	4.3 to 5.7 yrs	4.65	0.70	3.25%
7 to 10 yrs	5.7 to 7.3 yrs	5.80	0.65	3.75%
10 to 15 yrs	7.3 to 9.3 yrs	7.50	0.60	4.50%
15 to 20 yrs	9.3 to 10.6 yrs	8.75	0.60	5.25%
over 20 yrs	10.6 to 12 yrs	10.00	0.60	6.00%
	12 to 20 yrs	13.50	0.60	8.00%
	over 20 yrs	21.00	0.60	12.50%

Horizontal offsetting of debt securities
in the market risk proposals

The proposal groups time-bands into three zones as indicated below.

Partial offsetting would be permitted between weighted long and short positions in each zone, subject to the matched portion attracting a disallowance factor that is part of the capital charge. The disallowance proposed within zone 1 is 40%, applied to one side of the matched amount. Within zones 2 and 3 the disallowance would be 30%.

The remaining net position in each zone would be carried over and offset against opposite positions in other zones, where the process is repeated. The proposed disallowance factor between adjacent zones is 40%. The disallowance between non-adjacent zones would be 150%, meaning that 25% of a matched position could be regarded as hedged.

	<u>Time-band</u>	within <u>the zone</u>	between <u>adjacent zones</u>	between <u>zones 1 and 3</u>
Zone 1	0 - 1 mo.			
	1 - 3 mos	40%		
	3 - 6 mos			
	6 - 12 mos		40%	
Zone 2	1 - 2 yrs			
	2 - 3 yrs	30%		150%
	3 - 4 yrs			
Zone 3	4 - 5 yrs		40%	
	5 - 7 yrs			
	7 - 10 yrs			
	10 - 15 yrs	30%		
	15 - 20 yrs over 20 yrs			

Glossary

Amortising instruments: instruments which return both principal and interest on a predetermined basis over the life of the instrument.

Basis risk: the risk that the relationship between the prices of two similar, but not identical, instruments will change. Thus, even if maturities are perfectly matched, basis risk could remain.

Counterparty risk: the risk that the counterparty to a financial contract will not meet the terms of the contract.

Currency swap: a transaction involving an initial exchange of principal of two different currencies. Interest payments are exchanged over the life of the contract and the principal amounts are repaid either at maturity or according to a predetermined amortisation schedule.

Delta: the expected change of an option's price as a proportion of a small change in the price of the underlying instrument. An option whose price changes by \$1 for every \$2 change in the price of the underlying has a delta of 0.5. The delta rises toward 1.0 for options that are deep in-the-money and approaches 0 for deep out-of-the-money options.

Duration: a mathematical concept designed to measure the price sensitivity of debt securities to small parallel changes in interest rates. Specifically, duration is the weighted average maturity of all payments of a security, coupons plus principal, where the weights are the discounted present values of the payments. Modified duration is duration divided by a factor of one plus the interest rate.

Embedded losses: locked-in losses caused by past movements in interest rates but not yet recognised in accounts that are carried at historic cost.

Forward: a commitment to buy (sell) an asset at a future date for a price determined at the time of commitment, usually reflecting the net cost of carry. May be applied to currencies, equities, commodities or other assets.

Forward rate agreement (FRA): a contract in which two counterparties agree on the interest rate to be paid on a notional deposit of specified maturity at a specific future time. Normally, no principal exchanges are involved, and the difference between the contracted rate and the prevailing rate is settled in cash.

Futures contract: an exchange-traded contract generally calling for

delivery of a specified amount of a particular grade of commodity or financial instrument at a fixed date in the future.

General market risk: the risk of a general market movement arising from, for example, a change in interest rates or official policy.

Hedge: to reduce risk by taking a position which offsets existing or anticipated exposure to a change in market rates or prices.

Instruments subject to behavioural maturities: items whose contractual terms do not accurately reflect expected behaviour, for example loans which may be prepayable at the borrower's discretion or deposits which may be left with the bank beyond the contractual repayment date.

Interest rate cap (or floor): an option-like feature for which the buyer pays a fee or premium to obtain protection against a rise (or fall) in a particular interest rate above (or below) a certain level.

Interest rate mismatch: a difference in the repricing schedule of positions which exposes the institution to interest rate risk.

Interest rate risk: the risk that changes in market interest rates might adversely affect an institution's financial condition.

Interest rate swap: a transaction in which two counterparties exchange interest payment streams of differing character based on an underlying notional principal amount. The three main types are coupon swaps (fixed rate to floating rate in the same currency), basis swaps (one floating rate index to another floating rate index in the same currency) and cross-currency interest rate swaps (fixed rate in one currency to floating rate in another).

LIBOR: London Interbank Offered Rate. The rate at which banks offer to lend funds in the international interbank market.

Market risk: the risk of losses in on- and off-balance-sheet positions arising from movements in market prices, including interest rates, exchange rates and equity values.

Non-amortising instruments: instruments which return the full principal amount upon maturity.

Off-balance-sheet activities: banks' business that does not generally involve booking assets or liabilities. Examples include trading in swaps, options, futures and foreign exchange forwards, and the granting of stand-by commitments and letters of credit.¹⁴

Option: the contractual right, but not the obligation, to buy or sell a

14 For certain countries, some of these items may be on the balance sheet.

specified amount of a given financial instrument at a fixed price before or at a designated future date. A call option confers on the holder the right to buy the financial instrument. A put option involves the right to sell the financial instrument.

Prepayment: a payment of principal made before the scheduled payment date. For example, a houseowner may prepay a mortgage because the house has been refinanced or sold.

Reference rate (or Administered rate) business: banking transactions that are not subject to a fixed interest rate for a given term but whose interest rates are linked to some reference rate (e.g. prime rate) and therefore change at unpredictable intervals.

Swap: a financial transaction in which two counterparties agree to exchange streams of payments over time according to a predetermined rule.

Trading book: an institution's proprietary positions in financial instruments which are taken on with the intention of benefiting in the short term from actual or expected differences between their buying and selling prices or of hedging other elements of the trading book, or which are held for short-term resale, or in order to execute a trade with a customer.

Volatility: a measure of the variability of the price of an asset, usually defined as the annualised standard deviation of the natural log of asset prices.

Writer: the party that sells an option. The writer is required to carry out the terms of the option at the choice of the holder.

Zero coupon bonds: securities which do not make periodic interest payments and are redeemed at face value at a specified maturity date. These securities are sold at a deep discount, and the return accrues to the buyer as the security gradually appreciates.



BOARD OF GOVERNORS
OF THE
FEDERAL RESERVE SYSTEM

WASHINGTON, D. C. 20551

SR 93-69 (FIS)

DIVISION OF BANKING
SUPERVISION AND REGULATION

December 20, 1993

TO THE OFFICER IN CHARGE OF SUPERVISION
AT EACH FEDERAL RESERVE BANK

SUBJECT: Examining Risk Management and Internal Controls for
Trading Activities of Banking Organizations

The review of risk management and internal controls is an essential element of our examination of trading activities. In view of the increasing importance of these activities to the overall risk profile and profitability of certain banking organizations, the following guidance is being issued to highlight key considerations in examining the risk management and internal controls of trading activities in both cash and derivative instruments.¹

This guidance specifically targets trading, market making, and customer accommodation activities in cash and derivative instruments at State member banks, branches and agencies of foreign banks, and Edge corporations. The principles set forth in this guidance also apply to the risk management of bank holding companies, which should manage and control aggregate risk exposures on a consolidated basis, while recognizing legal distinctions among subsidiaries. Many of the principles advanced can also be applied to banks' use of derivatives as end-users. Examiners should assess management's application of this guidance to the holding company and to a bank's end-user derivative activities where appropriate, given the nature of the institution's activities and current accounting standards.

The following guidance both reiterates and supplements earlier directives provided in various supervisory letters and examination manuals on these topics. It is also incorporated and addressed in significant detail in the draft Capital Markets and Trading Activities Manual that is currently being field tested. Specifically, this letter provides examiner guidance for evaluating the following elements of an institution's risk management process for trading and derivatives activities:

¹ In general terms, derivative instruments are bilateral contracts or agreements whose value derives from the value of one or more underlying assets, interest rates, exchange rates, commodities, or financial or commodity indexes.

- I. Board of directors and management oversight;
- II. The measurement procedures, limit systems, and monitoring and review functions of the risk management process; and,
- III. Internal controls and audit procedures.

In assessing the adequacy of these elements at individual institutions, examiners should consider the nature and volume of a bank's activities and the bank's overall approach toward managing the various types of risks involved. As with the examination of other banking activities, examiner judgment plays a key role in assessing the adequacy and necessary sophistication of a bank's risk management system for cash and derivative instrument trading and hedging activities.

Many of the managerial and examiner practices contained in this guidance are fundamental and are generally accepted as sound banking practices for both trading and non-trading activities. However, other elements may be subject to change, as both supervisory and bank operating standards evolve in response to new technologies, financial innovations, and developments in market and business practices. Future experience, including that gained from implementing the Capital Markets and Trading Activities Manual, may also identify useful changes to these examiner guidelines.

I. Oversight of the Risk Management Process

As is standard practice for most banking activities, banks should maintain written policies and procedures that clearly outline the institution's risk management guidance for trading and derivative activities. At a minimum these policies should identify the risk tolerances of the board of directors and should clearly delineate lines of authority and responsibility for managing the risk of these activities. Individuals throughout the trading and derivatives areas should be fully aware of all policies and procedures that relate to their specific duties.

The board of directors, senior-level management, and members of independent risk management functions are all important participants in the risk management process. Examiners should ensure that these participants are aware of their responsibilities and that they adequately perform their appropriate role in managing the risk of trading and derivative activities.

Board of Directors. The board of directors should approve all significant policies relating to the management of risks throughout the institution. These policies, which should include those related to trading activities, should be consistent with the organization's broader business strategies, capital adequacy, expertise, and overall willingness to take risk. Accordingly, the board should be informed regularly of the risk exposure of the institution and should regularly re-evaluate significant risk management policies and procedures with special emphasis placed on those defining the institution's risk tolerance regarding these activities. The board of directors should also conduct and encourage discussions between its members and senior management, as well as between senior management and others in the institution, regarding the institution's risk management process and risk exposure.

Senior Management. Senior management is responsible for ensuring that there are adequate policies and procedures for conducting trading operations on both a long-range and day-to-day basis. This responsibility includes ensuring that there are clear delineations of lines of responsibility for managing risk, adequate systems for measuring risk, appropriately structured limits on risk taking, effective internal controls, and a comprehensive risk-reporting process.

Senior management should evaluate regularly the procedures in place to manage risk to ensure that those procedures are appropriate and sound. Senior management should also foster and participate in active discussions with the board, with staff of risk management functions, and with traders regarding procedures for measuring and managing risk. Management must also ensure that trading and derivative activities are allocated sufficient resources and staff to manage and control risks.

Independent Risk Management Functions. The process of measuring, monitoring, and controlling risk consistent with the established policies and procedures should be managed independently of individuals conducting trading activities, up through senior levels of the institution. An independent system for reporting exposures to both senior-level management and to the board of directors is an important element of this process.

Banking organizations should have highly qualified personnel throughout their trading and derivatives areas, including their risk management and internal control functions. The personnel staffing independent risk management functions should have a complete understanding of the risks associated with all traded on- and off-balance sheet instruments. Accordingly, compensation policies for these individuals should be adequate to

attract and retain personnel qualified to judge these risks. As a matter of general policy, compensation policies, especially in the risk management, control, and senior management functions, should be structured in a way that avoids the potential incentives for excessive risk taking that can occur if, for example, salaries are tied too closely to the profitability of trading or derivatives activities.

II. The Risk Management Process

The primary components of a sound risk management process are: a comprehensive risk measurement approach; a detailed structure of limits, guidelines, and other parameters used to govern risk taking; and a strong management information system for monitoring and reporting risks. These components are fundamental to both trading and non-trading activities, alike. Moreover, the underlying risks associated with these activities, such as credit, market, liquidity, and operating risk, are not new to banking, although their measurement and management can be somewhat more complex. Accordingly, the process of risk management for trading activities should be integrated into the institution's overall risk management system to the fullest extent possible using a conceptual framework common to the bank's other activities. Such a common framework enables the institution to manage its consolidated risk exposure more effectively, especially since the various individual risks involved in trading activities can, at times, be interconnected and can often transcend specific markets.

As is the case with all risk-bearing activities, the risk exposures a banking organization assumes in its trading and derivatives activities should be fully supported by an adequate capital position. Banking organizations should ensure that their capital positions are sufficiently strong to support all trading and derivatives risks on a fully consolidated basis and that adequate capital is maintained in all affiliated entities engaged in these activities.

Risk Measurement. An institution's system for measuring the various risks of trading and derivatives activities should be both comprehensive and accurate. Risks should be measured and aggregated across trading and non-trading activities on an institution-wide basis to the fullest extent possible.

While examiners should not require the use of a single prescribed risk measurement approach for management purposes, they should evaluate the extent to which a bank's procedures enable management to assess exposures on a consolidated basis. Examiners should also evaluate whether the risk measures and the risk measurement process are sufficiently robust to reflect

accurately the multiple types of risks facing the institution. Risk measurement standards should be understood by relevant personnel at all levels of the institution--from individual traders to the board of directors--and should provide a common framework for limiting and monitoring risk taking activities.

The process of marking trading and derivatives positions to market is fundamental to measuring and reporting exposures accurately and on a timely basis. Institutions active in dealing foreign exchange, derivatives, and other traded instruments should have the ability to monitor credit exposures, trading positions, and market movements at least daily. Some institutions should also have the capacity, or at least the goal, of monitoring their more actively traded products on a real-time basis.

Analyzing stress situations, including combinations of market events that could affect the banking organization, is also an important aspect of risk measurement. Sound risk measurement practices include identifying possible events or changes in market behavior that could have unfavorable effects on the bank and assessing the ability of the bank to withstand them. These analyses should consider not only the likelihood of adverse events, reflecting their probability, but also plausible "worst case" scenarios. Ideally, such worst case analysis should be conducted on an institution-wide basis by taking into account the effect of unusual price changes or the default of a large counterparty across both the derivatives and cash trading portfolios and the loan and funding portfolios.

Such stress tests should not be limited to quantitative exercises that compute potential losses or gains. They should also include more qualitative analyses of the actions management might take under particular scenarios. Contingency plans outlining operating procedures and lines of communication, both formal and informal, are important products of such qualitative analyses.

Limiting Risks. A sound system of integrated institution-wide limits and risk taking guidelines is an essential component of the risk management process. Such a system should set boundaries for organizational risk-taking and should also ensure that positions that exceed certain predetermined levels receive prompt management attention, so that they can be either reduced or prudently addressed. The limit system should be consistent with the effectiveness of the organization's overall risk management process and with the adequacy of its capital position. An appropriate limit system should permit management to control exposures, to initiate discussion about opportunities and risks, and to monitor actual

risk taking against predetermined tolerances, as determined by the board of directors and senior management.

Global limits should be set for each major type of risk involved. These limits should be consistent with the bank's overall risk measurement approach and should be integrated to the fullest extent possible with institution-wide limits on those risks as they arise in all other activities of the firm. The limit system should provide the capability to allocate limits down to individual business units.

At times, especially when markets are volatile, traders may exceed their limits. While such exceptions may occur, they should be made known to senior management and approved only by authorized personnel. These positions should also prompt discussions between traders and management about the consolidated risk-taking activities of the firm or the trading unit. The seriousness of individual or continued limit exceptions depends in large part upon management's approach toward setting limits and on the actual size of individual and organizational limits relative to the institution's capacity to take risk. Banks with relatively conservative limits may encounter more exceptions to those limits than do institutions where limits may be less restrictive. Ultimately, examiners should ensure that stated policies are enforced and that the level of exposure is managed prudently.

Reporting. An accurate, informative, and timely management information system is essential to the prudent operation of a trading or derivatives activity. Accordingly, the examiner's assessment of the quality of the management information system is an important factor in the overall evaluation of the risk management process. Examiners should determine the extent to which the risk management function monitors and reports its measures of trading risks to appropriate levels of senior management and to the board of directors. Exposures and profit and loss statements should be reported at least daily to managers who supervise but do not, themselves, conduct trading activities. More frequent reports should be made as market conditions dictate. Reports to other levels of senior management and the board may occur less frequently, but examiners should determine whether the frequency of reporting provides these individuals with adequate information to judge the changing nature of the institution's risk profile.

Examiners should ensure that the management information systems translate the measured risk from a technical and quantitative format to one that can be easily read and understood by senior managers and directors, who may not have specialized and technical knowledge of trading activities and derivative

products. Risk exposures arising from various products within the trading function should be reported to senior managers and directors using a common conceptual framework for measuring and limiting risks.

Management Evaluation and Review. Management should ensure that the various components of a bank's risk management process are regularly reviewed and evaluated. This review should take into account changes in the activities of the institution and in the market environment, since the changes may have created exposures that require additional management and examiner attention. Any material changes to the risk management system should also be reviewed.

The independent risk management functions should regularly assess the methodologies, models, and assumptions used to measure risk and to limit exposures. Proper documentation of these elements of the risk measurement system is essential for conducting meaningful reviews. The review of limit structures should compare limits to actual exposures and should also consider whether existing measures of exposure and limits are appropriate in view of the bank's past performance and current capital position.

The frequency and extent to which banks should re-evaluate their risk measurement methodologies and models depends, in part, on the specific risk exposures created by their trading activities, on the pace and nature of market changes, and on the pace of innovation with respect to measuring and managing risks. At a minimum, banks with significant trading and derivative activities should review the underlying methodologies of their models at least annually--and more often as market conditions dictate--to ensure they are appropriate and consistent. Such internal evaluations may, in many cases, be supplemented by reviews by external auditors or other qualified outside parties, such as consultants who have expertise with highly technical models and risk management techniques. Assumptions should be evaluated on a continual basis.

Banks should also have an effective process to evaluate and review the risks involved in products that are either new to the firm or new to the marketplace and of potential interest to the firm. In general, a bank should not trade a product until senior management and all relevant personnel (including those in risk management, internal control, legal, accounting, and auditing) understand the product and are able to integrate the product into the bank's risk measurement and control systems. Examiners should determine whether the banking organization has a formal process for reviewing new products and whether it

introduces new products in a manner that adequately limits potential losses.

Managing Specific Risks. The following discussions present examiner guidance for evaluating the specific components of a firm's risk management process in the context of each of the risks involved in trading cash and derivatives instruments.

Credit Risk. Broadly defined, credit risk is the risk that a counterparty will fail to perform on an obligation to the banking institution. Banks should evaluate both settlement and pre-settlement credit risk at the customer level across all traded derivative and non-derivative products. On settlement day, the exposure to counterparty default may equal the full value of any cash flows or securities the bank is to receive. Prior to settlement, credit risk is measured as the sum of the replacement cost of the position, plus an estimate of the bank's potential future exposure from the instrument as a result of market changes. Replacement cost should be determined using current market prices or generally accepted approaches for estimating the present value of future payments required under each contract, given current market conditions.

Potential credit risk exposure is measured more subjectively than current exposure and is primarily a function of the time remaining to maturity and the expected volatility of the price, rate, or index underlying the contract. It is often assessed through simulation analysis and option valuation models, but can also be addressed by using "add-ons," such as those included in the risk-based capital standard. In either case, examiners should evaluate the reasonableness of the assumptions underlying the bank's risk measure and should also ensure that banks that measure exposures using a portfolio approach do so in a prudent manner.

Master netting agreements and various credit enhancements, such as collateral or third-party guarantees, can be used by banks to reduce their counterparty credit risk. In such cases, a bank's credit exposures should reflect these risk reducing features only to the extent that the agreements and recourse provisions are legally enforceable in all relevant jurisdictions. This legal enforceability should extend to any insolvency proceedings of the counterparty. Banks should be able to demonstrate that they have exercised due diligence in evaluating the enforceability of these contracts and that individual transactions have been executed in a manner that provides adequate protection to the bank.

Credit limits that consider both settlement and pre-settlement exposures should be established for all counterparties

with whom the bank trades. As a matter of general policy, trading with a counterparty should not commence until a credit line has been approved. The structure of the credit-approval process may differ among institutions, reflecting the organizational and geographic structure of the institution and the specific needs of its trading activities. Nevertheless, in all cases, it is important that credit limits be determined by personnel who are independent of the trading function, that these personnel use standards that are consistent with those used for nontrading activities, and that counterparty credit lines are consistent with the organization's policies and consolidated exposures.

Examiners should consider the extent to which credit limits are exceeded and whether exceptions were resolved according to the bank's adopted policies and procedures. Examiners should also evaluate whether the institution's reports adequately provide traders and credit officers with relevant, accurate, and timely information about the credit exposures and approved credit lines.

Trading activities that involve cash instruments often involve short-term exposures that are eliminated at settlement. However, in the case of derivative products traded in over-the-counter markets, the exposure can often exist for a period similar to that commonly associated with a bank loan. Given this potentially longer term exposure and the complexity associated with some derivative instruments, banks should consider not only the overall financial strength of the counterparty and its ability to perform on its obligation, but should also consider the counterparty's ability to understand and manage the risks inherent in the derivative product.

Market Risk. Market risk is the risk to a bank's financial condition resulting from adverse movements in market prices. Accurately measuring a bank's market risk requires timely information about the current market values of its assets, liabilities, and off-balance sheet positions. Although there are many types of market risks that can affect a portfolio's value, they can generally be described as those involving forward risk and those involving options. Forward risks arise from factors such as changing interest rates and currency exchange rates, the liquidity of markets for specific commodities or financial instruments, and local or world political and economic events. Market risks related to options include these factors as well as evolving perceptions of the volatility of price changes, the passage of time, and the interactive effect of other market risks. All of these sources of potential market risk can affect the value of the institution and should be considered in the risk measurement process.

Market risk is increasingly measured by market participants using a value-at-risk approach, which measures the potential gain or loss in a position, portfolio, or institution that is associated with a price movement of a given probability over a specified time horizon. Banks should revalue all trading portfolios and calculate their exposures at least daily. Although banks may use risk measures other than value at risk, examiners should consider whether the measure used is sufficiently accurate and rigorous and whether it is adequately incorporated into the bank's risk management process.

Examiners should also ensure that the institution compares its estimated market risk exposures with actual market price behavior. In particular, the output of any market risk models that require simulations or forecasts of future prices should be compared with actual prices. If the projected and actual results differ materially, the models should be modified, as appropriate.

Banks should establish limits for market risk that relate to their risk measures and that are consistent with maximum exposures authorized by their senior management and board of directors. These limits should be allocated to business units and individual traders and be clearly understood by all relevant parties. Examiners should ensure that exceptions to limits are detected and adequately addressed by management. In practice, some limit systems may include additional elements such as stop-loss limits and trading guidelines that may play an important role in controlling risk at the trader and business unit level; examiners should include them in their review of the limit system.

Liquidity Risk. Banks face two types of liquidity risk in their trading activities: those related to specific products or markets and those related to the general funding of the bank's trading activities. The former is the risk that a banking institution cannot easily unwind or offset a particular position at or near the previous market price because of inadequate market depth or because of disruptions in the marketplace. Funding liquidity risk is the risk that the bank will be unable to meet its payment obligations on settlement dates. Since neither type of liquidity risk is unique to trading activities, management should evaluate these risks in the broader context of the institution's overall liquidity. When establishing limits, institutions should be aware of the size, depth and liquidity of the particular market and establish trading guidelines accordingly. Management should also give consideration to the potential problems associated with replacing contracts that terminate early in volatile or illiquid markets.

In developing guidelines for controlling the liquidity risks in trading activities, banks should consider the possibility that they could lose access to one or more markets, either because of concerns about the bank's own creditworthiness, the creditworthiness of a major counterparty, or because of generally stressful market conditions. At such times, the bank may have less flexibility in managing its market, credit, and liquidity risk exposures. Banks that make markets in over-the-counter derivatives or that dynamically hedge their positions require constant access to financial markets, and that need may increase in times of market stress. The bank's liquidity plan should reflect the institution's ability to turn to alternative markets, such as futures or cash markets, or to provide sufficient collateral or other credit enhancements in order to continue trading under a broad range of scenarios.

Examiners should ensure that banking institutions that participate in over-the-counter derivative markets adequately consider the potential liquidity risks associated with the early termination of derivative contracts. Many forms of standardized contracts for derivative transactions allow counterparties to request collateral or to terminate their contracts early if the banking institution experiences an adverse credit event or a deterioration in its financial condition. In addition, under conditions of market stress, customers may ask for the early termination of some contracts within the context of the dealer's market making activities. In such situations, a bank that owes money on derivative transactions may be required to deliver collateral or settle a contract early and possibly at a time when the bank may face other funding and liquidity pressures. Early terminations may also open up additional, unintended, market positions. Management and directors should be aware of these potential liquidity risks and should address them in the bank's liquidity plan and in the broader context of the bank's liquidity management process. In their reviews, examiners should consider the extent to which such potential obligations could present liquidity risks to the bank.

Operational Risk, Legal Risk and Business Practices.

Operating risk is the risk that deficiencies in information systems or internal controls will result in unexpected loss. Legal risk is the risk that contracts are not legally enforceable or documented correctly. Although operating and legal risks are difficult to quantify, they can often be evaluated by examining a series of plausible "worst-case" or "what if" scenarios, such as a power loss, a doubling of transaction volume, a mistake found in the pricing software for collateral management, or an unenforceable contract. They can also be assessed through periodic reviews of procedures, documentation requirements, data processing systems, contingency plans, and other operating

practices. Such reviews may help to reduce the likelihood of errors and breakdowns in controls, improve the control of risk and the effectiveness of the limit system, and prevent unsound marketing practices and the premature adoption of new products or lines of business. Considering the heavy reliance of trading activities on computerized systems, banks should have plans that take into account potential problems with their normal processing procedures.

Banks should also ensure that trades that are consummated orally are confirmed as soon as possible. Oral transactions conducted via telephone should be recorded on tape and subsequently supported by written documents. Examiners should ensure that the institution monitors the consistency between the terms of a transaction as they were orally agreed-upon and the terms as they were subsequently confirmed.

Examiners should also consider the extent to which banks evaluate and control operating risks through the use of internal audits, stress testing, contingency planning, and other managerial and analytical techniques. Banks should also have approved policies that specify documentation requirements for trading activities and formal procedures for saving and safeguarding important documents that are consistent with legal requirements and internal policies. Relevant personnel should fully understand the requirements.

Legal risks should be limited and managed through policies developed by the institution's legal counsel (typically in consultation with officers in the risk management process) that have been approved by the bank's senior management and board of directors. At a minimum, there should be guidelines and processes in place to ensure the enforceability of counterparty agreements. Examiners should determine whether a bank is adequately evaluating the enforceability of its agreements before individual transactions are consummated. Banks should also ensure that the counterparty has sufficient authority to enter into the transaction and that the terms of the agreement are legally sound. Banks should further ascertain that their netting agreements are adequately documented, that they have been executed properly, and that they are enforceable in all relevant jurisdictions. Banks should have knowledge of relevant tax laws and interpretations governing the use of these instruments. Knowledge of these laws is necessary not only for the bank's marketing activities, but also for its own use of derivative products.

Sound business practices provide that banking organizations take steps to ascertain the character and financial sophistication of counterparties. This includes efforts to

ensure that the counterparties understand the nature of and the risks inherent in the agreed transactions. Where the counterparties are unsophisticated, either generally or with respect to a particular type of transaction, banks should take additional steps to ensure that counterparties are made aware of the risks attendant in the specific type of transaction. While counterparties are ultimately responsible for the transactions into which they choose to enter, where a bank recommends specific transactions for an unsophisticated counterparty, the bank should ensure that it has adequate information regarding its counterparty on which to base its recommendation.

III. Internal Controls and Audits

A review of internal controls has long been central to the Federal Reserve's examination of trading and derivatives activities. Policies and related procedures for the operation of these activities should be an extension of the institution's overall structure of internal controls and should be fully integrated into routine work-flows. Properly structured, a system of internal controls should promote effective and efficient operations, reliable financial and regulatory reporting, and compliance with relevant laws, regulations, and bank policies. In determining whether internal controls meet those objectives, examiners should consider: the overall control environment of the organization; the process for identifying, analyzing and managing risk; the adequacy of management information systems; and adherence to control activities such as approvals, confirmations and reconciliations.

Assessing the adequacy of internal controls involves a process of understanding, documenting, evaluating and testing an institution's internal control system. This assessment should include product or business line reviews which, in turn, should start with an assessment of the line's organizational structure. Examiners should check for adequate separation of duties, especially between trading desk personnel and internal control and risk management functions, adequate oversight by a knowledgeable manager without day-to-day trading responsibilities, and the presence of separate reporting lines for risk management and internal control personnel on one side and for trading personnel on the other. Product-by-product reviews of management structure should supplement the overall assessment of the organizational structure of the trading and derivatives areas.

Examiners are expected to conduct in-depth reviews of the internal controls of key activities. For example, for transaction recording and processing, examiners should evaluate written policies and procedures for recording trades, assess the

trading area's adherence to policy, and analyze the transaction processing cycle, including settlement, to ensure the integrity and accuracy of the bank's records and management reports. Examiners should review the revaluation process in order to assess the adequacy of written policies and procedures for revaluing positions and for creating any associated revaluation reserves. Examiners should review compliance with revaluation policies and procedures, the frequency of revaluation, and the independence and quality of the sources of revaluation prices, especially for instruments traded in illiquid markets. All significant internal controls associated with the management of market risk, such as position versus limit reports and limit coverage approval policies and procedures, should also be reviewed. Examiners should also review the credit approval process to ensure that the risks of specific products are adequately captured and that credit approval procedures are followed for all transactions.

An important step in the process of reviewing internal controls is the examiner's appraisal of the frequency, scope, and findings of independent internal and external auditors and the ability of those auditors to review the bank's trading and derivatives activities. Internal auditors should audit and test the risk management process and internal controls on a periodic basis, with the frequency based on a careful risk assessment. The depth and frequency of internal audits should be increased if weaknesses and significant issues are discovered or if significant changes have been made to product lines, modelling methodologies, the risk oversight process, internal controls, or the overall risk profile of the institution.

In reviewing the risk management functions in particular, internal auditors should thoroughly evaluate the effectiveness of internal controls relevant to measuring, reporting and limiting risks. Internal auditors should also evaluate compliance with risk limits and the reliability and timeliness of information reported to the bank's senior management and board of directors. Internal auditors are also expected to evaluate the independence and overall effectiveness of the bank's risk management functions.

The level of confidence that examiners place in the banking organization's audit programs, the nature of the audit findings and management's response to those findings will influence the scope of the current examination of trading and derivatives activities. Even when the audit process and findings are satisfactory, examiners should document, evaluate and test critical internal controls.

Similar to the focus of internal auditors, examiners should pay special attention to significant changes in product lines, risk measurement methodologies, limits, and internal controls that have occurred since the last examination. Meaningful changes in earnings from trading or derivatives activities, or in the size of positions or the value at risk associated with these activities, should also receive emphasis during the examination.

For additional areas of testing and evaluation, examiners should consult the Capital Markets and Trading Activities Manual. If you have any questions regarding these practices, please call Roger Cole, (202/452-2618), Jim Houpt (202/452-3358), or Jim Embersit (202/452-5249).

A handwritten signature in black ink, appearing to read 'R. Spillenkothen', with a long horizontal line extending to the right.

Richard Spillenkothen
Director

*The Report of the
Commodity Futures Trading Commission*

OTC Derivative
Markets
and Their Regulation

October 1993

cftc

Federal Regulatory Agency for
Futures and Option Trading



COMMODITY FUTURES TRADING COMMISSION

2033 K Street, N. W., Washington, DC 20551

Sheila C. Bair
Acting Chairman

October 25, 1993

(202) 254 - 6970

LETTER OF TRANSMITTAL

I am pleased to transmit to you the Commodity Futures Trading Commission's Study of Swaps and Off-Exchange Derivatives Trading as required by the Conference Report to accompany P.L. 102-546, the Futures Trading Practices Act of 1992. The Conference Committee requested the study in order to provide Congress with information to assist it in its consideration of future legislation relating to the markets for derivative products. The study includes information on business transactions and market participants; the information is provided consistent with the Commission's discretionary authority under section 8(b) of the Commodity Exchange Act.

Through this report, the Commission has attempted to provide an overview of derivative products found in today's marketplace and their attendant risks, as well as a survey of regulatory controls and risk management practices currently in effect in the United States. In its recommendations, the Commission has endeavored to identify areas of concern to be addressed in any future attempts to impose additional legal or regulatory safeguards and to ensure the integrity of the over-the-counter derivatives market. During the development of this study, the Commission consulted with representatives of the Securities and Exchange Commission and the Board of Governors of the Federal Reserve Board.

Copies of this submission also are being transmitted to all Members of the Conference Committee on P.L. 102-546. The Commission looks forward to working with you in the months ahead on the many issues addressed in the study.

Respectfully Submitted,

*Sheila Bair*Sheila C. Bair
Acting Chairman

TABLE OF CONTENTS

Executive Summary	1
Introduction	8
Chapter I - The Nature, Size and Scope of the OTC Derivatives Markets	15
Introduction	15
Data Sources and Limitations	16
The Nature of the OTC Derivatives Markets	19
Quantitative Characterization of the OTC Derivatives Markets	24
Market Size	24
Market Participants and Their Derivatives Usage	26
Swap Dealers	26
End-Users	26
Risk-Related Market Characteristics	28
Maturity	28
Replacement Costs	29
Credit Ratings	30
Figures 1 - 15	31
Chapter II - Overview of the Regulatory Status of OTC Derivative Transactions	47
Introduction	47
An Overview of the Origins of Financial Regulation	53
The Current Status of Regulatory Review of OTC Derivatives	57

Common Elements of Regulated Exchange Markets and Intermediaries That Address Derivative Risks	64
Financial Integrity of the Market	64
Customer Protection	65
Open, Competitive and Fair Transaction Execution	65
Transparency	66
Market and Trade Practice Surveillance	67
Market Efficiency	67
Review of New Products	67
Prohibition of Certain Trade Practices	68
Market Surveillance and Disruption Programs	68
Regulation of Intermediaries	70
Financial Safety Protections	70
Fitness Screening	72
Disclosure and Sales Practice Requirements	73
Non-Public OTC Transactions	73
CFTC Provisions for Off-Exchange Transactions	74
Statutory Exclusion for Forward Contracts	76
Trade Options	77
Swaps	78
Energy Contracts	80
Foreign Currency Transactions	80
SEC Regulation of OTC Securities Derivatives	82
Banking Regulation	85
End-User Regulation	86
Summary of Regulatory Status of OTC Derivatives	87

Chapter III - Potential Risks Arising from OTC Derivatives Transactions	90
Potential Risks Originating in Individual Firms	93
Market Risk	93
Credit Risk	97
Settlement Risk	102
Legal Risk	106
Operational Risk	110
Potential Risks Arising from OTC Derivatives Activities Generally	112
Size and Complexity	112
Risk Concentration	114
Lack of Transparency	115
Market Liquidity Risk	118
Market Linkages	121
Chapter IV - Recommendations	124
Cross-Jurisdictional Regulatory Coordination	125
Information Access	128
Pricing, Disclosure and Risk Valuation Issues	131
Internal Controls	134
Clearing Facilities for OTC Derivatives	135
Areas for CFTC Consideration	135
Clearing Facilities for Swaps	136
FDICIA Netting Eligibility	138
Risk Assessment	138
Treasury Amendment	139
<u>Arkansas Best</u>	139

Chapter V - The Public Policy Implications of the <u>A-Mark</u> and <u>Tauber</u> Decisions	141
The Decision of the U.S. Court of Appeals for the Ninth Circuit in <u>Bybee v. A-Mark Precious Metals, Inc.</u> , 945 F. 2d 309 (1991)	141
The Decision of the U.S. District Court for the Eastern District of Virginia in <u>Salomon Forex, Inc. v. Tauber</u> , 795 F. Supp. 768 (1992), aff'd, No. 92-1406 (4th Cir. October 18, 1993)	146
Chapter VI - Analysis of a Single Regulator for Derivatives, Futures and Securities	157
Introduction and Background	157
Merger of Regulatory Frameworks	162
Merger of the Regulators	166
Conclusions and Recommendations	172

EXECUTIVE SUMMARY

The Conference Committee considering the CFTC's 1992 reauthorization legislation directed the agency to conduct a study of over-the-counter (OTC) derivative markets to determine the need, if any, for additional regulation of these markets, to analyze the public policy implications of two recent court decisions, and to consider the appropriateness of a single federal regulator for futures, securities, and OTC derivatives. Pursuant to this directive, the following Report was prepared by the Commission, in consultation with the Securities and Exchange Commission (SEC) and Board of Governors of the Federal Reserve Board (Fed or FRB).

The Report's central conclusion is that while no fundamental changes in regulatory structure appear to be needed at this time to address issues presented by the growing use of OTC derivatives, greater coordination among federal financial regulators would help assure that federal oversight remains adequate. Finding that the "systemic and public policy issues suggested by these products are not confined to any single market or the province of any one regulator," the Report recommends the establishment of an interagency council to consider common approaches to such issues as market information access, transparency, internal management controls, and the development of clearing facilities for OTC derivatives.

A detailed summary of the Commission's findings and recommendations follows.

A. Size and Scope of the OTC Derivatives Markets

The Report provides an overview of the OTC derivative markets, including a quantitative characterization of their size and scope. Among the Report's key findings:

- o Market Size: The widespread use of notional principal in "sizing" the OTC derivatives market may grossly overstate total risk exposure because, for many common OTC derivatives transactions, notional principal is used only to calculate payments between counterparties and is never exchanged. Thus while available sources indicate that total notional principal in the interest rate and currency swap markets approached \$5 trillion at year-end 1992, the true risk exposure in these markets can be assumed to be only a small fraction of that amount.

- o Growth/Nature of Market: OTC derivatives have grown rapidly by any measure. The market for swaps appears to be almost entirely intermediated by institutions that act as dealers.

- 3 -

- o Swap Dealers: As of year-end 1991, the number of U.S. swap dealers with notional principal exceeding \$10 billion stood at 20. Of U.S. dealers, commercial bank positions were three to five times larger than those of non-banks or U.S. units of foreign dealers. Information provided by the Securities and Exchange Commission indicates that aggregate notional principal held by major U.S. broker-dealer affiliates on interest rate and, currency swaps and forex forwards roughly equaled the aggregate notional value of these dealers' futures positions.

- o End-Users: Based on available information, end-users of interest rate and forex derivative products appear to consist primarily of commercial banks and corporate financial subsidiaries (25%), followed by corporations (20%), regional banks (18%), and non-dealer foreign banks (16%). A few large U.S. end-users tend to account for a sizeable proportion of total industry notional principal.

The Report also notes that a threshold issue in considering the size and nature of the markets in OTC derivatives is that comprehensive, standardized data about OTC derivative products and those who use them are currently unavailable. One reason for this is that OTC derivatives market participants are subject to

varying degrees of regulatory oversight and, thus, to different disclosure obligations. However, the available data is adequate to draw some basic conclusions, but includes gaps suggesting a need for further study.

B. Potential Risks Presented by Swaps and Other OTC Derivatives and Corresponding Recommendations

The Report points out that potential systemic risks, including those associated with individual participants (such as credit risk), and those more generally associated with OTC derivatives trading (such as lack of transparency), have been identified by numerous domestic and international regulators, and other interested parties. The Report summarizes these risks, and describes steps that have been taken by regulators and market participants to address them.

At this point, existing regulatory structures appear adequate to address issues raised by the growth in OTC derivatives markets. However, given that many of the issues raised to date are clearly interagency in nature, benefits could be reaped from greater communication and coordination among regulators with an interest in these markets. This effort would supplement, rather than supplant, the ongoing efforts of these regulators. Accordingly, the interagency council being recommended by the Commission would identify and consider common regulatory issues raised by OTC derivative products. Specifically, the CFTC recommends that such a council's agenda consist of the following issues:

- 5 -

1. Information Access. Perhaps the most pressing issue is the difficulty of obtaining comprehensive information about OTC derivative markets. An early focus of regulators' efforts should be identification of information gaps and data needs; e.g., what information or statistics are needed; what information is available and where such information is located; how information currently collected under risk assessment, capital or other authorities of the various regulators could be more standardized; whether more explicit lead regulator-type arrangements for the collection, exchange and monitoring of information could improve its usefulness and accessibility; and the extent to which existing authorities are sufficient as to unregulated end-users and unregistered or foreign entities performing intermediary functions.

2. Pricing, Disclosure and Risk Valuation Issues. Another issue that federal regulators may wish to review is the relative lack of transparency in OTC derivatives markets, specifically, whether opacity adversely affects the management of risk. Additionally, regulators could examine the adequacy of financial disclosure by the various types of participants in these markets.

3. Internal Controls. Federal regulators may also wish to consider how they best can encourage the extension of basic risk control measures to end-users through guidance to regulated participants.

4. Clearing Facilities for OTC Derivatives. Proposals for clearing various OTC derivatives raise a number of issues

appropriate for interagency discussion due to intermarket linkages between clearing systems, the intermarket interests of major participants, and participation by firms in multiple markets.

5. Scope of Regulatory Oversight. Though the Commission is not recommending additional regulatory controls over OTC derivatives at this time, the interagency council may wish to consider issues raised by the presence of dealers in OTC derivative markets that are not otherwise subject to federal regulatory oversight.

C. Public Policy Implications of A-Mark and Tauber Decisions

1. A-Mark. The Commission intends to carefully monitor how this decision is used by litigants and interpreted by courts, but does not believe the Commission's or the states' law enforcement efforts will be significantly hampered by the decision.

2. Tauber. In view of the prevalence of litigation over the scope of the Treasury Amendment, and the courts' lack of unanimity to which the recent Court of Appeals opinion contributes, the Commission will consider recommending to Congress legislation that would affirm the CFTC's view that the Treasury Amendment does not extend to the sale of futures and options on foreign currency to the general public.

D. Analysis of a Single Regulator for Derivative, Futures and Securities

The Report's analysis of the single regulator issue focuses primarily on issues raised by a merger of the CFTC and SEC. In the Commission's view, it is unlikely that the anticipated

- 7 -

benefits of combining the functions of the CFTC and the SEC into one agency would outweigh the anticipated costs. Merging the CFTC and the SEC would leave unaddressed the emerging issues concerning OTC derivatives which are the primary focus of the Report because OTC derivatives encompass products unregulated under either agency's regulatory framework. The systemic implications of OTC derivatives relate to the responsibility of bank regulators to oversee the activities of financial institutions involved with the products as well. The CFTC believes that the cross-market concerns about these products could best be addressed by establishment of the recommended interagency council encompassing the SEC, CFTC, and bank regulators to supplement the agencies' current efforts at cooperation, information sharing, and harmonization of regulatory efforts.

INTRODUCTION

By any measure, the worldwide growth of the over-the-counter (OTC) markets in derivative products during the past decade has been extraordinary. This growth has fundamentally changed financial management by providing increasingly novel and flexible tools for the efficient allocation and management of risks. With the recognition of these important benefits of derivative products also has come an increasing need to consider the implications of these products for the financial markets and the public interest at large. As a result, during this period, lawmakers and regulators from the United States and abroad have increasingly found it necessary to focus on the legal and regulatory issues presented by these markets. In this regard, the Commodity Futures Trading Commission (CFTC or Commission) has been directed by the Conference Committee that considered the Futures Trading Practices Act of 1992 (FTPA), Pub. L. No. 102-962, 106 Stat. 3590, to conduct this study of OTC derivative products and to report the results of its study to Congress. The Conference Committee requested the report in order to provide Congress with information to assist it in its consideration of the need for future legislation relating to the markets for derivative financial products.

The Conferees' request for this report followed years of deliberation by both Congress and the Commission concerning the legal status and appropriate regulatory treatment of OTC derivatives such as swaps agreements and hybrid instruments. These Congressional deliberations culminated in the enactment of

- 9 -

the FTPA. Among other things, the FTPA granted the Commission authority, in appropriate circumstances, to grant exemptions from the requirements of the Commodity Exchange Act (CEA),^{1/} including the requirement that futures contracts be traded only on Commission-designated exchanges. Further, the FTPA specifically authorized the Commission to use that exemptive authority promptly to provide legal certainty to swap agreements and hybrid instruments. At the same time, with a view to the future, the Conferees directed the Commission--with the cooperation of and in consultation with the Securities and Exchange Commission (SEC) and the Board of Governors of the Federal Reserve System (Federal Reserve Board)--to conduct this study specifically to determine:

- (1) the size, scope, activities, and potential risks presented by the markets for swaps and other off-exchange derivative financial products;
- (2) the need for additional regulatory controls that should be applicable to these products;
- (3) how any such regulatory controls could be implemented in a cost-effective manner;
- (4) the public policy implications of the decisions in Krommenhoek v. A-Mark Precious Metals Inc., 945 F.2d 309 (9th Cir. 1991) and Laszlo N. Tauber, M.D. v. Salomon Forex Inc., 795 F. Supp. 768 (E.D. Va. 1992), aff'd No. 92-1406 (4th Cir. October 18, 1993); and
- (5) whether a single federal regulatory agency should regulate the exchange or off-exchange trading of, and markets for, futures, options, swaps, derivative products and securities.

^{1/} 7 U.S.C. § 1 et seq.

- 10 -

The Conferees directed the Commission to include in the report of its study any recommendations it had concerning the regulation of trading in the studied products.

As Congress and the Conferees were aware, the Commission had devoted substantial resources prior to the enactment of the FTPA to addressing the legal and regulatory issues raised by the evolving OTC derivatives markets. Beginning in the late 1980's, the Commission began to see an increasing number of innovative off-exchange transactions that exhibited some of the economic or legal characteristics of futures contracts or commodity options, but which were designed to be traded outside the exchange environment. With the creation of these products, questions arose concerning the applicability of the CEA. Since that time, the Commission has specifically attempted to foster the development of these emerging products, where possible. In this endeavor, the Commission's goal has been, and continues to be, to support innovation within the framework of the CEA. The Commission has worked closely with other agencies to avoid regulatory gaps and to reduce regulatory uncertainties that may have existed with regard to these new products and that may have stood as an impediment to financial innovation.

For several years prior to the enactment of the FTPA, the Commission made use of its then-existing authority in its efforts to accommodate the expanding OTC derivatives markets. For example, with regard to swap agreements, the Commission in July 1989 adopted and published a policy statement which noted that

- 11 -

most swaps, although possessing elements of futures or option contracts, were not appropriately regulated under the CEA or the Commission's regulations. The policy statement thus recognized a non-exclusive "safe harbor" for swap agreements satisfying certain specified conditions.

With regard to hybrid instruments, the Commission, also in July 1989, adopted rules regarding certain hybrid instruments that combined characteristics of commodity options with debt, preferred equity or depository interests. The rules established an exemption from Commission regulation for these types of instruments based upon the limited nature of their commodity option component and deference to other federal and state regulatory frameworks applicable to their non-commodity component. In addition, in January 1989 and April 1990, the Commission issued, and subsequently re-issued in refined form, a statutory interpretation applicable to hybrid instruments that combine characteristics of futures contracts or commodity options with debt or depository instruments. The Commission essentially determined that the commodity component of instruments covered by the statutory interpretation was relatively insignificant or de minimis in nature and that they would be deemed to be excluded from Commission regulation.

Since the enactment of the FTPA, the Commission has used its new exemptive authority to further clarify the legal status of swaps and hybrids. In this regard, in January 1993, the Commission issued rules generally exempting certain swap

- 12 -

agreements from most Commission regulations and amended its rules exempting certain hybrid instruments. The Commission has also received several petitions for exemption from regulation submitted pursuant to the exemptive authority provisions of the FTPA. One petition, involving certain contracts between commercial participants for the deferred purchase or sale of energy products, was generally granted by Commission order in April 1993. Currently, the Commission is considering a petition for exemption from the Chicago Mercantile Exchange concerning the purchase and sale of certain of its now exchange traded futures and options foreign currency contracts, and a petition from the Chicago Board of Trade seeking an exemption for a "professional trading market" for trading in any instrument of any board of trade.

This Report consists of six chapters as follows:

Chapter I	The Nature, Size and Scope of the OTC Derivatives Markets
Chapter II	Overview of the Regulatory Status of OTC Derivative Transactions
Chapter III	Potential Risks Arising from OTC Derivative Transactions
Chapter IV	Recommendations
Chapter V	The Public Policy Implications of the <u>A-Mark</u> and <u>Tauber</u> Decisions
Chapter VI	Analysis of the Costs and Benefits of a Single Regulator for Derivatives, Futures and Securities

A separately bound volume of working papers containing detailed background material prepared by the Commission's staff accompanies the report. The seven working papers cover the following areas:

Working Paper 1	Size and Scope of the OTC Derivatives Market
Working Paper 2	Summary of Interviews
Working Paper 3	Regulatory Overviews
Working Paper 4	Default Case Studies
Working Paper 5	Accounting Issues
Working Paper 6	Descriptions of Derivative Product Companies
Working Paper 7	A. Glossary of Terms B. Bibliography C. Survey of Literature

The CFTC staff undertook the following research in the preparation of this report;

- o In-depth analysis of several extensive databases relating to OTC and exchange-based derivatives market activity and participants;
- o Wide-ranging interviews of 25 U.S. OTC market participants encompassing fourteen dealers and eleven end-users, four software providers, two major credit rating agencies and one regulatory agency with supervisory authority over one class of interviewee;

- 14 -

- o A detailed survey of market authorities in Canada, France, Germany, Japan, Hong Kong and the United Kingdom on the regulatory status of OTC derivative products in these jurisdictions;

- o Review of a large body of existing literature on the OTC derivatives markets, including academic papers and books, U.S. and foreign government reports, and industry reports; and

- o Review of existing domestic financial regulatory structures, including statutes and regulations, to determine their interface with OTC derivatives markets.

In addition, the Commission consulted with and received the full cooperation of the SEC and the Federal Reserve Board in preparing this report.

Through this report and its appended working papers, many sections of which address complementary or overlapping issues, the Commission has attempted to provide an overview of derivative products found in today's marketplace and their attendant risks, as well as a survey of regulatory controls and risk management practices currently in effect in the U.S. In its recommendations, the Commission has addressed potential areas of concern which warrant further discussion.

THE INSTITUTE OF INTERNATIONAL FINANCE, INC.

AN INTEGRATED
BANK REGULATORY APPROACH
TO
DERIVATIVES ACTIVITIES

May 1993

An Integrated Bank Regulatory Approach To Derivatives Activities

Background: In late 1992, a Task Force on Bank Derivatives Activities was formed at the Institute of International Finance. The task force is composed of senior bank managers from European, Japanese, and U.S. banks. The group agreed to contribute its findings to the Group of Thirty's Study Group on Derivatives Markets and Instruments, upon approval of the report by the Institute's Board of Directors. That approval was given on May 4, 1993.

Also in late 1992, the BIS published a report on the interbank derivatives market: *Recent Developments in International Interbank Relations* (The Promisel Report). It was prepared by a working group appointed by governors of the central banks of the Group of Ten countries. In general, that report stressed the importance of derivatives-related credit risks as well as the need for increased disclosure and better statistics concerning this business. The Promisel Report also encouraged the banking industry to communicate its suggestions for the supervision of their derivatives activities.

The Institute's member banks welcomed this invitation and have taken the initiative to describe prudent practices that would help reduce derivatives-related risks without adversely impacting on the market's function and flexibility.

To this end, task force members have met, completed questionnaires, and discussed emerging trends and issues. The banks hope that by articulating their views through the forum of the Institute, they might contribute to the international public policy debate while also providing guidance to all banks participating or planning to participate in the derivatives markets. They also hope to dispel any misperceptions concerning their derivatives activities and the related management controls that currently exist.

The task force recommendations on four key issues are attached as Appendices A (Internal Controls), B (Netting), C (Capital Adequacy), and D (Disclosure).

The task force recognizes that the internal control and disclosure recommendations address issues common to both banks and nonbank participants in the derivatives markets. For this reason, banks believe that internal control issues should be the central focus of an informed debate concerning regulation of derivatives activities.

In addition, the task force wishes to underscore the difference between banks and others active in the derivatives markets. Because banks must comply with capital adequacy rules established in the Basle Capital Accord (the Accord), they must evaluate the capital adequacy implications of their off-balance-sheet activities in a manner not shared entirely by their nonbank competitors. As noted in Appendix C, these capital adequacy rules should now be refined to reflect changes in the derivatives markets since the Accord was promulgated.

Internal control and capital adequacy issues are necessarily linked. To the extent that internal control systems are strong, capital adequacy concerns may be lessened. To the extent that capital adequacy requirements are realistic, internal control systems will be more effective. Therefore, the recommendations made by the task force seek to create an integrated approach for the supervision of banks' off-balance-sheet activities.

Summary of Recommendations: A common theme runs through the recommendations: Derivatives are a natural extension of banks' traditional risk intermediation activities. The nature of financial intermediation is changing, at least for large internationally active institutions because deregulation, technological advances, and other developments have created more complex financial markets that require more innovative intermediation. In addition to traditional credit and correspondent

services, bank customers now demand more creative financing techniques. In order to retain their role as financial intermediaries, banks have adapted by providing the same services (credit and risk management) with new tools (derivative financial instruments). Banks use derivatives to refine their own internal risk management practices; banks are also end-users of derivative financial products.

Asset and liability management policies, as well as credit policies, have been adapted to include analysis of all types of counterparty and market risks with respect to derivatives. The goals are to assess derivatives-related risks and to price derivative products properly. But the underlying activity remains the same as that for traditional credits: identifying, monitoring, and actively managing potential risks posed by both single transactions and whole portfolios. As with loans that require repayment after a period of time, credit analysis in the derivatives context evaluates a counterparty's ability to fulfill future derivatives-related payment obligations. In many cases, credit analysis is expanded by incorporating simulated market volatilities in order to examine their combined effects and potential costs on counterparties. This blurs the distinction between credit and market risk. As the Promisel Report noted: "credit risk in derivative instruments is largely inseparable from market risk," because counterparties rely on and analyze each other's ability to meet transaction terms over time despite market dislocations.

Since the methods for dividing and measuring risk components are evolving at a very fast pace, banks believe that the proper regulatory focus should be on management's ability first to instill a risk management culture, and secondly to identify and adapt to technological and analytical developments. For this reason, it would be short-sighted for bank supervisory agencies to impose specific technical methods that could rapidly become obsolete.

Banks believe that supervisory and market evaluations

of their off-balance-sheet exposures should instead focus on good management controls. This approach would be consistent with management prerogatives in controlling on-balance-sheet risks. It would also encourage the development of in-house methodologies best suited to measure and control derivatives-related risks in each bank. Finally, a supervisory emphasis or industry consensus on specific formulas (most often used in pricing derivatives products) would be undesirable because it might interfere with free competition and stifle new product innovation.

Nonetheless, banks agree that at a minimum, certain risk variables (price risk, spread risk, and volatility risk) should be analyzed by all market participants in order to ensure the market's integrity and safety. But the precise calculation of these variables should be determined separately by each bank management in line with its internal control procedures. A separate statement on internal controls is attached as Appendix A.

The Promisel Report noted that derivative instruments are important tools for decreasing financial market risks. By dividing market risks into component parts, contracts can be tailored to address each identifiable risk. This significantly strengthens an organization's ability to manage its overall risk profile. As intermediaries and end-users of derivatives, banks provide liquidity to derivatives markets, and they contribute to better overall risk management in the financial system. Thus, the safety and soundness of the global financial system itself, which is of paramount concern to internationally active banks as well as to bank supervisors, is enhanced through banks' strong internal control and credit assessment processes.

It must be recognized, however, that limits exist on the ability of banks to contain the effects of potential market disruptions and accidents in the global financial system. Because of this, bank regulatory and supervisory authorities must establish closer cooperation among themselves and should continue to harmonize national banking regulations. This will

help eliminate nonprice competitive distortions that arise from differing legal requirements. In the process of creating a level playing field by harmonizing regulatory standards, potential systemic risks can be eliminated.

For example, the Basle Accord addresses one component of systemic risk by establishing minimum capital requirements for credit risks. This capital adequacy framework has been adopted by most countries. But the Accord does not create specific capital requirements for market risks. National governments, however, are beginning to enact market risk capital adequacy rules with a significantly different focus. Banks and some national regulators are concerned that differences in emerging national capital adequacy rules for market risks may create a very uneven playing field even among bank participants. Given the global nature of the derivatives markets, any rules concerning market risks should be consistent across jurisdictions in order to avoid artificial (and potentially destabilizing) nonprice differences that distort competition. For this reason, the Institute supports the Basle Committee's current efforts to address market risks.

In order to prevent market disruptions and overly restrictive or dissimilar rules from distorting competition, banks suggest that policymakers take four steps to enhance systemic stability: recognize banks' internal control policies and procedures (Appendix A), ensure the validity of netting arrangements (Appendix B), refine the capital accord (Appendix C), and support more uniform disclosure of off-balance-sheet activities (Appendix D). Increased and consistent disclosure by all market participants would improve the usefulness of counterparty credit risk assessments by derivatives market participants, thereby increasing the efficacy of market discipline.

The capital adequacy refinements, of course, relate specifically to banks. Task force participants suggest that the capital adequacy framework for off-balance-sheet instruments

be refined to reflect the increased sophistication of participants in the derivatives markets since the Accord was promulgated in 1988. This can be accomplished by making capital requirements more sensitive to durational elements in derivatives instruments and by eliminating the use of the original exposure method for calculating risk-based capital adequacy. It can also be accomplished by expanding the regulatory framework to recognize banks' capital allocations that cover market risks. These refinements would provide a clearer picture of the capital cushion banks currently maintain for their derivatives activities.

Banks would welcome the opportunity to work closely with bank regulators and bank supervisors on the details of such refinements to the Accord. In particular, banks welcome the Basle Committee's current efforts to incorporate market risks and bilateral netting arrangements into the Accord.

Regulatory recognition of the risk management methods detailed in Appendices A, B, and C would ensure that a consistent minimum level of risk management applies on a cross-border basis to derivatives market participants. Developed by banks over time, with significant regulatory scrutiny, these methods are both commercially feasible and reliable. We also recommend that individual participants adopt these methods where appropriate.

Conclusion: This integrated approach should ease regulatory anxiety over the risks related to banks' cross-border derivatives activities. It should also enhance systemic stability in three ways. First, it would bolster the ability of all derivatives markets participants to evaluate counterparty credit standings. Second, it will help ensure that new entrants in the interbank derivatives market are aware of industry expectations and common practices. Third, it will emphasize prudent practices and promote increased uniformity among banks active in the derivatives arena without unduly interfering with competition.

International Capital Markets

Part II. Systemic Issues in International Finance

By a Staff Team from the
International Monetary Fund

led by
Morris Goldstein and
David Folkerts-Landau



INTERNATIONAL MONETARY FUND
Washington, DC
August 1993



III

The Growing Involvement of Banks in Derivative Finance—A Challenge for Financial Policy

The markets for over-the-counter and exchange-traded derivative instruments have exhibited explosive growth in the late 1980s and early 1990s.⁵² In their continuing search for profitable new activities, the banking sectors in the major industrial countries have become extensively involved in these markets both by acting as dealers in the OTC market and as users of exchange-traded instruments. Indeed, the most notable development in the major financial markets during the past five years has been the growth in volume and in diversity of OTC financial derivative instruments. Exchange-traded derivative contracts have likewise grown at a dizzying pace, stimulated in large part by the OTC business of the banking sector. The notional value of outstanding exchange-traded and OTC contracts has grown from \$1.6 trillion in 1987 to \$8 trillion in 1991, or from about 35 percent to 140 percent of U.S. GDP (Table 6 and Chart 18).

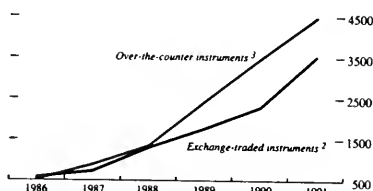
This development has fundamentally altered the structure of finance and the interaction of markets.⁵³ By now, the advantages that derivative markets offer for hedging price risks and for increasing the liquidity of underlying markets are well appreciated. In particular, the new instruments and techniques permit the separation and unbundling of risk, the pricing of its separate components (credit risk, liquidity risk, market risk), and the redistribution of risks to those best able to manage them. But the exponential growth of the derivatives market

⁵²Whereas OTC contracts—e.g., forwards, forward rate agreements, swaps, options, and caps/floors/collars—are tailor-made by the intermediaries to fit the end users' needs, exchange-traded contracts—futures and options—have standardized maturity, contract size, and delivery terms, and the exchange itself is the counterparty in each transaction. The most actively traded financial derivatives on organized exchanges are futures on interest rates, primarily U.S. Treasury bond rates, Eurodollars, French Government bonds (Obligations Assimilables du Trésor (OAT)), German Government bonds, Japanese Government bonds, and U.K. short sterling and gilts.

⁵³Derivatives allow borrowers and lenders easily to change the risk characteristics of securities, e.g., currency denominations or interest rate structure (floating or fixed, caps), or to create completely new risk positions. For example, a U.S. borrower who would like to obtain floating rate deutsche mark to fund a direct investment in Europe might access the fixed rate U.S. dollar market, but swap the proceeds into the floating rate deutsche mark market and attach a deutsche mark interest cap.

Chart 18. Notional Principal Amounts Outstanding for Exchange-Traded and Over-the-Counter (OTC) Derivative Instruments¹

(In billions of U.S. dollars equivalent, end-year data)



Source: Bank for International Settlements (1992), p. 49.

¹1986 data are estimates.

²Excludes options on individual shares and derivatives involving commodity contracts; consists of futures and options (calls and puts) on currency, interest rate, and stock market index.

³Only data collected by International Swap Dealers Association (ISDA). Excludes information on contracts such as forward rate agreements, OTC currency options, forward foreign exchange positions, equity swaps, and warrants on equity; includes interest rate and currency swaps (adjusted for reporting of both currencies) and other derivative instruments (caps, collars, floors, and swaptions).

has forced regulators and other financial authorities to wonder if prudential considerations are being given sufficient attention. The fact that banking difficulties have so far emerged generally as a result of the mismanagement of credit risk is not entirely reassuring, since OTC activities are a recent phenomenon. After all, harking back to the principles of sound banking alluded to earlier, experience suggests that rapid expansion of, and concentration in, a particular banking activity often signals both a weakening of internal controls and an underassessment of credit risk.

This section begins by describing the recent expansion of trading activity in both OTC and exchange-traded derivative instruments and then concentrates specifically on bank activities in derivatives markets. The risks involved in dealing in

Table 6. Markets for Selected Derivative Financial Instruments: Notional Principal Amounts Outstanding
(In billions of U.S. dollars, end-year data)

	1986	1987	1988	1989	1990	1991	Percent Change	
							1986-91	1990-91
Exchange-traded instruments	583	725	1,300	1,762	2,284	3,518	503	54
Interest rate futures	370	488	895	1,201	1,454	2,159	484	49
Interest rate options ¹	146	122	279	387	600	1,072	634	79
Currency futures	10	14	12	16	16	18	80	12
Currency options ¹	39	60	48	50	56	59	51	5
Stock market index futures	15	18	28	42	70	77	413	10
Options on stock market indices ¹	3	23	38	66	88	132	...	50
Over-the-counter (OTC) instruments ²	500 ³	866	1,326	2,423	3,451	4,449	790	29
Interest rate swaps ⁴	400 ³	683	1,010	1,539	2,312	3,065	666	33
Currency and cross-currency interest rate swaps ^{4, 5}	100 ³	183	316	434	578	807	707	40
Other derivative instruments ^{3, 4, 6}	450	561	577	...	3

Sources: Bank for International Settlements (BIS) calculations; United States, Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, and Office of the Comptroller of the Currency (1993); Futures Industry Association (FIA), IMF staff estimates; International Swap Dealers Association (ISDA); and various futures and options exchanges worldwide.

¹Calls plus puts.

²No statistics are available on forward rate agreements or OTC foreign exchange options. Only data collected by ISDA.

³Estimates.

⁴Contracts between ISDA members reported only once.

⁵Adjusted for reporting of both currencies.

⁶Caps, collars, floors, and swaptions.

derivatives and how banks manage these risks is then discussed, followed by the systemic implications and regulatory response of the heavy bank involvement in these markets.

Markets for Derivative Instruments

Measured activity in derivative financial instruments points to continued strong growth in these markets. The outstanding notional principal value of OTC instruments (mostly interest rate and currency swaps) increased to \$4,449 billion at end-1991, an increase of 413 percent from end-1987 (Table 6). In the first half of 1992, \$1,474 billion in new swaps was written, a 44 percent increase over the second half of 1991. The notional principle of exchange-traded derivative instruments has also registered strong growth, climbing to \$3.5 trillion at end-1991, up 385 percent from end-1987. Derivative instruments have grown by a much wider margin than other financial instruments. As a rough indication of this trend, the ratio of the outstanding notional value of interest rate and currency derivative contracts to the international assets of banks rose from about 31 percent at end-1987 to 106 percent at end-1991.⁵⁴

OTC Derivatives Markets

The most actively used OTC instruments are interest rate swaps, the notional principal value of

which totaled \$3,065 billion at end-1991, up 349 percent from end-1987 (Table 7). Interbank swaps rose from 30 percent of total swaps outstanding at end-1987 to 44 percent at end-1991. This development reflects the evolving role of swaps.⁵⁵ In its early years, the market was dependent on new bond issues and arbitrage activity in capital markets, recently, however, investors, particularly financial institutions, are using interest rate swaps to hedge shorter-term exposures. Thus the weighted-average maturity of new U.S. dollar interest rate swaps declined to about 2.4 years in the second half of 1991 from 4 years in the first half of 1987. Another important development is the fall in the share of the U.S. dollar sector in total interest rate swaps outstanding from 79 percent at end-1987 to 49 percent at end-1991. Nondollar business continued to expand in the first half of 1992. Contracts denominated in the Japanese yen, deutsche mark, pound sterling, and French franc account for the bulk of the outstanding nondollar interest rate swaps.

The market for currency swaps, including cross-currency interest rate swaps, has also grown rapidly. The notional value of these swaps totaled \$807 billion at end-1991, an increase of 342 percent from end-1987 (Table 7). However, in the first half of 1992 growth tapered off, with new currency swaps totaling \$156 billion. This decline of 6.6 percent from the second half of 1991 reflects a reduction in swaps involving the U.S. dollar and the Japanese

⁵⁴International assets are defined as cross-border plus local foreign currency claims of Bank for International Settlements (BIS) reporting banks.

⁵⁵See Bank for International Settlements (1992b), pp 50-52 for a more detailed discussion.

Table 7. Currency Composition of Notional Principal Value of Outstanding Interest Rate and Currency Swaps
(In billions of U.S. dollars)

	1987	1988	1989	1990	1991
Interest rate swaps					
All counterparties	682.9	1,010.2	1,502.6	2,311.5	3,065.1
U.S. dollar	541.5	728.2	993.7	1,272.7	1,506.0
Japanese yen	40.5	78.5	128.0	231.9	478.9
Deutsche mark	31.6	56.5	84.6	193.4	263.4
Pound sterling	29.7	52.3	100.4	242.1	253.5
Other	39.5	94.8	195.8	371.5	563.3
Interbank (ISDA member)	206.6	341.3	547.1	909.5	1,342.3
U.S. dollar	161.6	243.9	371.1	492.8	675.0
Japanese yen	19.5	43.0	61.1	126.1	264.9
Deutsche mark	7.9	17.2	32.6	78.4	111.2
Pound sterling	10.4	17.6	40.0	100.1	106.3
Other	7.1	19.6	42.2	112.1	184.9
End user	476.2	668.9	955.5	1,402.0	1,722.8
U.S. dollar	379.9	484.3	622.6	779.9	831.0
Japanese yen	21.0	35.5	66.9	105.8	214.0
Deutsche mark	23.7	39.3	52.0	115.0	152.2
Pound sterling	19.3	34.7	60.4	142.0	147.3
Other	32.4	75.2	153.6	259.4	378.3
Currency swaps¹					
All counterparties	182.8	319.6	449.1	577.5	807.2
U.S. dollar	81.3	134.7	177.1	214.2	292.1
Japanese yen	29.9	65.5	100.6	122.4	180.1
Deutsche mark	10.7	17.0	26.9	36.2	47.6
Pound sterling	5.3	8.9	16.7	24.5	37.4
Other	55.7	93.5	127.8	180.3	250.0
Interbank (ISDA member)	35.5	82.6	115.1	155.1	224.9
U.S. dollar	16.7	34.1	48.2	59.7	86.8
Japanese yen	7.2	18.6	28.3	37.4	60.9
Deutsche mark	1.6	3.0	5.4	7.6	9.4
Pound sterling	1.1	1.6	4.3	6.2	8.4
Other	9.0	25.4	28.8	44.1	59.5
End user	147.3	237.0	334.1	422.5	582.3
U.S. dollar	64.6	100.7	128.9	154.5	205.3
Japanese yen	22.7	47.0	72.2	85.0	119.2
Deutsche mark	9.1	14.0	21.5	28.5	38.2
Pound sterling	4.2	7.3	12.4	18.3	29.0
Other	46.7	68.1	99.0	136.2	190.6

Sources: Bank for International Settlements, *International Banking and Financial Market Developments*, various issues; and International Swap Dealers Association (ISDA).

¹ Adjusted for double-counting as each currency swap involves two currencies.

yen. Over the past several years, a number of changes have taken place in the market for currency swaps, mirroring those in the interest rate swap market.⁵⁶ For example, the share of interbank business increased to 28 percent at end-1991 from 19 percent at end-1987, whereas the weighted average maturity of interbank currency swaps declined to three years from about six years. At the same time, the share of currency swaps arranged between non-dollar currencies rose from 11 percent to 28 percent.

The OTC markets also include caps, floors, collars, and swaptions.⁵⁷ At end-1991, the aggregate

notional value of these instruments stood at \$577 billion, an increase of 28 percent from end-1989 (Tables 6 and A4).⁵⁸ In this total, the notional principal of caps outstanding amounted to \$317 billion, of which about 40 percent was accounted for by interbank positions. The notional value of new contracts agreed in the first half of 1992 was \$294 billion, 60 percent higher than new activity had been in the second half of 1991.

debt. Conversely, a floor sets a lower limit on the interest rate received. A collar combines a cap and floor to limit the fluctuation of an interest rate to a desired range, while a swaption is an option to enter into a swap agreement.

⁵⁸Data on the notional value of caps, floors, collars, and swaptions have been compiled only since end-1989.

⁵⁶See *ibid.*, pp. 52-53, for a more detailed discussion.

⁵⁷The cap is the most important instrument, which sets an upper limit on the interest rate that must be paid on floating rate

Table 8. Annual Turnover in Derivative Financial Instruments Traded on Organized Exchanges Worldwide
(in millions of contracts traded)

	1986	1987	1988	1989	1990	1991
Futures on short-term interest rate instruments	16.4	29.4	33.7	70.2	75.8	84.8
of which						
Three-month Eurodollar ¹	12.4	23.7	25.2	46.8	39.4	41.7
Futures on long-term interest rate instruments	74.6	116.3	122.6	130.8	143.3	149.7
of which:						
U.S. Treasury bond ²	54.6	69.4	73.8	72.8	78.2	69.9
Notional French Government bond ³	1.1	11.9	12.4	15.0	16.0	21.1
Ten-year Japanese Government bond ⁴	9.4	18.4	18.8	19.1	16.4	12.9
German Government bond ⁵	—	—	0.3	5.3	9.6	12.4
Currency futures	19.7	20.8	22.1	27.5	29.1	29.2
Interest rate options and options on interest rate futures	22.2	29.3	30.5	39.5	52.0	50.8
Currency options and options on currency futures	13.0	18.2	18.2	20.7	18.8	21.5
Total	145.9	214.0	227.1	288.6	319.1	336.0
of which:						
in the United States	122.9	161.4	165.3	198.1	205.7	199.7
in Europe	9.8	27.2	32.6	49.0	61.0	84.2
in Japan	9.4	18.3	18.8	23.7	33.6	30.0

Source: Adapted from Bank for International Settlements (1992b), p. 55.

¹Traded on the Chicago Mercantile Exchange-International Monetary Market (CME-IMM), Singapore Mercantile Exchange (SIMEX), London International Financial Futures Exchange (LIFFE), Tokyo International Financial Futures Exchange (TIFFE), and Sydney Futures Exchange (SFE).

²Traded on the Chicago Board of Trade (CBOT), LIFFE, Mid-America Commodity Exchange (Midam), New York Futures Exchange (NYFE), and Tokyo Stock Exchange (TSE).

³Traded on the Marché à Terme International de France (MATIF).

⁴Traded on TSE, LIFFE, and CBOT.

⁵Traded on LIFFE and the Deutsche Terminbörse (DTB).

Exchange-Traded Derivatives

The most actively traded financial derivatives on organized exchanges are futures on interest rates. Trading volumes in these instruments totaled 234.5 million contracts in 1991, up 61 percent from the 1987 figure (Table 8). The bulk of this activity is concentrated in U.S. Treasury bonds and three-month Eurodollar futures (Table A5). However, trading volumes in the notional French Government bond—Obligations Assimilables du Trésor (OAT)—and German bond futures have increased significantly in recent years. Interest rate options and options on interest rate futures are also actively traded on organized exchanges. The volume of interest rate-related option contracts traded worldwide totaled 50.8 million in 1991, up from 29 million in 1987.

The most actively traded currency futures and options contracts involve the Japanese yen, deutsche mark, Swiss franc, and pound sterling. The total volume of worldwide trading in currency futures was 29.2 million contracts in 1991, an increase of 40 percent from 1987. In currency options and options on currency futures, global trading amounted to 21.5 million contracts in 1991, up 18 percent from 1987. At the same time, trading volumes in futures and options on stock market indices have tapered off. The volume of trading in these instruments is relatively small compared with that of interest rate and currency contracts.

Derivatives Activities of Banks

The major intermediaries or dealers in the OTC derivatives markets tend to be large banks and securities firms in the United States, Japan, France, the United Kingdom, Germany, and Switzerland (Table A6). Banks have been attracted to dealing in OTC derivatives as a way of expanding the menu of interest rate and currency risk management products that they have traditionally provided to their customers.

Among U.S. banks, a handful of large institutions are the main dealers in OTC derivatives accounting for much of the position taking.⁵⁹ Bank holding companies with total assets of at least \$10 billion hold between 98 percent and 100 percent of the notional value of all positions taken by U.S. bank holding companies in various types of OTC and exchange-traded derivatives. This concentration of activity has been relatively stable since 1990, when data were first compiled. The smaller institutions tend to be end users that typically take on derivatives positions to manage risks associated with their traditional banking activities.

Although the notional amounts serve to identify institutions that are active in the derivatives mar-

⁵⁹United States, Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, and Office of the Comptroller of the Currency (1993) examines in greater detail the role of U.S. banks in the markets for derivative instruments.

Table 9. Open Positions in Financial Futures and Options on Financial Futures Contracts Traded on U.S. Exchanges, 1992

(In percent of total, end-year data)

Types of Contract	Distribution of Positions					
	Purchases (Long)			Sales (Short)		
	Banks		Other	Banks		Other
U.S.	Non-U.S.	U.S.		Non-U.S.		
	<i>Futures</i>					
Short-term interest rate ¹	23.56	11.71	64.73	11.06	26.96	61.97
Long-term interest rate ²	4.30	7.32	88.37	8.19	16.35	75.47
Currency ³	11.24	12.18	76.58	2.13	18.20	79.67
Stock market index ⁴	26.57	0.50	72.93	11.78	10.29	77.94
	<i>Options</i>					
Call options						
Short-term interest rate ¹	14.83	28.85	56.32	17.46	26.08	56.46
Long-term interest rate ²	17.78	15.46	66.76	7.09	18.86	74.05
Currency ³	15.48	39.17	45.34	6.43	47.38	46.19
Stock market index ⁴	0.29	0.34	99.37	1.16	10.77	88.07
Put options						
Short-term interest rate ¹	23.17	25.08	51.75	16.71	31.83	51.46
Long-term interest rate ²	3.56	18.48	77.95	7.60	19.52	72.89
Currency ³	7.55	30.57	61.89	5.77	46.42	47.81
Stock market index ⁴	2.94	2.17	94.89	1.34	1.01	97.65

Source: Commodity Futures Trading Commission (CFTC).

¹Chicago Mercantile Exchange-International Monetary Market (CME-IMM) one-month LIBOR, CME-IMM Treasury bills, Chicago Board of Trade (CBOT) 30-day interest rate, and CME-IMM Eurodollars.

²CBOT Treasury bonds, CBOT 2-year and 6.5 10-year Treasury notes, and CBOT municipal bonds.

³CME-IMM Canadian dollar, deutsche mark, Japanese yen, pound sterling, and Swiss franc.

⁴CME-IMM Nikkei, Standard & Poor's (S&P) 500, and S&P 400.

kets, these figures do not provide a useful gauge of credit exposures. The notional amounts are simply hypothetical principal values used to calculate the contractual cash flows that generate the actual credit exposures. The credit exposure of a derivatives contract is the cost of replacing the contract if the counterparty defaults; in other words, it is the positive market value of the contract, if any. These exposures generally amount to only a small fraction, roughly 2-4 percent for interest rate swaps, of the notional values.

U.S. banks report the replacement cost of interest rate and currency swaps as part of their compliance with the Basle accord. The bulk of the credit exposure is concentrated in ten banks, the aggregate credit exposure of which was \$170 billion (17.3 percent of their total assets) at end-September 1992. Relative to the total assets of these banks, their credit exposures ranged from 3.2 percent to 33.4 percent. Moreover, 69 percent of total credit exposure (\$117.7 billion) is associated with exchange rate contracts, despite their smaller aggregate notional principal amounts, reflecting the fact that currency swaps involve an exchange of both a stream of interest payments and a principal amount.

Bank participation in markets for exchange-traded interest rate futures and options is also extensive. Banks use these instruments in part to hedge

their net OTC derivatives position and their on-balance-sheet interest rate risk. The most comprehensive data on banks' activities in these instruments come from the large trade reports submitted by futures brokers in the United States registered with the U.S. Commodities Futures Trading Commission (CFTC). They cover the large open positions of both U.S. and non-U.S. banks that transact in U.S. futures and options exchanges.⁶⁰

With respect to open futures positions, available data indicate that banks are most heavily involved in futures on short-term interest rates, such as the three-month Eurodollar contract (Table 9). At end-December 1992, reporting banks accounted for 35 percent of long open positions and 38 percent of short open positions in contracts on short-term interest rates. Banks accounted for 23 percent of long positions in currency futures and 20 percent of short positions; while in futures on stock market indices, banks held 27 percent of all long positions and 22 percent of short positions.

Available data on banks' open positions in listed options suggest that banks are major participants in options on short-term interest rates. For example, at

⁶⁰"Large" open positions are defined as positions in excess of a minimum that varies between 100 and 850 open contracts depending on the product.

end-1992, reporting banks wrote 49 percent of put options on short-term interest rates (Table 9). As far as other option contracts are concerned, non-U.S. banks were active as both purchasers and writers of options on currency futures. But banks were not very active in the market for options on futures on stock market indices.

Management of Risks in OTC Derivative Business⁶¹

Although participants in markets for derivative securities are exposed to the same types of risks as in other markets—credit, market, liquidity, and legal risks—there are concerns that the speed at which these markets have expanded and the complexity of many of the instruments have weakened risk management.⁶² Some of the recent products may not be well understood either by senior management of banks or by supervisors of securities firms. Moreover, these institutions may differ in their expertise at evaluating different types of risks. For example, whereas banks have over time developed considerable expertise in performing credit assessments, securities firms have traditionally specialized in evaluating market risks. Finally, participation in derivatives markets can cause firms to become connected through complicated transactions in ways that are not easily understood, making the evaluation of counterparty risk extremely difficult.

Credit Risk

Credit risk derives from the extension of credit to counterparties who may be unwilling or unable to fulfill their contractual obligations. For derivative instruments the current credit exposure is measured by the positive value, or replacement cost, of the contract (which, as demonstrated above, is generally much lower than the notional value of the contract). For exchange-traded derivatives the evaluation and management of credit risk is facilitated by the design of the market. The pricing of credit exposures is achieved through the existence of a near-continuous market for the contracts and by the requirement that positions be marked to market at the end of each trading session. Performance bonds and maintenance margins provide a degree of protection against default by any one participant, while the reserves of the clearinghouse itself and the access to bank lines of credit by the clearinghouse

and members of the exchange provide protection to all members against the failure of any one participant.

In contrast, OTC contracts, especially longer-dated ones, can generate significant credit exposures, and some banks have begun to mark OTC contracts to market and to require periodic margin payments. The measurement of credit exposures in OTC derivatives can be complicated by their specificity. The absence of a market for these contracts makes it more difficult to determine capital gains and losses on a continuous basis. The replacement cost of an OTC derivative is obtained by recalculating the theoretical value of the contract as the parameters of the pricing equation change.

For OTC derivatives such as swaps that do not contain options, the initial replacement cost of the contract is zero, since no payment is made at their inception. However, once the market price of the underlying instrument moves, the value of the contract will change, becoming positive for one party and negative for the other. The owner of a contract with a positive value has a claim on the counterparty and is therefore exposed to credit risk.

Conversely, an option does have a positive value at inception—the premium. Over time, and as the price of the underlying instrument changes, the value of the option changes. However, since the value of the option can never be negative, the purchaser will always have a credit exposure to the contract's writer unless the option has a zero value.⁶³

The current credit risk of a swap contract is calculated as the present value of the net payments the holder expects to pay and receive over the life of the contract. Similarly, for options, the current credit risk can be measured by pricing the option using standard formulas. However, estimating future credit exposures can be very difficult, since the future value of a derivative contract depends on the future values of the underlying instrument and the interest rate that must be forecast. Therefore, the reliability of the forecast itself adds to the risk factor.

Credit risk is generally managed by establishing exposure limits for each counterparty. The most obvious example is the requirement that counterparties have investment-grade credit ratings (triple B or above).⁶⁴ A substantially higher credit rating—AA or higher—is typically necessary for institutions

⁶³This is also true, for example, for contracts such as caps, floors, collars, and swaptions, which include options in their design.

⁶⁴According to a survey by the International Swap Dealers Association (ISDA), 91 percent of swaps in the portfolios of its members were investment grade at end-December 1991. For end users that do not have investment grade credit ratings, the posting of collateral is one way to gain access to the OTC derivatives market. ISDA is currently undertaking a project to standardize the documentation for collateralized swap contracts to improve the management of credit risk.

⁶¹The risks associated with derivatives activity by banks are also discussed in *Bank for International Settlements (1992b)* and *United States, Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, and Office of the Comptroller of the Currency (1993)*.

⁶²See, for example, *Corrigan (1992)*.

that are dealers in the OTC market, in particular for nonbank financial institutions. Owing to concern about their credit standings, three U.S. securities firms—Merrill Lynch, Goldman Sachs, and Salomon Brothers—have recently set up units for their swap business, which have been separately capitalized and organized to qualify for a triple A rating.

Once the decision has been made to accept a particular counterparty exposure, the extent of that exposure must be managed. Dealers typically manage both on- and off-balance-sheet credit limits in a centralized unit for a given market, if not globally, to avoid large exposures for the institution as a whole. The overall credit limit for any one counterparty often reflects the expected return and risk associated with the claims on it, with riskier counterparties tending to pay a higher premium in the form of a wider bid-ask spread to undertake a transaction. In fact, the widely posted quotes for swaps are for triple A counterparties only; those with lower ratings are often given different quotes. However, risk-based spreads are not universal, in part owing to the lack of reliable information about the financial positions of counterparties, especially other dealers with complex derivatives books.⁶⁵

The bilateral netting of swap contracts provides a mean to curb the escalation of these risks, provided that the provisions are legally enforceable.⁶⁶ The new 1992 master agreement developed by ISDA provides for both payment netting (to reduce the periodic cash flows associated with swaps) and netting of claims in the event of default. Moreover, in the United States, provisions in recent banking reform legislation and an amendment to the bankruptcy law ensure that agreements calling for the netting of claims in the event of default are legally enforceable. But the legal standing of netting provisions of the new ISDA master agreement outside the United States is not altogether certain. Although ISDA has obtained legal opinions in each of the other Group of Ten countries that the netting provision would be legally enforceable if challenged in court, the agreement has not yet faced such legal challenges.

⁶⁵The General Manager of the BIS, Mr. Alexandre Lamfalussy, in remarks before the European Finance Conference, November 24, 1992, called for the standardized disclosure of off-balance-sheet positions. To this end, the International Accounting Standards Board (IASB) is developing standards for the accounting treatment of derivative instruments. In a related development, the Financial Accounting Standards Board (FASB) in the United States has adopted several rules regarding disclosure of off-balance-sheet items. For example, under FASB Statement 107, market values of some derivatives are to be disclosed in financial statements beginning in 1993.

⁶⁶ISDA has estimated that legally enforceable bilateral netting reduces the credit exposures of swaps dealers by 40–60 percent.

Market and Liquidity Risks

Market risk refers to an unexpected change in the value of an open position owing to a change in the price of the underlying instrument. Unlike credit risk, market risk is generally managed on a portfolio basis rather than on a counterparty basis.⁶⁷ This arrangement allows banks to set market risk to any desired level. Since dealers frequently enter into offsetting positions with different counterparties and generally hedge the remaining net position, the sensitivity of the overall portfolio to changes in the price of an underlying instrument can be minimal. Hedging can complicate the management of credit risk through the practice of reducing market risk by taking new positions, rather than by unwinding existing ones. In effect, market risk is managed by taking on greater credit risk.

The most difficult risk to counter is liquidity risk; that is, the risk that the act of selling an existing position in derivatives will have a significant impact on the price. Unfortunately, the demands made on derivative products for the hedging of positions can cause liquidity to disappear suddenly in these markets. In the OTC market, where instruments are tailor-made for a particular group of clients, there is in any event less liquidity than in more homogeneous exchange-traded products. For this reason, market makers with uncovered positions at the end of a day's trading will cover either by taking opposite positions in the organized derivatives markets or by synthesizing an opposite position by using dynamic hedging techniques.⁶⁸ The use of such dynamic hedging methods can generate liquidity problems because they often mandate sales of underlying securities when prices fall or purchases when prices rise; this can trigger an avalanche of sales into a relatively illiquid market for the underlying security, thereby collapsing the price or causing a breakdown in trading.⁶⁹ Thus, liquidity risk

⁶⁷For example, if in an interest rate swap a bank agrees to deliver floating rate interest payments and receive fixed rate payments with a client, it will seek a balancing swap to deliver fixed rate payments and receive floating rate payments.

⁶⁸In theory, the price behavior of derivative instruments such as call or put options can be mimicked by that of a specific portfolio of positions in cash and in the underlying securities. Such a portfolio is referred to as a synthetic option. When a position in actual options is balanced by the opposite position in synthetic options, the overall position is perfectly hedged, but maintaining the hedge requires dynamic adjustment of the cash and underlying security positions, hence the term dynamic hedging. For further discussion on dynamic hedging, see Goldstein and others (1993), Annex II.

⁶⁹Alternatively, the models used to produce the theoretical hedge may be invalid. During the September 1992 exchange rate mechanism (ERM) crisis, for example, interest rate volatility was far outside its normal range. Hedging models built on assumptions of low volatility prescribed inappropriate mimicking portfolios for some currency and interest rate OTC options, thereby imposing serious losses on market making banks.

puts limits on the reliability of the methods used to control market risk and should generate skepticism over claims that risk control software has eliminated market risk as a matter for concern.

Legal Risk

Legal uncertainties have actually been responsible for the most significant losses to date in derivatives markets and continue to present perhaps the most significant risks. The most prominent example is the defaults by some U.K. local authorities on their swaps contracts.⁷⁰ A unique feature of this financing of local authorities is their access to fixed rate loans on the finest terms from a government agency, which passed on the Government's comparative advantage in fixed rate borrowing.⁷¹ In addition, since local authorities' income and expenditures tend to move in line with nominal interest rates, a number of authorities sought to obtain low-cost, variable rate loans by borrowing from the Government at fixed interest rates and simultaneously entering into an interest rate swap to pay a variable interest rate and receive a fixed rate. However, in January 1991, the U.K. local authorities were found by the House of Lords to have entered into the swap contracts without the legal right to do so. Subsequently, defaults by local authorities have resulted in losses to their counterparties.

In the United States, the most important source of legal risk is the possibility that the CFTC would apply the Commodity Exchange Act's prohibition against off-exchange trading to swaps. Under this act, a futures contract not traded on a designated exchange is illegal. Because swaps have certain of the characteristics of futures, this restriction has raised concern that some OTC derivatives would be judged illegal off-exchange futures. In February 1993, the CFTC established a set of rules to exempt swaps and related derivative instruments from most provisions of the act. These new rules were issued under the expanded exemptive authority received by the CFTC under the Futures Trading Practices Act of 1992.

The new rules place several conditions on the exclusion of these transactions from the Commodity Exchange Act, however. In particular, to qualify for exclusion, the instruments cannot be part of a fungible class of instruments that are standardized,

⁷⁰According to the 1992 ISDA Default Survey, U.K. local authorities were the source of almost 50 percent of the \$358 million in cumulative losses incurred by dealers over the history of their involvement in swaps. The survey covered approximately 70 percent of swaps dealers.

⁷¹Bank of England (1991) provides details on the legal status of swaps entered into by the local authorities.

and they cannot be traded on a physical or electronic trade execution system. Moreover, the CFTC had issued a policy statement in 1989 that characterized a swap as an instrument having individually tailored terms, commercial and institutional participants, and the expectation of being held to maturity.

A major source of legal risk is the uncertainty surrounding the legal enforceability of netting arrangements among market participants. Under such arrangements, the exposure arising from multiple derivative transactions is netted. Informal industry estimates suggest that exposure reductions of more than 50 percent are achievable through bilateral netting. In the swaps market, master agreements with netting provisions have come into use in which transactions are automatically netted. Without legal certainty, however, the receiver of a bankrupt counterparty might repudiate the agreement and demand payment on all contracts with positive value (cherry picking), while placing the holders of contracts with negative value among the general creditors.⁷²

Systemic Risk and Public Policy

Regulators have at times raised concerns about the risk of a systemic disturbance arising from the derivatives markets. The rapid growth of activity in derivative instruments has tended to strengthen the linkages between market segments, both within countries and across borders. These links have emerged from the capacity of derivatives to unbundle and reallocate the risks associated with positions in the markets for the underlying instruments. The ability, for example, to hedge the currency risk of cross-border investments using derivative instruments has undoubtedly contributed to the rapid growth of gross international capital flows. The unbundling of risks in the underlying asset markets through the use of derivative instruments, such as the separation of currency risk and interest rate risk in a foreign-denominated bond, also creates opportunities to exploit mispricing across market segments.

The tendency for derivatives to create arbitrage opportunities and to strengthen the linkages between markets has increased the possibility that disruptions or increased uncertainty in these markets might spill over into other derivatives markets and into the cash markets more readily than in the past.⁷³ Indeed, a seasoned observer has noted

⁷²The BIS-sponsored report on netting schemes (Lamfalussy Report) endorses netting as a general risk reduction technique and suggests a speedy implementation of measures to ensure legal certainty.

⁷³The potential for such problems was evident in the global stock market collapse of 1987, the bankruptcy of Drexel Burn-

recently that "the expansion of market linkages, which cut across national boundaries and embrace a wide range of financial and nonfinancial firms, raises concerns about the ability of central banks to contain systemic difficulties should they emerge."⁷⁴ Such linkages to other markets were also stressed in the report prepared by the Group of Ten central banks on recent developments in international interbank relations (the Promisel Report).⁷⁵ In addition, there is concern among regulators that risk in the OTC market is overly concentrated in the hands of a few major market players, that risk is systematically underpriced, and that the financial safety net would have to be expanded beyond the banking system to cover nonbank financial intermediaries.

Considering the phenomenal growth of the OTC derivative markets, the potential for systemic risk, and the fact that this relatively complicated subject is admittedly not fully understood by either senior bank managers or by senior regulators, it is not surprising that questions have been raised about the adequacy of the existing regulatory framework. As one prominent observer stated: "Derivatives have revolutionized finance, but have yet to revolutionize regulation." That evaluation notwithstanding, several regulatory initiatives are under way to improve the prudential supervision of OTC derivatives activities. Regulators have recently sought to

ham Lambert in 1990, and in the 1992 European currency crisis. The market break in October 1987 was perhaps accelerated by trading in stock index futures, as prices in equity markets tended to lag behind those in the derivatives market owing in part to capacity constraints in the former. During the ERM crisis in September 1992, the increased interest rate and exchange rate volatility led to strains in certain derivatives markets, such as OTC options, although the markets generally performed well at that time.

⁷⁴Phillips (1993), p. 6.

⁷⁵The explosive growth of trading in derivative products and other securities has greatly increased payments traffic through the world's major domestic and international payments systems. In the past five years, these mounting pressures on payments systems have spurred central banks to implement mechanisms to control associated credit risks. Nonsettlement of a bank's payment operations in a particular currency would either impose a loss directly on the central bank or trigger a systemic problem. To reduce credit risks, caps can be placed on daylight overdrafts in gross payment systems (systems in which payments messages sent by payor banks coincide with the receipt of good funds by the payee bank) or on daylight net debit positions on net end-of-day payment systems. Such limits have been imposed on the Fedwire and Clearing House Interbank Payments System (CHIPS) in the United States and are planned for the *Système Interbancaire de Télécompensation—Interbank Teletclearing System (SIT)* in France. In addition, some systems have either imposed a partial collateral requirement on net debit positions (CHIPS) or have formally announced intentions to shift to a real-time gross settlement with fully collateralized overdrafts (Clearing House Automated Payment System (CHAPS) in the United Kingdom). The Swiss Interbank Clearing (SIC) system has already shifted to the latter mode of operation. Such changes are still in the planning stage for other countries.

encourage institutions to strengthen their internal risk management practices and to improve oversight of this activity by their senior managements. In addition, regulatory authorities in several countries are currently upgrading their prudential supervision of banks in the area of off-balance-sheet exposures and of improving their overall understanding of derivatives. Several government and private sector studies now under way aim to address this latter shortcoming.

The main efforts to limit the potential for systemic risk aim to strengthen individual institutions through appropriate financial policies and to improve the functioning of payments and settlement systems. Capital adequacy requirements and prudential supervision are the main policies directed at strengthening individual institutions, while the principal initiative in payments systems has been to encourage the development of sound arrangements for the netting of OTC derivative contracts.

The Basle accord established a basic framework for including banks' off-balance-sheet positions in the setting of risk-adjusted capital requirements, largely by establishing credit equivalent measures of OTC interest rate and currency contracts. Interest rate contracts are defined to include single-currency interest rate swaps, basis swaps, forward rate agreements, interest rate futures and interest rate options purchased, and similar instruments. Exchange rate contracts include cross-currency interest rate swaps, forward foreign exchange contracts, currency futures, currency options purchased, and similar instruments. However, instruments traded on exchanges may be excluded provided they are subject to daily margin requirements. Exchange rate contracts with an original maturity of less than 14 days or less are also excluded.

The accord measures the current credit exposure of a derivatives book as the marked-to-market value of all interest rate and currency swaps that have a positive value. A further allowance is made for future credit exposures as well. The sum of current and potential credit exposures carries a 50 percent risk weight under the accord. If a swap has a remaining maturity of at least one year, the add-on is one-half of 1 percent of the notional principal value for an interest rate swap and 5 percent for a currency swap. If the remaining maturity is less than one year, the allowance is zero percent of the notional principal value for an interest rate swap and 1 percent for a currency swap.

With respect to the bilateral netting of positions, the accord relies on the criterion of whether a liquidator of a failed counterparty has (or may have) the right to unbundle the netted contracts, demanding performance on those contracts favorable to its clients and defaulting on the unfavorable contracts.

At the time of agreement on the accord, only netting by novation—folding the accumulated net position into a new legally binding contract—was recognized as satisfying this criterion.⁷⁶ Recently, however, the Basle Committee on Banking Supervision has proposed revisions to the original capital accord that would allow capital requirements to be applied to net open positions in securities in those countries where netting arrangements are legally enforceable.

Could risk reduction also be achieved by channeling more of the OTC business to the organized exchanges? Margin requirements and loss-sharing

arrangements have gone a long way toward eliminating credit risk among members of the exchanges, as well as the risk of spillover from a major default. However, banks that satisfy capital requirements may be as creditworthy as some clearinghouses and exchange members with lines of credit, the ultimate protection from liquidity risk is the same in both markets. It is generally agreed that capital regulations in the OTC markets ought to establish or maintain a level playing field for competition between the exchanges and OTC. The problem is that it is not entirely clear what "level" means. At the heart of this question is the concern that the massive growth in OTC business has occurred because the obligations of major banks and their liquidity are implicitly guaranteed by the financial safety net.

⁷⁶Netting by novation is a bilateral contract under which any obligation to deliver a given currency on a given date is automatically amalgamated with all other such obligations, legally substituting one single net amount for the previous gross obligations in a contract that defines novation.

July 1993

Derivatives: Practices and Principles

Appendix I: Working Papers

Global Derivatives Study Group

30

Recommendations

Summary

Global over-the-counter derivatives activity is relatively new, and until now there has been no thorough study of its management. Dealers and end-users, while aware of the broader challenges, have focused their discussions on specific issues – and have addressed these with a variety of practices, some more effective than others.

This Study presents the first comprehensive effort to take stock of what the industry has learned, and to broaden awareness of the more successful management approaches. It provides practical guidance in the form of 20 recommendations addressed to dealers and end-users alike (some firms perform both functions). These recommendations can help them to manage derivatives activity, to respond to its growth and complexity, and to continue to benefit from its use.

The recommendations, which the Steering Committee has endorsed unanimously, were formulated by the Working Group – a diverse cross-section of end-users, dealers, academics, accountants, and lawyers involved in derivatives. Input also came from a detailed Survey of Industry Practice among 80 dealers and 72 end-users worldwide, involving both questionnaires and in-depth interviews.

Some of the recommendations reflect a strong consensus among participants, and are already in widespread use; others represent the Working Group's choice among alternative practices. Still others point to emerging practices currently followed by a handful of participants.

These 20 recommendations are not necessarily the only means to good management. What they do offer is a benchmark against which participants can measure their own practices.

To summarize, the recommendations suggest that each dealer and end-user of derivatives should:

- *Determine at the highest level of policy and decision making the scope of its involvement in derivatives activities and policies to be applied.*
- *Value derivatives positions at market, at least for risk management purposes.*
- *Quantify its market risk under adverse market conditions against limits, perform stress simulations, and forecast cash investing and funding needs.*
- *Assess the credit risk arising from derivatives activities based on frequent measures of current and potential exposure against credit limits.*
- *Reduce credit risk by broadening the use of multi-product master agreements with close-out netting provisions, and by working with other participants to ensure legal enforceability of derivatives transactions within and across jurisdictions.*

- *Establish market and credit risk management functions* with clear authority, independent of the dealing function.
- *Authorize only professionals* with the requisite skills and experience to transact and manage the risks, as well as to process, report, control, and audit derivatives activities.
- *Establish management information systems* sophisticated enough to measure, manage, and report the risks of derivatives activities in a timely and precise manner.
- *Voluntarily adopt accounting and disclosure practices* for international harmonization and greater transparency, pending the arrival of international standards.

In addition, there are four recommendations for legislators, regulators, and supervisors. To help strengthen the financial infrastructure for derivatives activities, officials are called upon to:

- *Recognize close-out netting arrangements* and amend the Basle Accord to reflect their benefits in bank capital regulations.
- *Work with market participants to remove legal and regulatory uncertainties* regarding derivatives.
- *Amend tax regulations* that disadvantage the economic use of derivatives.
- *Provide comprehensive and consistent guidance* on accounting and reporting of derivatives and other financial instruments.

The recommendations are generally grouped below according to specific areas of study. Six subcommittees of the Working Group addressed these areas in detail. Their Working Papers, published separately as Appendix I, form the basis for these recommendations and provide essential background information.

Recommendations for Dealers and End-Users

These recommendations are addressed to participants in derivatives activity, both dealers and end-users. The terms "dealer" and "end-user" do not refer to particular types of institution, but rather to the nature of their derivatives activity. A bank, for instance, may participate both as a dealer and as an end-user. Likewise, some corporate end-users of derivatives may also be involved as dealers. (For information about who uses derivatives and why, see Section II of the Overview of Derivatives Activity.)

General Policies

Recommendation 1: The Role of Senior Management

Dealers and end-users should use derivatives in a manner consistent with the overall risk management and capital policies approved by their boards of directors. These policies should be reviewed as business and market circumstances change. Policies governing derivatives use should be clearly defined, including the purposes for which these transactions are to be undertaken. Senior management should approve procedures and controls to implement these policies, and management at all levels should enforce them.

Derivatives activities merit senior management attention because they can generate significant benefits or costs for any firm. A firm's policies for derivatives should be an integral part of its overall policies for risk taking and management, either in its underlying business (if it is an end-user) or in its other lines of business (if it is a dealer). Periodic reviews will help ensure that these policies reflect changing circumstances and innovations.

Valuation and Market Risk Management

Recommendation 2: Marking to Market

Dealers should mark their derivatives positions to market, on at least a daily basis, for risk management purposes.

Marking to market is the only valuation technique that correctly reflects the current value of derivatives cash flows to be managed and provides information about market risk and appropriate hedging actions. Lower-of-cost-or-market accounting, and accruals accounting, are not appropriate for risk management.

The Survey of Industry Practice shows that the practice of marking to market daily is widespread among dealers, reflecting the importance of the information it provides to risk managers. Intraday or even real time valuation can help greatly, especially in managing the market risk of some option portfolios.

Recommendation 3: Market Valuation Methods

Derivatives portfolios of dealers should be valued based on mid-market levels less specific adjustments, or on appropriate bid or offer levels. Mid-market valuation adjustments should allow for expected future costs such as unearned credit spread, close-out costs, investing and funding costs, and administrative costs.

Marking to mid-market less adjustments specifically defines and quantifies adjustments that are implicitly assumed in the bid or offer method. Using the mid-market valuation method without adjustment would overstate the value of a portfolio by not deferring income to meet future costs and to provide a credit spread.

Two adjustments to mid-market are necessary even for a perfectly matched portfolio: the "unearned credit spread adjustment" to reflect the credit risk in the portfolio; and the "administrative costs adjustment" for costs that will be incurred to administer the portfolio. The unearned credit spread adjustment represents amounts set aside to cover expected credit losses and to provide compensation for credit exposure. Expected credit losses should be based upon expected exposure to counterparties (taking into account netting arrangements), expected default experience, and overall portfolio diversification. The unearned credit spread should preferably be adjusted dynamically as these factors change. It can be calculated on a transaction basis, on a portfolio basis, or across all activities with a given client.

Two additional adjustments are necessary for portfolios that are not perfectly matched: the "close-out costs adjustment" which factors in the cost of eliminating their market risk; and the "investing and funding costs adjustment" relating to the cost of funding and investing cash flow mismatches at rates different from the LIBOR rate which models typically assume.

The Survey reveals a wide range of practice concerning the mark-to-market method and the use of adjustments to mid-market value. The most commonly used adjustments are for credit and administrative costs.

Recommendation 4: Identifying Revenue Sources

Dealers should measure the components of revenue regularly and in sufficient detail to understand the sources of risk.

By identifying and isolating individual sources of revenue, dealers develop a more refined understanding of the risks and returns of derivatives activities. Components of revenue generally include origination revenue, credit spread revenue, if applicable, and other trading revenue. It is useful, though complex, to split other trading revenue among components of market risk.

The Survey of Industry Practice indicates that few dealers identify individual sources of revenue. This should become a more common practice.

Recommendation 5: Measuring Market Risk

Dealers should use a consistent measure to calculate daily the market risk of their derivatives positions and compare it to market risk limits.

- *Market risk is best measured as "value at risk" using probability analysis based upon a common confidence interval (e.g., two standard deviations) and time horizon (e.g., a one-day exposure).*
 - *Components of market risk that should be considered across the term structure include: absolute price or rate change (delta); convexity (gamma); volatility (vega); time decay (theta); basis or correlation; and discount rate (rho).*
-

Reducing market risks across derivatives to a single common denominator makes aggregation, comparison, and risk control easier. "Value at risk" is the expected loss from an adverse market movement with a specified probability over a particular period of time. For example, with 97.5% probability (that is, a "confidence interval" of 97.5%), corresponding to calculations using about two standard deviations, it can be determined that any change in portfolio value over one day resulting from an adverse market movement will not exceed a specific amount. Conversely, there is a 2.5% probability of experiencing an adverse change in excess of the calculated amount.

Value at risk should encompass changes in all major market risk components listed in the recommendation. The difficulty in applying the technique of value at risk increases with the complexity of the risks being managed. For comparability, value at risk should be calculated to a common confidence interval and time horizon.

For most portfolios without options, once the expected loss is known for events with a given probability, the loss for a more likely or less likely scenario can easily be deduced. Therefore, for such portfolios, the choice of confidence interval is of no great significance. For option-based portfolios, however, this does not hold true. In their case, it would also be useful to calculate the loss from more and less likely scenarios.

A time horizon of one day is consistent with Recommendation 2 for daily marking to market, which allows management to know and decide daily any change of the risk profile.

Once a method of risk measurement is in place, market risk limits must be decided based on factors such as: management tolerance for low probability extreme losses versus higher probability modest losses; capital resources; market liquidity; expected profitability; trader experience; and business strategy.

The Survey suggests that most dealers know and consider some or all of the components of market risk. However, the use of one consistent measure of market risk, such as value at risk, is more prevalent among large dealers.

Recommendation 6: Stress Simulations

Dealers should regularly perform simulations to determine how their portfolios would perform under stress conditions.

Simulations of improbable market environments are important in risk analysis because many assumptions that are valid for normal markets may no longer hold true in abnormal markets.

These simulations should reflect both historical events and future possibilities. Stress scenarios should include not only abnormally large market swings but also periods of prolonged inactivity. The tests should consider the effect of price changes on the mid-market value of the portfolio, as well as changes in the assumptions about the

adjustments to mid-market (such as the impact that decreased liquidity would have on close-out costs). Dealers should evaluate the results of stress tests and develop contingency plans accordingly.

The Survey indicates that some stress testing is being conducted, mainly by large dealers, and that broader usage is planned.

Recommendation 7: Investing and Funding Forecasts

Dealers should periodically forecast the cash investing and funding requirements arising from their derivatives portfolios.

The frequency and precision of forecasts should be determined by the size and nature of mismatches. A detailed forecast should determine surpluses and funding needs, by currency, over time. It also should examine the potential impact of contractual unwind provisions or other credit provisions that produce cash or collateral receipts or payments.

The Survey indicates that at present, half of responding dealers are conducting forecasts of cash investing and funding requirements. This type of forecast should become a more common practice.

Recommendation 8: Independent Market Risk Management

Dealers should have a market risk management function, with clear independence and authority, to ensure that the following responsibilities are carried out:

- *The development of risk limit policies and the monitoring of transactions and positions for adherence to these policies. (See Recommendation 5.)*
 - *The design of stress scenarios to measure the impact of market conditions, however improbable, that might cause market gaps, volatility swings, or disruptions of major relationships, or might reduce liquidity in the face of unfavorable market linkages, concentrated market making, or credit exhaustion. (See Recommendation 6.)*
 - *The design of revenue reports quantifying the contribution of various risk components, and of market risk measures such as value at risk. (See Recommendations 4 and 5.)*
 - *The monitoring of variance between the actual volatility of portfolio value and that predicted by the measure of market risk.*
 - *The review and approval of pricing models and valuation systems used by front- and back-office personnel, and the development of reconciliation procedures if different systems are used.*
-

The growth of activities in derivatives and other financial instruments has led many firms to establish market (and credit) risk management functions to assist senior management in establishing consistent policies and procedures applicable to various activities. Market risk management is typically headed by a board level or near board level executive.

The market risk management function acts as a catalyst for the development of sound market risk management systems, models, and procedures. Its review of trading performance typically answers the question: Are results consistent with those suggested by analysis of value at risk? The risk management function is rarely involved in actual risk-taking decisions.

According to the Survey, a large majority of dealers already have such a function in place and over 50% of those that do not, plan to establish one in the near future.

Recommendation 9: Practices by End-Users

As appropriate to the nature, size, and complexity of their derivatives activities, end-users should adopt the same valuation and market risk management practices that are recommended for dealers. Specifically, they should consider: regularly marking to market their derivatives transactions for risk management purposes; periodically forecasting the cash investing and funding requirements arising from their derivatives transactions; and establishing a clearly independent and authoritative function to design and assure adherence to prudent risk limits.

While many end-users do not expect significant change in the combined value of their derivatives positions and the underlying positions, others do. Derivatives are customer-specific transactions, often designed to offset precisely the market risk of an end-user's business position (e.g., buying a commodity as a raw material). End-users should establish the performance assessment and control procedures that are appropriate for their derivatives activities.

Less than half of those end-users surveyed currently mark their derivatives hedges to market for risk management purposes. About half plan to do so.

Credit Risk Measurement and Management

Recommendation 10: Measuring Credit Exposure

Dealers and end-users should measure credit exposure on derivatives in two ways

- *Current exposure, which is the replacement cost of derivatives transactions, that is, their market value*
 - *Potential exposure, which is an estimate of the future replacement cost of derivatives transactions. It should be calculated using probability analysis based upon broad confidence intervals (e.g., two standard deviations) over the remaining terms of the transactions.*
-

To assess credit risk, a dealer or end-user should ask two questions. If a counterparty was to default today, what would it cost to replace the derivatives transaction? If a counterparty defaults in the future, what is a reasonable estimate of the future replacement cost?

Current exposure is an accurate measure of credit risk that addresses the first question. It simply evaluates the replacement cost of outstanding derivatives commitments. The result can be positive or negative. It is an important measure of credit risk as it represents the actual risk to a counterparty at any point in time. The regular calculation of current exposure is a broadly accepted practice today.

Potential exposure is more difficult to assess, and the methods used to determine it vary. The most rigorous methods use either simulation analysis or option valuation models. The analysis generally involves a statistical modeling of the effects on the value of the derivatives of movement in the prices of the underlying variables (such as interest rates, exchange rates, equity prices, or commodity prices). These techniques are often used to generate two measures of potential exposure: expected exposure; and maximum or "worst case" exposure.

Dealers and end-users that cannot justify the simulation and statistical systems needed to perform such potential exposure calculations should use tables of factors developed under the same principles. The factors used should differentiate appropriately by type and maturity of transaction and be adjusted periodically for changes in market conditions.

The Survey shows that dealers use several different methods for calculating credit exposures. These include: the BIS original and current exposure methods, used by one-third of all dealers; methods based on worst-case scenarios applied to each transaction, used by about a quarter of dealers and expected to become the most common in the future; and methods that rely upon tables of factors, used by almost 40% of dealers. End-users tend to rely on simpler methods primarily based on notional amounts.

Recommendation 11: Aggregating Credit Exposures

Credit exposures on derivatives, and all other credit exposures to a counterparty, should be aggregated taking into consideration enforceable netting arrangements. Credit exposures should be calculated regularly and compared to credit limits.

In calculating the current credit exposure for a portfolio of transactions with a counterparty, the first question is whether netting applies. If it does, the current exposure is simply the sum of positive and negative exposures on transactions in the portfolio.

The calculation of potential exposure is more complicated. Simply summing the potential exposures of all transactions will in most cases dramatically overstate the actual exposure, even if netting does not apply. This is because a straight summation fails to take into account transactions in the portfolio that offset each other or that have peak potential exposures at different times. The most accurate calculation of

potential exposure simulates the entire portfolio. Although portfolio-level simulation is not commonly used by dealers at present, they should pursue it more widely to avoid overstating aggregate exposure.

Credit exposures should be calculated regularly. In particular, dealers should monitor current exposures daily; they can generally measure potential exposures less frequently. End-users with derivative portfolios should also periodically assess credit exposures. For them, the appropriate frequency will depend upon how material their credit exposures are.

Credit exposures should also be regularly compared to credit limits, and systems should be in place to monitor when limits are approached or exceeded, so that management can take appropriate actions.

By aggregating credit exposures on derivatives as described above, participants will have a consistent basis for comparison with other credit exposures including those resulting from on-balance-sheet activity. This would permit a more effective evaluation of the adequacy of credit reserves relative to overall credit exposure.

The Survey suggests that most dealers monitor gross credit use against limits. Aggregating current and potential exposures by counterparty on a net basis is not common among dealers, although some who do not net at present plan to in the future. Frequent monitoring of credit exposure is widespread among dealers, with three-quarters of respondents doing it either intraday or overnight. The majority of end-users monitor credit exposures at least once a month.

Recommendation 12: Independent Credit Risk Management

Dealers and end-users should have a credit risk management function with clear independence and authority, and with analytical capabilities in derivatives. responsible for:

- *Approving credit exposure measurement standards.*
 - *Setting credit limits and monitoring their use.*
 - *Reviewing credits and concentrations of credit risk.*
 - *Reviewing and monitoring risk reduction arrangements.*
-

For dealers, credit exposures should be monitored by an independent credit risk management group. According to the Survey, most dealers and some end-users have such a group. For end-users, this role may not necessarily be performed by a separate group; however, the credit risk should be managed independently from dealing personnel. This separation of responsibility is intended to prevent conflicts of interest and to ensure that credit exposure is assessed objectively. The credit risk management function should approve exposure management standards, and should establish credit limits for counterparties consistent with these standards. Specifically, it

should conduct an internal credit review before engaging in transactions with a counterparty, and should guide the use of documentation and credit support tools. Credit limits and guidelines should ensure that only those potential counterparties that meet the appropriate credit standards, with or without credit support, become actual counterparties.

The credit risk management function should continually review the creditworthiness of counterparties and their credit limits.

Recommendation 13: Master Agreements

Dealers and end-users are encouraged to use one master agreement as widely as possible with each counterparty to document existing and future derivatives transactions, including foreign exchange forwards and options. Master agreements should provide for payments netting and close-out netting, using a full two-way payments approach.

Participants should use one master agreement with each counterparty. That agreement should provide for close-out and settlement netting as widely as possible to document derivatives transactions. In particular, there is substantial scope for reducing credit risk by including foreign exchange forwards and options under master agreements along with other derivatives transactions.

A single master agreement that documents transactions between two parties creates the greatest legal certainty that credit exposure will be netted. The use of multiple master agreements between two parties introduces the risk of "cherry-picking" among master agreements (rather than among individual transactions); and the risk that the right to set off amounts due under different master agreements might be delayed. Dealers and end-users will be well served by using a single master agreement with counterparties to document as many derivatives transactions as law or regulation permit. The practices of using separate agreements for each transaction between two parties, or standard terms that do not constitute a master agreement, are not good practices and should be discontinued. According to the Survey, two-fifths of all dealers now document derivatives transactions under a multi-product master, and more plan to do so in the future.

Full two-way payments, as opposed to limited two-way payments, is now the preferred payments approach in master agreements. Under full two-way payments, the net amount calculated through the netting provisions in a bilateral master agreement is due regardless of whether it is to, or from, the defaulting party. Under limited two-way payments, the defaulting party is not entitled to receive anything, even if the net amount is in its favor. This discourages default and enhances cross-product and cross-affiliate set-off. However, when master agreements cover a wide range of derivatives transactions, the benefits created by increasing the certainty about the value of a net position under full two-way payments outweigh any possible benefits under limited two-way payments.

Recommendation 14: Credit Enhancement

Dealers and end-users should assess both the benefits and costs of credit enhancement and related risk-reduction arrangements. Where it is proposed that credit downgrades would trigger early termination or collateral requirements, participants should carefully consider their own capacity and that of their counterparties to meet the potentially substantial funding needs that might result.

Credit risk reduction arrangements can be useful in the management of counterparty credit risk. These include collateral and margin arrangements; third-party credit enhancement such as guarantees or letters of credit; and structural credit enhancement through the establishment of special-purpose vehicles to conduct derivatives business.

The Survey indicates that about two-thirds of dealers are prepared to accept credit enhancement with cash or securities as collateral, and over three-quarters accept a third party guarantee or enhancement. Reflecting strong dealer credit ratings, only one-third are prepared to provide cash or securities collateral and only 10% or so will offer a third party guarantee.

Enforceability

Recommendation 15: Promoting Enforceability

Dealers and end-users should work together on a continuing basis to identify and recommend solutions for issues of legal enforceability, both within and across jurisdictions, as activities evolve and new types of transactions are developed.

Dealers regularly develop new types of transactions, and new technologies are developed to confirm them. These developments may not fit clearly within the current legal framework in the jurisdictions where transactions occur. Therefore, dealers and end-users should continue to work together to evaluate developments in light of existing laws to assess what legal issues may arise. They should take the initiative to ensure that risks arising from these developments can be properly handled through analysis, market practices, documentation and, when necessary, legislation.

Enforceability of netting provisions is considered a serious concern by 43% of dealer senior management responding to the Survey, and another 45% consider it to be of some concern. It also is considered a serious issue by management of many end-users.

Systems, Operations, and Controls

Recommendation 16: Professional Expertise

Dealers and end-users must ensure that their derivatives activities are undertaken by professionals in sufficient number and with the appropriate experience, skill levels, and degrees of specialization. These professionals include specialists who transact and manage the risks involved, their supervisors, and those responsible for processing, reporting, controlling, and auditing the activities.

To establish good management, derivatives activities must be staffed by talented, well-trained, and responsible professionals. There is a danger, however, in relying on a few specialists, and it is essential that their managers understand not only derivatives but also the broader business context.

Derivatives support functions are technical and generally require a level of expertise higher than for other financial instruments or activities. Respondents to the Survey expressed concern that, while they are satisfied with the quality of staff in line derivatives activities, the quality of support staff lags. Developing expertise through training programs and appropriate standards of professionalism is encouraged.

The Survey indicates that, for the majority of respondent dealers, senior management is confident about the general quality of its derivatives professionals. To the extent it is concerned about issues of professionalism, it is more worried about its own lack of understanding, about insufficient understanding of derivatives by other functions, and about overreliance on a few specialists.

Recommendation 17: Systems

Dealers and end-users must ensure that adequate systems for data capture, processing, settlement, and management reporting are in place so that derivatives transactions are conducted in an orderly and efficient manner in compliance with management policies. Dealers should have risk management systems that measure the risks incurred in their derivatives activities including market and credit risks. End-users should have risk management systems that measure the risks incurred in their derivatives activities based upon their nature, size, and complexity.

The size and scope of the required systems will depend upon the nature and scale of an organization's derivatives transactions.

For dealers, operating efficiency and reliability are enhanced through the development of systems that minimize manual intervention. Those benefits are particularly significant for dealers with a large volume of activity and a high degree of customization of transactions. At the moment, confirmations of transactions, for example, are automated for about 40% of dealers, some 10% are partially automated, and another 45% rely on manual systems. Eighty percent plan to automate their confirmations completely. In addition, large dealers have made significant investments to integrate

back- and front-office systems for derivatives with their firms' other management information systems. Dealers that have done so have found that the integration further enhances operating efficiency and reliability.

While end-users may invest less extensively in their systems than dealers do, these should still be sufficient to group exposures and analyze aggregated risk in a meaningful and useful way.

Recommendation 18: Authority

Management of dealers and end-users should designate who is authorized to commit their institutions to derivatives transactions.

Authority may be delegated to certain individuals or to persons holding certain positions within the firm. Management may choose to limit authority to certain types of transactions, for example to certain maturities, amounts, or types of underlying risks. It is essential that this information be understood within the firm.

Participants should communicate information on which individuals have the authority to commit to counterparties. They should recognize, however, that the legal doctrine of "apparent authority" may govern the transactions they enter into, and that there is no substitute for appropriate internal controls.

Two-thirds of dealers responding to the Survey involve senior management in authorizing traders to commit the firm.

Accounting and Disclosure

Recommendation 19: Accounting Practices

International harmonization of accounting standards for derivatives is desirable. Pending the adoption of harmonized standards, the following accounting practices are recommended:

- *Dealers should account for derivatives transactions by marking them to market, taking changes in value to income each period.*
- *End-users should account for derivatives used to manage risks so as to achieve a consistency of income recognition treatment between those instruments and the risks being managed. Thus, if the risk being managed is accounted for at cost (or, in the case of an anticipatory hedge, not yet recognized), changes in the value of a qualifying risk management instrument should be deferred until a gain or loss is recognized on the risk being managed. Or, if the risk being managed is marked to market with changes in value being taken to income, a qualifying risk management instrument should be treated in a comparable fashion.*
- *End-users should account for derivatives not qualifying for risk management treatment on a mark-to-market basis.*

- *Amounts due to and from counterparties should only be offset when there is a legal right to set off or when enforceable netting arrangements are in place.*

Where local regulations prevent adoption of these practices, disclosure along these lines is nevertheless recommended.

Accounting policies for derivatives vary widely around the world. In some countries there are local accounting standards that address accounting for derivatives; in other countries there are no specific standards and a variety of customs and practices has developed. In view of the global nature of derivatives, it is desirable to achieve some harmonization of accounting treatment to assist in clarifying the financial statements of dealers and end-users.

The recommendation for dealers to account for changes in the value of their derivatives positions in income during each period has become standard in many, although not all, countries. It provides a better representation of the economic effects of such positions than other methods.

The recommended accounting treatment for end-users using derivatives to manage risks, referred to as "risk management accounting," is also a standard treatment. It has evolved in many countries, at least in a modified form, as a response to anomalies in the existing accounting framework. Traditionally in some countries, this accounting treatment has been applied solely to transactions undertaken to reduce risks, usually referred to as "hedges."

Policies must define when financial instruments are eligible for risk management accounting to ensure that the method is not abused.

Among a majority of dealers who responded to the Survey, senior management thought inconsistency of accounting standards with the economics of the business were either of serious or some concern.

Recommendation 20: Disclosures

Financial statements of dealers and end-users should contain sufficient information about their use of derivatives to provide an understanding of the purposes for which transactions are undertaken, the extent of the transactions, the degree of risk involved, and how the transactions have been accounted for. Pending the adoption of harmonized accounting standards, the following disclosures are recommended:

- *Information about management's attitude to financial risks, how instruments are used, and how risks are monitored and controlled.*
 - *Accounting policies.*
 - *Analysis of positions at the balance sheet date.*
 - *Analysis of the credit risk inherent in those positions.*
 - *For dealers only, additional information about the extent of their activities in financial instruments.*
-

The Survey shows that the quality of financial statement disclosure about derivatives transactions varies even more widely than the accounting policies that are applied. Until local standards-setting bodies can adopt harmonized standards, there is a need to improve the quality of financial statement disclosure concerning transactions in both derivatives and cash market instruments.

Its qualitative nature dictates that information about management's attitude to financial risks, how instruments are used, and how risks are monitored and controlled, should appear in the management analysis section of the annual report. The remaining information should appear in the footnotes to the financial statements and be commented on as appropriate in the management analysis.

This recommendation is not apparently precluded by accounting regulations in any country and its early adoption is encouraged.

Inadequate public disclosure of exposures of counterparties is of some concern, or of serious concern, to about three-fifths of senior management among dealers responding to the Survey.

Recommendations for Legislators, Regulators, and Supervisors

Recommendation 21: Recognizing Netting

Regulators and supervisors should recognize the benefits of netting arrangements where and to the full extent that they are enforceable, and encourage their use by reflecting these arrangements in capital adequacy standards. Specifically, they should promptly implement the recognition of the effectiveness of bilateral close-out netting in bank capital regulations.

The bilateral or multilateral netting of contractual payments due on settlement dates, and of unrealized losses against unrealized gains in the event of a counterparty's default, is the most important means of mitigating credit risk. By reducing settlement risk as well as credit exposures, netting contributes to the reduction of systemic risk.

Significant efforts have been made to develop standard master agreements that effect netting across the full range of derivatives products. Nonetheless, the enforceability of such netting provisions remains among the highest concerns of senior management of derivatives dealers, according to the Survey.

Regulators and supervisors should officially recognize netting where and to the full extent it is enforceable, and reflect these arrangements in the capital standards. In this way, regulators and supervisors will stimulate efforts to resolve uncertainties where they exist and will create tangible incentives for using this most important method of reducing counterparty risk.

An important step in implementing this recommendation was taken in April of this year when the Basle Committee released a Consultative Paper that included a proposal for recognizing the effectiveness of close-out netting. This is an amendment to the agreed framework for measuring bank capital adequacy (the "Basle Accord") published by the Basle Committee in July 1988. When the consultation period for this proposal has ended, the national supervisory authorities represented on the Basle Committee should recognize and implement bilateral close-out netting for capital purposes.

Recommendation 22: Legal and Regulatory Uncertainties

Legislators, regulators, and supervisors, including central banks, should work in concert with dealers and end-users to identify and remove any remaining legal and regulatory uncertainties with respect to:

- *The form of documentation required to create legally enforceable agreements (statute of frauds).*
 - *The capacity of parties, such as governmental entities, insurance companies, pension funds, and building societies, to enter into transactions (ultra vires).*
 - *The enforceability of bilateral close-out netting and collateral arrangements in bankruptcy.*
 - *The enforceability of multibranch netting arrangements in bankruptcy.*
 - *The legality/enforceability of derivatives transactions.*
-

These five main enforceability risks are analyzed for nine major jurisdictions in Appendix II (bound separately). Regulators and legislators in these jurisdictions should remove the remaining uncertainties that have been identified. In other countries, market participants, regulators, and legislators should work to identify and resolve any similar legal risks. These efforts should be conducted on a continuing basis, to account for new types of derivatives transactions and new technologies. It is important to approach these issues aggressively so that the largest risks faced by dealers and end-users are not legal risks from legal systems that have not kept pace with financial developments.

Further work on the enforceability in bankruptcy or insolvency of bilateral netting and collateral arrangements is particularly important if the credit risk reduction techniques for derivatives are to evolve. These techniques are essential building blocks for enforceable multilateral netting arrangements, if that is a direction participants choose to take.

Recommendation 23: Tax Treatment

Legislators and tax authorities are encouraged to review and, where appropriate, amend tax laws and regulations that disadvantage the use of derivatives in risk management strategies. Tax impediments include the inconsistent or uncertain tax treatment of gains and losses on the derivatives, in comparison with the gains and losses that arise from the risks being managed.

In most, if not all jurisdictions, the tax treatment being applied to derivatives transactions dates back to before they came into general use. This can lead to considerable uncertainty in determining how gains and losses associated with these instruments should be taxed depending upon their use.

These uncertainties and inconsistencies present real difficulties to organizations that seek to use derivatives to manage risks in their businesses. Confusion can discourage them from pursuing commercially sensible risk management strategies.

Recommendation 24: Accounting Standards

Accounting standards-setting bodies in each country should, as a matter of priority, provide comprehensive guidance on accounting and reporting of transactions in financial instruments, including derivatives, and should work towards international harmonization of standards on this subject. Also, the International Accounting Standards Committee should finalize its accounting standard on Financial Instruments.

At present no country has accounting and reporting standards that comprehensively address all financial instruments, including derivatives. Even in those countries where development of accounting standards is considered far advanced, there are gaps or inconsistencies between different standards. This is an area where action needs to be taken as a matter of priority.

In a number of countries, accounting standards-setters have recognized the need to improve accounting standards in this area and some have commenced work. Furthermore, the International Accounting Standards Committee (IASC) has issued an exposure draft on Financial Instruments (E40) and presently intends to finalize an accounting standard by the end of 1993.

In addressing the accounting and disclosure requirements for financial instruments, the IASC and national accounting standards-setters are encouraged to address the problems of accounting for risk management activities. Most existing accounting regulations were formulated before recent advances in risk management strategies. This poses considerable practical problems, both to end-users and dealers. Developments in accounting regulations have not kept pace with changes in the way risk is managed.

In some countries, the accounting standards that govern the eligibility for hedge accounting treatment of hedges of anticipated transactions may be too restrictive: some relaxation should be permitted, subject to safeguards to prevent abuse.

Similarly, accounting standards should deal with risk management in a broad sense and not deal just with risk reduction (hedging) which is only one aspect of risk management. Risk management strategies are increasingly being used by both financial and nonfinancial institutions to achieve an acceptable risk profile, but not necessarily a reduced level of risk. Concern over current accounting regulations is deterring some organizations from pursuing commercially sensible risk management strategies. While standards are necessary to ensure that risk management accounting is not abused, it is essential that accounting standards respond to modern risk management techniques.

Problems Real and Imagined: A Washington Perspective on Derivatives

Remarks by R. Christopher Whalen

I am delighted that *Business Week* and AFGL International invited me to speak with you today. I hope that this will be the first of many such forums where we provide insights and analysis about political developments in Washington that affect Wall Street.

Wall Street lives by trading volatility and volume. Washington worships stability and predictability. The mind-sets of speculators and bureaucrats are a universe apart, yet, at the end of the day, the former must submit to the latter's rules on behalf of the unseen and generally ignored third party -- the public. Therefore, it is axiomatic that Washington prefers the evil that it knows and, hopefully controls, to any possible unknown situation. Washington's hostility toward the unfamiliar applies first and foremost to the realm of economic and financial policy, but also extends to the area of foreign policy, as witness the recent vote on NAFTA.

The vote to approve NAFTA was, from the Washington standpoint, a reaffirmation of the carefully maintained political status quo that extends back to the 1982 debt crisis. More than trade or investment, NAFTA was and is about maintaining single-party rule in Mexico, thereby protecting American banks and newer groups of NAFTA-enthused investors, like mutual funds, which still have huge (and in some cases growing) financial exposure to Mexico.

Had NAFTA been defeated, it would have marked a major shift in both the financial and political fortunes of Mexico as well as several of the larger U.S. money center banks and mutual funds that currently provide the lion's share of dollar liquidity to that market.¹

¹ As of June 30, 1993, Mexico's total foreign debt reached \$130 billion, not including \$30-40 billion in peso debt instruments held by offshore investors. At 3.1 pesos per dollar, Mexico's current account deficit is roughly 6.5 percent of its \$350 billion in GDP -- a higher level than ever maintained by an OECD country. If you look at these same economic relationships at 4 pesos per dollar, the ratios quickly approach those seen after the 1982 debt crisis.

The peculiar coalition that came together to support NAFTA reveals a great deal about the political equation of Washington today. Generally speaking, the economic world-view of Democratic Washington reflects the dominance of Keynesian/socialist ideas, while the nominally "conservative" Republican worldview reflects corporatist ideas usually found in American educational and research institutions. In other words, the 1930s economic policy debate in Washington continues full-blast, albeit in a less coherent and more inconsistent fashion.

Both of the dominant schools of economic thought in Washington say that government can and should affect economic policy, and that government regulation helps to ensure "stability" in financial markets. The same worldview, which is shared by both political parties, holds that the Federal Reserve controls interest rates and that the cost of money will move lower if the central bank provides ever-higher levels of liquidity, as it has over the past 36 months.

The traditional free market, hard money view that prevailed in America before W.W.I, however, contradicts this Keynesian-derived "supply side" view on financial regulation and monetary policy. Hard money advocates such as Milton Friedman and former Cleveland Fed President W. Lee Hoskins probably would say that regulation of financial markets is, at best, an after-the-fact expedient meant more to comfort politicians than to truly maintain the illusory public policy goal of "market stability."

Likewise, these and other genuine exponents of free market principles believe that by not providing excess liquidity to the marketplace, the Federal Reserve can calm investors' fears of inflation and thus keep the cost of money low, particularly long-term rates. Of course, in the age of over \$4 trillion dollars in U.S. government debt, such fine distinctions are probably moot. I will come back to this important point later in my talk.

Washington's fear of "instability" reflects the increasingly short-term perspective of the political and business establishment. Indeed, difficult lessons learned through such fiascoes as the S&L crisis, the experience with Third World debt, the 1987 market crash, and the real estate bubble of the 1980s have left official Washington with great bitterness and hostility toward all who propose "financial innovations."

It is fair to say that even years after the announcement of a final "solution" to the S&L crisis, the mere mention of the subject is sufficient to cause anxiety to the most stalwart members of Congress. Lest we forget, the financial "deregulation" of the 1982 Garn-St.Germain legislation led directly to the S&L debacle, the cost of which has reached \$180 billion (at present value) as of year-end 1992. Thus the trepidation felt by members of Congress and the financial regulatory community toward the fast-growing market for derivative securities is both natural and, from Washington's distorted political perspective, understandable.

In the same way that the once seemingly open-ended liability of the S&L crisis haunted Congress during the late 1980s, today swaps are seen not only as risky and exotic, but as the latest in a long series of costly surprises from Wall Street. These include the S&L debacle, the collapse of the junk bond market and Drexel Burham Lambert, and most recently the scandal involving Salomon Brothers and the manipulation of the market for U.S. Treasury securities.

Just prior to each of these episodes, I remind you that representatives of the larger Wall Street banks and broker-dealers appeared in Washington to assure members of Congress that these situations were not a source of risk to the financial system. Let me also remind you that junk bonds once were touted as being less susceptible to default risk partly because of the shorter durations

implied by high annual cash flows. Members of Congress (and their staffs), who once welcomed political contributions from underwriters of high-yield securities, now know that this is not the case.²

At some \$7-8 trillion (some say much more) in nominal face amount, the market for derivative securities is so large and so distant from the comprehension of most public officials and even bankers that the mere suggestion of problems has driven many regulators scurrying for political cover. Almost by definition, the generational and technological differences that exist between regulators and senior management of major banks, on the one hand, and the new generation of financial engineers on Wall Street, on the other hand, is enormous.

I can say from personal experience that many senior regulators within the Federal Reserve System do not understand derivatives or even the functioning of relatively simple instruments such as futures and options. The general ignorance of how derivatives function inside the Group of Seven financial regulatory community is confirmed, I believe, by the now infamous January 1992 speech by former New York Fed President E. Gerald Corrigan³ and the subsequent comments by observers as respected and diverse as Henry Kaufman, the German *Bundesbank* and Comptroller of the Currency Eugene Ludwig.

In each case, these leading voices in the regulatory community have expressed their fear that "off-balance sheet" financing represents a risk to the financial community, all the while acquiescing in on-balance sheet activities that are equally if not more risky than derivative instruments.⁴ The reality is, of course, that swaps are really only another way to buy and sell cash flows.

² For a discussion of the current Congressional view of derivatives, see Duncan, Jeffrey S.; "Fantasy and Reality: The Regulatory Parameters for Derivatives," House Subcommittee on Telecommunications and Finance, October 12, 1993.

³ Corrigan, it should be noted, was a great advocate of "financial innovation" up to this point in order to boost the earnings of the major New York banks under his supervision.

⁴ The top 10 money center banks currently carry hundreds of billions of dollars in interest rate risk on their books in the form of Treasury debt purchased during the past 24 months. By definition, most of the price risk carried by these positions is "unhedged" since the banks would otherwise earn little benefit from these investments.

Discussions with senior federal regulators and members of Congress responsible for supervising activities in private financial markets lead almost inexorably to the conclusion that most of the transactions that occur in the multi-trillion dollar market for derivative financial products are not well understood. Moreover, regulators confess in private that many of their contemporaries in the management of banks, broker dealers and other financial market participants share their lack of familiarity with basic products like options and mortgage-backed securities, much less the latest innovations in areas such as swaps.

You are all familiar with the Group of Thirty's conveniently-timed paper on swaps that was released earlier this year. More recently, the new Comptroller of the Currency, Eugene Ludwig, proposed along with a group of regulators that an "inter-agency study" be conducted on the dangers posed by swaps. Ludwig has expressed significant worries about the derivatives market to more than one member of Congress. His decision to initiate a study should be recognized by Wall Street as the beginning of a longer process than may lead, eventually, to greater oversight of what is now a relatively free and unregulated market.

In those rare cases where regulators do understand new financial markets, concerns over derivatives can be categorized in three basic groups: credit risk, market risk and systemic risk. The last category may be familiar to some of you because of its connection with the hazy concept known as "too big to fail," which refers to the government's unwritten and now legally proscribed policy of providing taxpayer-subsidized bailouts to large money center banks.⁵ Systemic risk is the chief source of worry for regulators and their

⁵ Generally speaking, the Federal Deposit Insurance Corporation Improvement Act of 1991 curbed the use of discount window loans and other expedients to keep insolvent banks afloat. However, FDICIA contained a little-noticed change to Section 13 (3) of the Federal Reserve Act that effectively opens the Fed's discount window to all borrowers regardless of whether they have "eligible collateral." This amendment was made by the Senate Banking Committee at the behest of the securities industry. For a thorough discussion of this issue, see Todd, Walker, "FDICIA's Emergency Liquidity Provisions," *Economic Review*, Federal Reserve Bank of Cleveland, Third Quarter 1993, PP 16-23.

political patrons, not because of any heartfelt concern for the owners of banks and companies involved in these markets, but because of the broader political implications of a market disruption.⁶

For example, the English-language version of the October *Monthly Report* issued by the German Bundesbank has begun to circulate in the U.S. The lengthy document confirms the German central bank's dim view of financial innovation and echoes the warning of American regulators with respect to liquidity, market risk and other price-related considerations. More importantly, it focuses heavily on the question of payment risk, an area frequently ignored by many market participants.

The Bundesbank document notes that the multilateral "netting" agreements between banks increase market efficiency and may reduce some counterparty or payment risk. But it also emphasizes that the ability of banks to compel payment under such agreements may be limited by local and national bankruptcy laws and other considerations.⁷ To its credit, the Group of Thirty paper makes essentially the same point.

The threat posed by "off balance sheet" financing is well-appreciated in Germany, perhaps more so than in the United States. The collapse of the German **Herstatt Bank** in 1974 because of concealed losses on what many considered "riskless" spot foreign exchange transactions nearly destabilized the German financial system and the Eurodollar market, an event that no U.S. regulator or Bundesbank official can forget. Add to this relatively recent episode

⁶ Senator Carter Glass said while debating the 1933 Banking Act "Is there any reason why the American people should be taxed to guarantee the debts of banks, any more than they should be taxed to guarantee the debts of other institutions, including the merchants, the industries, and the mills of the country?"

⁷ "Regarding the question of capital adequacy," the report observes, "it should be borne in mind that other risks involved in [swap] transactions, such as operational risks, performance risks, legal risks, liquidity risks and the like, were not taken into consideration when the relevant weightings for the counterparty and market risks were set, but have to be absorbed as well, if necessary, by the banks' available capital."

the larger collective memory of the hyper-inflation of the 1920s and German reticence about potential costs of derivative instruments losses is understandable. 8

Recent revelations about a failure of internal management controls with respect to derivative instruments at the giant **American International Group** also have generated great concerns in and out of Washington. A September 6, 1993 cover story in *Investment Dealer's Digest* about the near-miss at AIG has been circulated widely in Washington, generating more than a few whispered discussions about the possibility of a "renegade" trading operation inside one of America's best managed financial services concerns.

In response to such fears, Wall Street has launched a rather clumsy and heavy-handed "education" effort in Washington. This has included seminars for regulators and congressional staff, many of whom have neither the time nor the desire to learn about the details of complex financial products. As one committee counsel put it to me a couple of months ago: "Why are these people bothering me? If there is no problem in the swaps market, why are all of these Wall Street people banging on my door?" I put that question to all of you today.

During the recent hearings on derivatives before the House Banking Committee, I personally witnessed what I believe is Wall Street making its own problem worse. Other than a few journalists and Banking Committee observers such as myself, the entire hearing room was filled with lobbyists working for various banks and brokers sent to monitor the hearing. No television cameras were present, nor

⁸The Bundesbank report concludes: "The question of whether derivative instruments imply additional risks to the soundness of the international financial system has already been the subject of many discussions. It is agreed that the growing use of derivative instruments in strategies covering many market segments has reinforced the integration of the financial markets and hence increased their vulnerability. In the event of the failure of a major market player or serious market disruptions, one cannot be sure whether hedging or replacement contracts will still be available in the derivative markets. Once the spot markets, too, are no longer sufficiently liquid, this may trigger chain reactions and jeopardize the financial system as a whole. Developments of this kind can be prevented only if all those concerned are aware not only of the scope for using, but also in particular of the risks posed by, off balance sheet activities, and proceed with the necessary caution."

did the hearing receive more than the usual, one-day-after press coverage. I can tell you that Chairman Gonzalez and his staff were delighted to see the room filled with worried lobbyists, but a more effective tactic from your perspective might have been to ignore the hearing.

Let me close by advancing a few suggestions about how Wall Street should and should not deal with the perception that there is a "problem" in Washington vis-à-vis future regulation of the market for swaps and other types of derivative securities:

First, don't try to educate members of Congress and/or their staffs unless and until they ask for information. When they do ask for information, tell them the truth. For example, when you say that swaps only are used to "hedge risk" or, even worse, "reduce risk," you run the risk of insulting the intelligence of people who have lived through the S&L nightmare, BCCI and the Salomon imbroglio.

While congressional staffers and regulators may not fully understand derivatives, they know the basic reality of the market, namely that risk cannot be extinguished, only shifted from superior to inferior players in the great financial bazaar. By sending large numbers of relatively young managing directors to prowl the marble corridors of Capitol Hill, young men and women who most remind me of the newly minted French princes at Agincourt, Wall Street is only feeding the already well-established suspicion that "there is a problem" in the swaps market. As the old saying goes, let sleeping dogs lie.

Second, Wall Street must understand that a "solution" to any prospective threat of federal regulation lies first and foremost in the market and with the major participants. Unless the banks and brokers that make up the derivative securities market are willing to (1) settle their parochial differences and (2) exercise self-discipline when it comes to entry thresholds for new market participants, they will feed the notion that the market is mostly a speculative

phenomenon better situated in Las Vegas or Atlantic City than in federally regulated (and in some cases federally insured) financial institutions.

For example, recent reports that the Ohio State Teachers Retirement System took \$100 million in losses on interest-only mortgage securities is unlikely to help the image of derivatives among that state's legislature, the Ohio congressional delegation, or the Cleveland Federal Reserve Bank.⁹

At the moment, there is little risk of new legislative initiatives to regulate swaps, but it takes only one market disruption, even on a relatively modest scale, to send Washington's craven politicians scurrying for the political cover of new legislation. Without the slightest hesitation, members of Congress who gratefully receive political contributions from banks and broker dealers will regulate your market out of existence if and when a sudden financial break threatens the "stability" of the political status quo.

Third and most important, Wall Street needs to wake up and smell the coffee in terms of what the derivative securities market is and is not. Were it not for the existence of \$4 trillion in federal debt, the market for derivative products would no doubt be far different than it is today. It probably would be smaller and based upon relatively "real assets" instead of built on a rapidly growing pile of public sector debt whose probability of eventual repayment is increasingly less assured.

Just look at the Clinton Administration's own budget numbers, which assume the addition of a further \$1 trillion in U.S. government debt in the next four years, and tell me or your children that this obligation ever will be repaid in kind. In a real sense, the increasing volatility in financial markets, and any real or perceived threat of "systemic risk," is a function of too many legal tender dollars chasing too few solid financial and real assets.

⁹ See Rutchick, Joel, "Retirement fund loses \$100 million," *Cleveland Plain Dealer*, November 20, 1983, p 1-A

Mind you, I am not arguing for passivity. Wall Street needs to argue back to the critics in Washington that derivatives markets grew to their present size in the fertile soil of \$4 trillion in federal debt. Another message that should be delivered to Washington is even more basic; namely, that the derivative securities markets are just a rational, defensive response of investors and financial intermediaries to Washington's own fiscal profligacy and monetary "fine tuning."

At the end of the day, when we turn our attention to the question of how or whether Washington understands the market for derivative securities, the true immensity of the problem becomes clear. The children of the immediate post-war generations, who borrowed and inflated their way to build the prosperity of the past 30 years, have now created a market that their parents only dimly understand.

The problem the children need to consider is whether there are some crucial bedrock lessons in fiscal sobriety, monetary restraint and banking prudence that we do not know today. Could it be that the Keynesian/socialist revolution of the post-W.W.II era caused our parents' generations to forget and then fail to teach those time-honored lessons to us?

Wall Street needs to remember that politicians never see the evil that they do, only the evil perpetrated by others. Unless the Wall Street community quickly regains control over the perception and reality of risk in the derivative securities market, events will slowly and inexorably lead to greater federal regulation. The basic question that has not been answered is this: how does the market for derivative securities serve the public interest?

At our firm, we have a motto we often repeat to our clients: Don't come to Washington looking to borrow an umbrella when it is already raining. The episodes involving AIG and, more recently, the

Ohio State Teachers Retirement System, foretell an approaching storm. How will responsible members of the derivatives market respond to this challenge?

Over the past 25 years, our firm has helped some of Wall Street's largest financial institutions to create and execute communications strategies to meet the political challenges in Washington. For example, our firm helped then Merrill Lynch chief **Donald Regan** set up SIPC in the 1970s when it seem that Wall Street was in serious trouble. In those days, as today, the basic problem was one of perception.

I would suggest to you that the solution to the "problem" with derivatives, real or imagined, lies first in fashioning a credible, industry-wide strategy to control the risks that do exist in derivatives -- and all markets -- and second in effectively communicating this strategy to several different constituencies in Washington whose ignorance and/or hostility will ultimately hurt you. Thank you for your attention.

#

Biographical Summary

Richard Christopher Whalen is a principal and member of the board of directors of The Whalen Company, Inc., a 24-year-old Washington consulting and communications firm that provides strategic business counsel to multinational companies in the U.S., Canada, Western Europe and the Far East, and also produces several specialized publications.

Whalen serves as executive editor of the Whalen Company and contributes regularly to the firm's unique proprietary news service, known as *Wires Washington*, a weekly analysis of developments in Washington affecting the Federal Reserve, trade policy and the U.S. economy. He also edits *The Mexico Report*, a fortnightly review of political and economic affairs in Mexico that combines news, independent analysis, interviews, and commentaries by observers in Mexico. In addition, The Whalen Company publishes a fortnightly, Japanese-language newsletter on U.S. business and political developments, known by the English title of *Inside Japan-U.S. Relations & Business*.

Whalen was born on January 6, 1959 and graduated from Villanova University with a degree in History in 1981. From 1981 through the end of 1982, he worked as a staff writer for the House Republican Conference Committee, which was then chaired by Rep. Jack Kemp (R-NY). In March of 1983, he took a position with the Federal Reserve Bank of New York, where he worked as a financial analyst in both the Bank Supervision and Foreign Departments.

Early in 1986, Whalen went to work for Bear, Stearns & Co., working as a bond dealer in the London branch of this respected Wall Street firm with specific responsibility for establishing new business relationships with financial institutions from Japan. He has experience in trading both fixed income and derivative products such as futures, options and interest rate swaps.

In 1988 Whalen assumed his present position with the Whalen Company. He is the co-editor of the 1990 book Trade Warriors: The Guide to the Politics of Trade and Foreign Investment. Whalen has testified before Congress on issues including the Federal Reserve System and the Mexican business environment. Over the past five years, he has contributed dozens of articles and commentaries on finance and political themes to publications such as *The American Banker*, *Barron's*, *The Freeman*, *The Wall Street Journal*, *Proceso*, *The Christian Science Monitor*, *The New York Times*, *The Washington Post* and *The Journal of Commerce*. Whalen is also co-founder and acting secretary of the Herbert Gold Society, an informal organization of current and former officials of the Federal Reserve, Treasury Department and the Congress.

KBW*Specialists in Banking***Bank Industry Issues**

Vol. 35

July 29, 1993
KBI: 2642
S&P 500: 430.24

PERSPECTIVE ON TRADING REVENUES

For the handful of banks for which trading is a significant line of business, second-quarter results were outstanding. Declining interest rates worldwide, turmoil in the European currency markets, and continued growth in customer-driven risk-management businesses drove trading results to new records across the board. Almost all these banks posted second-quarter earnings well in excess of expectations.

Investors were unimpressed. Most evidently believe that strong trading results are "here today, gone tomorrow," and should largely be treated as non-recurring gains. Without for a moment denying that second-quarter trading profits were exceptionally strong, we do think investors would benefit from a longer-term perspective on these banks' trading activities. In this report, we examine trading results over the last decade for the largest trading banks. Our most important conclusions are:

Trading is a growth business. Combined trading revenues for the largest trading banks have grown at a 17% compound annual rate over the last five years. That statistic does not take into account the extraordinary results posted in 1993's first half (up 74% year-over-year).

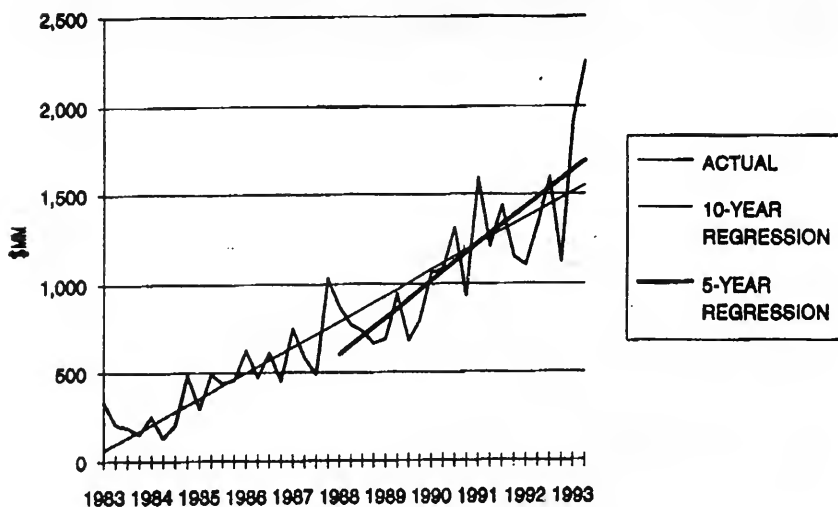
Variations in trading results have caused less bottom-line earnings volatility than have variations in credit costs, notwithstanding that individual banks' trading results exhibit significant quarter-to-quarter volatility. None of the six largest trading banks has posted a single quarterly trading loss in the last nine years.

Among U.S. commercial banks, trading expertise is highly concentrated. Moreover, the largest players' trading results would appear to be less volatile than those of smaller players. This reflects the breadth of their franchises and the sophistication of their risk-management systems.

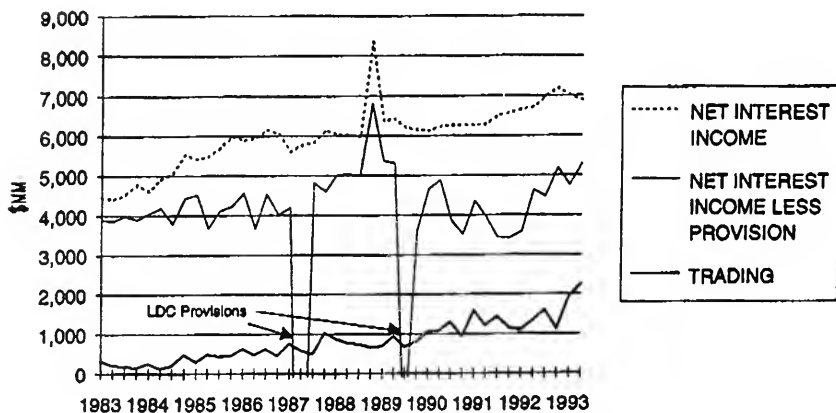
In our view, investors are not appropriately valuing the revenue streams derived from these banks' trading activities. While it is difficult to disaggregate investors' views about trading from their views about other aspects of bank performance, we suspect that concerns about trading volatility and a failure to appreciate the growth characteristics of trading revenues depress these companies' stock valuations. The stocks of most of the important trading banks all trade at a price/earnings multiple discount to the average bank stock.

KEEFE, BRUYETTE & WOODS, INC.

MONEY-CENTER BANKS' TRADING REVENUES



REVENUE VOLATILITY: NET INTEREST INCOME, PROVISION, AND TRADING



Methodology: We've looked at the quarterly trading revenues of seven major money-center banks for the last ten and a half years to gain a long-term perspective on the trading business. The banks included are: Citicorp, J P Morgan, Bankers Trust, Chemical Banking, Chase Manhattan, BankAmerica, and First Chicago. Chemical Banking's trading results include those of Manufacturers Hanover prior to those two companies' merger in December 1991. BankAmerica's data include Security Pacific's trading results prior to Security Pacific's purchase by BankAmerica in April 1992.

Observation: Trading is a growth business. Despite volatility quarter-to-quarter, and notwithstanding that trading results in the first half of 1993 have been exceptionally strong, over the long term trading revenues have shown a strong secular growth trend. In the mid-eighties (1985-87), combined trading revenues for these seven banks averaged \$557 million per quarter. In the early nineties (1990-92), combined trading revenues averaged \$1,243 million per quarter, 123% higher. Between those two three-year periods, average quarterly combined trading revenues grew at a 17% compound annual growth rate.

The combined trading revenues for these seven (once nine) banking companies has been plotted on page 2. A least-squares best-fit regression line has been drawn through both the full ten and a half years' of data and the last five and a half years' of data. The slope of our ten-year regression line (R-squared of 0.82) indicates growth of \$145 million in combined quarterly trading revenues per year.

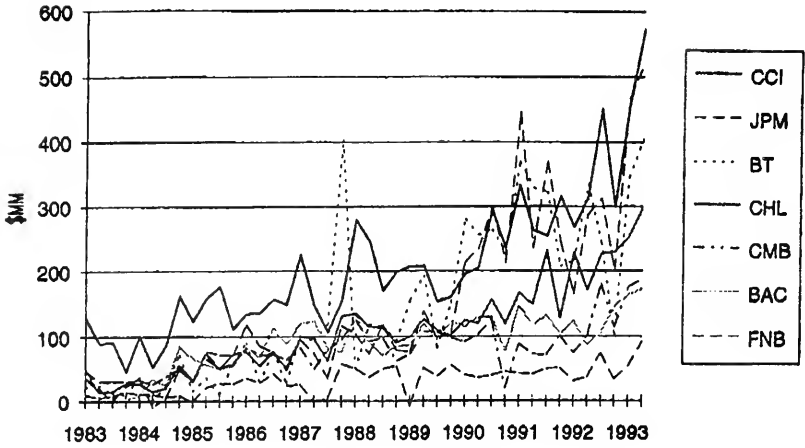
A number of factors have driven the growth in trading revenues. Perhaps the most significant has been the development of the derivatives market. The first interest-rate swap was entered into in 1981. By the end of 1991, the notional amount of interest-rate and foreign-exchange derivative instruments outstanding had grown to

\$4.5 trillion. The growth of the derivatives market reflects the increased acceptance by investors and issuers of derivative products as a cost-effective tool to enhance yields, reduce funding costs, and manage risk. Innovation -- both in terms of computer and communications technology and on the part of academics and bankers in developing sophisticated methods to assess and price risk -- has played a key role as well. At the same time, the growth of securitization and the opening up of economies around the world have increased the variety of tradeable instruments. In response, bankers have dedicated increased amounts of personnel and capital to develop global trading networks and comprehensive risk-management systems.

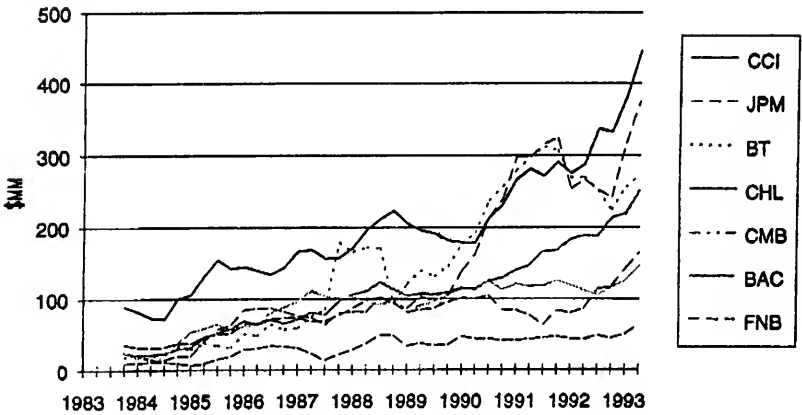
Observation: The pace of growth has increased in the last five years. The five-year regression line (R squared of 0.66) is steeper than the 10-year line. That five-year regression line indicates growth in combined quarterly trading revenues of \$207 million per year. This observation could simply be an artifact of the data, reflecting unusually depressed results in the 1988-89 period and the outsized trading profits in 1993's first half; certainly the fit of the line to the actual trading results is not as strong for the five-year regression as it is for the ten-year. Nevertheless, we think it reflects a real acceleration in the trading business. The universe of derivatives-market users has continued to grow, while U.S. money-center banks' dedication to the business has increased. In particular, this period coincides with the lift-off of J P Morgan's and Bankers Trust's trading businesses.

Observation: First half 1993 trading results were exceptionally strong. There's no denying that first half 1993 results were outsized by any measure. Combined trading results for these seven money-center banks were \$1.9 billion in the first quarter and more than \$2.2 billion in the second. The five-year regression line indicates "normal" trading profits would have been \$1.6

MONEY-CENTER BANKS' TRADING REVENUES



**MONEY-CENTER BANKS' TRADING REVENUES
FOUR-QUARTER MOVING AVERAGE**



billion and \$1.7 billion, so "excess" trading revenues of \$0.8 billion were earned in the first half. Declines in interest rates worldwide, European currency volatility, and price appreciation of LDC debt were among the factors cited by the money-center banks for their strong first half trading results, but most banks also cited continued growth in their customer-driven derivatives businesses as well. Turmoil in European currency markets has continued into the third quarter, so it is entirely possible that strong trading profits will be earned again in the third quarter. That said, it would be reasonable to expect trading revenues to decline later in 1993 and in 1994 from the levels achieved in 1993's first half.

Observation: Trading volatility is not as great as might be thought. The relatively high R-squared statistics for both the ten-year (0.82) and five-year (0.66) regression lines indicate a consistency to the trading business -- at least when seven banks' results are aggregated -- that many investors might not expect. Not surprisingly, most individual banks' trading revenues exhibit greater volatility than do the combined trading revenues for the seven banks -- something discussed in more detail on page 9. While we don't pretend that an R-squared statistic of 0.66 indicates trading results are growing at a precise linear rate over time, we do think the variability of trading results should be put in the context of the other ways banks make money.

The most important revenue item for most banks is net interest income, and, it is true, the quarter-to-quarter variability of net interest income is relatively small. Changes in earning asset volumes and interest-spread relationships are relatively glacial. However, the majority of most banks' earning assets are loans, and significant volatility in the spread-banking business does show up in the loan loss provision. The difference between net interest income and the loan loss provision could be called "risk-adjusted

net interest income," and risk-adjusted net interest income does exhibit considerable volatility from quarter to quarter.

On page 2, we've plotted combined quarterly net interest income, risk-adjusted net interest income, and trading revenues for these seven money-center banks for the last ten and a half years. It should be fairly evident that risk-adjusted net interest income has demonstrated a fair amount of volatility of its own. The standard deviation of quarterly risk-adjusted net interest income over the period 1988-1993 was almost \$1.6 billion, 39% of the average level of quarterly risk-adjusted net interest income of just under \$4 billion. In contrast, the standard deviation of the residuals from our five-year regression of combined quarterly trading revenues was \$243mm, 21% of the average level of quarterly trading revenues over the period of \$1.1 billion. Arguably, trading revenues have been less volatile than risk-adjusted net interest income.

Now the money-center banks may be viewed as having been particularly accident prone in the 1980s, so this comparison could be considered unfair. Certainly the LDC provisions in 1987 and 1989 loom large on our chart of risk-adjusted net interest income. Still, we don't think any reasonably fair sampling of regional banks would have generated a significantly less volatile series of risk-adjusted net interest income figures considering the unprecedented number of bank failures in the last decade.

Market risk from trading activities has contributed less volatility to bottom-line earnings than has *credit risk* from lending activities.

Observation: Trading is consistently profitable. This is a point closely related to the volatility of trading revenues. On page 4, we've plotted the actual quarterly trading revenues for these seven money-center banks. While it's a little hard to read this chart -- quarterly trading results for individual banks do bounce around -- a

**TRADING AND FOREIGN EXCHANGE REVENUES
FULL YEAR 1992**

		<u>\$mm</u>	<u>Pct of Top 10</u>
1	Citicorp	1,331	25%
2	J P Morgan	959	18%
3	Bankers Trust	898	17%
4	Chemical Banking	853	16%
5	Chase Manhattan	468	9%
6	BankAmerica	463	9%
7	First Chicago	177	3%
8	Republic New York	115	2%
9	Bank of New York	94	2%
10	NationsBank	71	1%

**TRADING AND FOREIGN EXCHANGE REVENUES
SECOND QUARTER 1993**

		<u>\$mm</u>	<u>Pct of Top 10</u>
1	Citicorp	572	24%
2	J P Morgan	520	22%
3	Bankers Trust	405	17%
4	Chemical Banking	298	13%
5	Chase Manhattan	187	8%
6	BankAmerica	172	7%
7	First Chicago	92	4%
8	Republic New York	54	2%
9	Continental Bank	27	1%
10	Bank of New York	23	1%

significant fact should be noted: The major trading banks hardly ever lose money from trading activities. Plotted here are trading results for seven money-center banks over ten and a half years -- 294 separate quarterly reports (or 366 if the data for Manufacturers Hanover and Security Pacific are disaggregated). In only four of those reports did a bank post a trading loss for the quarter, and each of those losses was minor. Three were posted by First Chicago, the smallest of these seven trading banks; the other was posted by J P Morgan in 1984, almost ten years ago.

Certainly these banks lose money on individual trades. And certainly whole trading-product areas can generate quarterly losses. J P Morgan lost hundreds of millions of dollars in its mortgage-backed securities trading over several quarters in 1992. But these banks' trading operations are sufficiently diversified that losses in one area are almost always offset by profits in others. Unlike a traditional securities broker/dealer, whose trading would be dominated by U.S. equities and bonds, these commercial banks trade a vast array of different products, including: interest-rate and currency swaps, U.S. and foreign government debt instruments, money-market securities, corporate debt securities, LDC loans and bonds, foreign currencies, equities, and other instruments. Those trading activities which are dominated by customer-driven transactions (e.g., Citicorp's foreign exchange business) would be expected to be consistently substantially profitable.

Observation: Among U.S. banks, the trading business is highly concentrated. This can be seen most clearly in the tables on page 6 showing market share of trading revenues among the top ten U.S. commercial banks. The largest four players accounted for three-quarters of the trading revenues earned by the top ten trading banks in 1992, and the tenth-ranked bank earned only 5% of that earned by the top-ranked bank. Virtually the same characterization could be

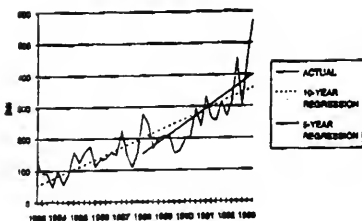
applied to trading results in 1993's second quarter. Since investors have identified J P Morgan and Bankers Trust most closely with trading and the derivatives business, it may come as a surprise that Citicorp's trading revenues are larger than either of those two's. Citicorp's preeminence in part reflects its dominance in foreign exchange, itself a function of the company's long-standing overseas presence. Chase Manhattan, BankAmerica, and First Chicago are clearly in the second tier, reflecting in some cases different management emphasis (BankAmerica) and in others simply belated development (Chase Manhattan).

On page 4, we've plotted a four-quarter moving average of the seven major trading banks' quarterly trading results. With some of the quarter-to-quarter volatility smoothed out, changes in market position can be seen clearly. Citicorp's long-standing dominance is clear as are the surges in J P Morgan's and Bankers Trust's trading revenues in the early 1990s. Also evident is Chemical Banking's move over the last three years from the second tier towards the first.

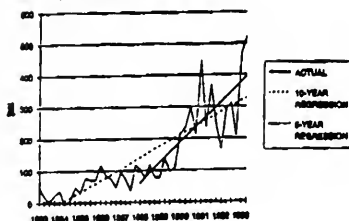
Observation: Trading volatility varies significantly among different banks. Those banks whose trading results are less volatile are most likely less involved in proprietary position-taking than in customer-driven activities. Less volatile results may also indicate a broader range of instruments traded. Stability of trading revenues over time also suggests that sophisticated risk-management processes are in place and are being followed.

On page 8, we have plotted actual quarterly trading results, a ten-year regression line, and a five-year regression line for each of these seven banks. R-squared statistics for the ten- and five-year regressions are shown below. Of these seven banks, Chemical Banking has had the most stable trading performance; its regression lines actually have higher R-squared statistics than do those for the combined group. All these

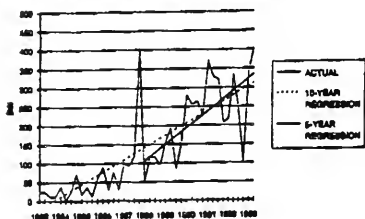
CITICORP TRADING REVENUES



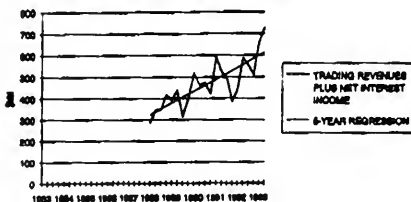
J P MORGAN TRADING REVENUES



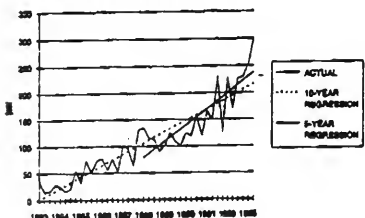
BANKERS TRUST TRADING REVENUES



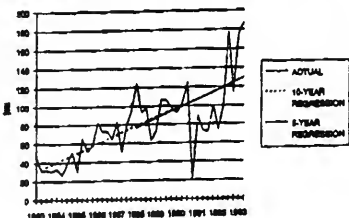
BANKERS TRUST TRADING REVENUES PLUS NET INTEREST INCOME



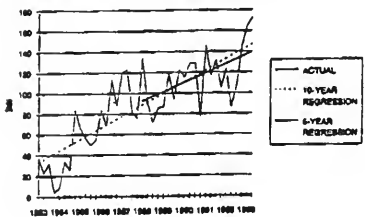
CHEMICAL BANKING TRADING REVENUES



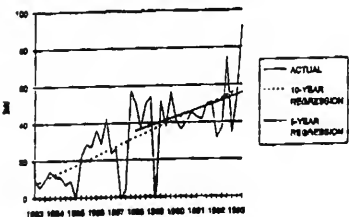
CHASE MANHATTAN TRADING REVENUES



BANKAMERICA TRADING REVENUES



FIRST CHICAGO TRADING REVENUES



regression lines meet statistical tests of significance (i.e., there is a real track record of growing trading revenues over time) with the exception of the five-year regressions for Chase Manhattan and First Chicago. The five-year regression for BankAmerica is also not statistically strong.

R-SQUARED STATISTICS

	10-Year	5-Year
Chemical Banking	0.84	0.69
J P Morgan	0.69	0.60
Citicorp	0.69	0.54
BankAmerica	0.68	0.28
Bankers Trust	0.65	0.47
Chase Manhattan	0.55	0.17
First Chicago	0.50	0.12
Combined	0.82	0.66

Bankers Trust's five-year regression R-squared is much stronger (0.64) if net interest income is taken into account. Since two-thirds of Bankers' balance sheet is made up of trading-related assets, and the company does engage in trading strategies whose benefits show up as net interest income rather than as trading revenues, this adjustment seems entirely reasonable.

There is a rough correlation between the size and stability of a bank's trading revenues. This is logical since the broader a bank's trading franchise -- by customer, product, and geography -- the more often weak results in one area will be balanced out by strong results elsewhere. At the same time, only the largest players are capable of successfully trading a broad set of products with a large number of customers.

Conclusions for Investors: Bank stocks typically trade at a price/earnings multiple discount to the general stock market, reflecting

either investors' belief that banks' growth prospects are less bright than other companies' or investors' concern that banks are riskier than other companies. That risk in most cases would be credit risk.

The trading banks' stocks typically trade at a price/earnings multiple discount to the average bank stock, implying that as much concern as investors have about growth or risk for most banks, they have more concern for the trading banks. While it is difficult to disaggregate investors' views about trading from other aspects of bank performance, to the extent this is true, we believe it represents a misunderstanding of the major trading banks' business.

The rapid growth in trading revenues over the last several years is likely to continue (though we're reluctant to use first half 1993 results as a baseline for that growth). The factors which have spurred growth in trading revenues over the last decade -- the growth of the derivatives market and an increase in the range of tradeable instruments, coupled with banks' increased commitment to the business -- are likely to lead to further growth in the next decade. While investors are correct to discount earnings derived from trading activities for volatility, allowance should also be made for the rapid growth that trading revenues have had and are likely to experience.

It should be kept in mind that trading losses have never led to a bottom-line loss for any of the major trading banks. The same cannot be said about credit losses.

Finally, investors should distinguish those banks' whose trading results are comparatively stable over the long term; such banks deserve higher valuations.

David S. Berry
Director of Research

LAZARD FRÈRES & CO.
ONE ROCKEFELLER PLAZA NEW YORK, NEW YORK 10020

SWAPS REVISITED

or, How I Learned to Stop Worrying and Love the Derivative

OVERVIEW

Last fall, we wrote a piece with the unexciting title of "The Outlook for Bank Margins in 1993" (November 9, 1992) which, in part, attempted to quantify banks' exposures to off-balance sheet interest rate exchange agreements (i.e., swaps). What this report attempts to do is to update that part of the report dealing with swaps in a more comprehensive and, hopefully, more informed way.

CAVEATS

The swap market is very complex and disclosure is minimal. Given that we are learning about this market as we go along and in order to provide some perspective on the use of these instruments, we offer the following:

- While swaps have become, for many banks, an integral part of an institution's asset and liability management (ALCO), they are generally only one part of ALCO and should be looked at in that context.
- We have attempted to isolate swaps, specifically, in this report in order to understand how banks use them, to look at total exposures and growth of exposures, and to determine which banks are deriving substantial earnings from them. Initially, we hoped to discover which banks are taking inordinate risk with swaps, but have found this to be very difficult. We have felt it best to fall back on the old bank analytical adage that those institutions that are growing swap books the fastest, have the greatest swap exposures relative to assets, and carry swaps with the longest maturity have higher risk.
- In this report, we look at only interest-rate swap positions, not cross-currency swaps or numerous types of futures and/or options. There are two reasons for this: most domestic regionals deal only in interest-rate swaps; and, the money center banks with whom we spoke, who do deal in both interest-rate and cross-currency instruments, had almost no interest in telling us their positions. Given our experience to date, we feel that the analysis of a combination of interest-rate and cross-currency swaps as well as futures and options would be, at best, daunting.
- Our statistical sample of 18 banks is rather limited considering the number of publicly traded financial institutions in the marketplace. Our reason for the small universe is that the lack of public disclosure makes this information very difficult and time consuming to collect.
- We have tried to be as accurate as possible in depicting each bank's interest-rate swap exposures but we may have missed a beat or two for which we apologize in advance. While we were pleased to find that many of the institutions with which we spoke were much more inclined to discuss swap exposures than a year ago, this subject is very complicated and lacks accurate disclosure. In some cases where institutions were loath to discuss swap specifics, we have used estimates that could be harsher than reality.

David N. Pringle

Lazard Frères Equity Research

(212) 632-6147

October 26, 1993

Although the information contained herein has been obtained from sources that Lazard Frères believes to be reliable, we do not guarantee its accuracy and such information may be incomplete or condensed. All opinions and estimates included herein constitute our judgment as of this date and are subject to change without notice. This report is for informational purposes only and is not intended as an offer or solicitation with respect to the purchase or sale of any security. We, or persons involved in the preparation of this report, may from time to time have long or short positions in, and buy or sell these securities, make a market in these securities and may also have, or solicit an investment banking relationship with, and/or have managed or co-managed an offering of securities within the past three years with companies mentioned in this report.

BACKGROUND

In its simplest form, an interest rate swap is merely an agreement between two parties to exchange cash flows on a notional principal balance. For example, an institution will agree to pay a variable rate of interest usually tied to something like LIBOR and receive a fixed rate of interest usually tied to a constant maturity treasury rate. The other institution will do the opposite. Such swaps are known alternatively as "plain vanilla" or "macro" swaps.

There are also instruments, known as "index-amortizing", "MBS", or "CMO" swaps, where the fixed rate portion is tied to a mortgage-backed security yield. In addition, we also ran into "corridor swaps" which, for instance, can arbitrage the prime-fed funds spread. While the swaps mentioned above are the most common, we believe that the overall swaps' product line is rather diverse. As a further note, there are now futures and options on most swap products. Swaps can be used with varying combinations of swaptions as well as interest rate futures, caps, and floors.

Interest rate swaps have been around since the early-1980s and were primarily the domain of the money center banks and a handful of large brokerage firms until the latter part of the decade. In essence, these institutions made a book as agent for client transactions and used derivatives to hedge their own balance sheets. In the late 1980s and early 1990s, the regional banks became more involved in the derivatives market primarily as users (i.e. balance sheet hedging) as opposed to dealers (i.e. running client books). As we shall show below, aggregate derivative exposure continues to grow at the regional banks.

We can attribute the rapid growth of swap portfolios to a number of factors:

- An increasing number of regional banks are becoming aware of the swap market.
- The perception is that liquidity in the swap market is increasing.
- The swap markets allow institutions to build large positions easily -- after setting up the initial relationships with dealers, it is at least as easy to set up a \$2 billion swap position as it is to buy, say, \$2 billion of Treasuries.
- Swap positions can be built quietly since they are not carried on the balance sheet -- this point raises some interesting questions regarding the adequacy of disclosure and representations of banking assets, equity ratios, margins, and historical measures of return. (see Tables IV through VIII).
- Swap positions can be instituted with minimum capital requirements - in the money swaps require at most capital equal to ½% of the notional principal amount - on the other hand, out of the money capital requirements can be very onerous (see Appendix I).
- We expect that mark-to-market accounting pressures will provide a huge incentive for banks to move longer-maturity investments off the balance sheet -- swaps fall outside the mark-to-market requirements.

After numerous discussions with individuals involved in swap activity, we have found some commonality in the banks' use of these instruments. Generally, the regional banks have set up swap positions whereby they receive fixed and pay variable rates. In simple language, they have set up short-funded bond portfolios with maturities of 2-3 years. The typical answer to our question of why they set up these positions was as follows: the response of our depositors during this period of

declining rates, combined with our ALCO (asset/liability committee) computer simulations, indicates that we have some very "lazy" deposits in our funding structure -- deposits that would not be sensitive to a rising interest rate environment. Presumably, the banks feel that they can lag deposit rates to any increase in short-term market rates and not lose depositors. We believe that the only way to find out whether the banks are correct is to wait until rates go up and see what happens. We do know that banks are making this bet at thinner and thinner spreads.

SWAP BOOKS

At this point, the only consistent financial disclosure on interest rate exchange agreements (i.e. interest rate swaps) appears in Federal Reserve call reports (i.e. the FR Y-9 C) "Schedule HC-F Part II, Interest rate contracts, etc. 2.c. Notional value of interest rate swaps" In addition, "2.a. Futures and forward contracts" may contain swaps of less than one year duration. Unfortunately, this disclosure does not distinguish between differing types of swap transactions, forwards, options and futures, etc. (to name a few interest rate instruments). Different types of swap transactions can have a significantly different impact on a bank's reported financial statements. For our purposes, we have broken out the swap portion as presented in the FR Y-9 C into three areas -- the latter two of which are of primary interest:

- Agency business: this represents positions in which the bank acts only as a broker and for a fee arranges for two parties to exchange cash flows. These fees are reported as non-interest income. This type of activity is not the focus of this report since it is nearly impossible to track and has no effect on reported assets or margins. In our opinion, the agency part of the swap business falls under the heading of systemic risk and one can only hope that the major players do not have a scandal-tainted Italian conglomerate counterpart which deals through BCCI.
- Swaps against banks' own balance sheet cash flows: this category includes transactions whereby banks swap against currently existing balance sheet items, either assets or liabilities. For example, a bank issues medium-term notes and swaps the fixed rate interest payments for variable rate payments. In another example, a bank swaps variable money market investments for longer maturity fixed-rate investments. While these activities in a declining rate environment may create non-recurring windfalls which distort reported margins (the benefit is run through net interest income), they do not distort reported earning assets.
- Swaps as asset/liability "proxies": a number of institutions have set up swap positions free and clear of any existing reported assets and or liabilities, i.e. these positions are really a substitute for conventionally leveraging the balance sheet by, say, short-funding a mortgage-backed securities portfolio. As is the case with swaps against specific balance sheet items, these "proxies" may create windfall positions which distort reported margins. In addition, since these swap positions are, in reality, shadow assets, we believe that their existence distorts reported earning assets and overstates reported margins. For example:

	Reported <u>Earn. Assets</u>	Asset <u>Proxies</u>	Adjusted <u>Earn Assets</u>
Principal Balance	\$10,000	\$2,000	\$12,000
Margin	4.95%	1.50%	4.13%
Net Interest Income	\$ 495 (a)	\$ 30 (a)	\$ 495 (a)

(a) The \$30 net interest income from proxies is already included in reported net interest income.

CONCLUSIONS

After a year-long on-again, off-again look at swaps, we have reached the following conclusions:

- The disclosure on swap activity is atrocious -- ferreting out the information necessary to analyze swap positions is a pain in the neck -- most analysts and investors prefer to ignore the whole thing.
- Swaps are an increasingly integral part of banks' operating strategies and are here to stay.
- At a number of those companies which disclosed their swap positions, exposures are growing very quickly. In our universe of 18 banks, the aggregate swap position has grown 59% year-to-year and 44% year-to-date (not annualized -- please refer to Table I). In addition, the notional value of swap portfolios at many banks currently now exceeds 10% of reported asset balances. At five of the institutions, swap exposures are greater than 20% of reported assets (please refer to Table II).
- Swaps spreads are narrowing. The latest swap transaction is nearly 100 basis points below the weighted average spread for the group as we have calculated it. Assuming that swap portfolios remain at current levels, we estimate that the banks in our universe will lose roughly \$900 million in net interest income over the next two years (please see Table III).
- The increased use of interest-rate swaps is creating some sizable distortions in reported earnings. We estimate that the earnings contribution from swap activity can range from being a huge drag on earnings at an institution such as FirstFed to creating a positive contribution of 20% or more to the bottom line.
- The quality and sustainability of swap driven earnings indicates to us that this is a very low P/E business.
- The increased use of interest-rate swaps as asset "proxies" is creating some sizable distortions in reported earning assets, margins, and the historical measure of return on assets. The use of "proxies" can serve to understate earning assets by as much as 20% or more (please refer to Table IV), overstate margins by 30 basis points or more (please refer to Tables V & VI), and overstate ROA by as much as 20-30 basis points (please refer to Table VII). Adjusting for these distortions leads us to believe that banking industry returns, while better at individual institutions, may not be better in composite than those posted by the highest returning banks during the mid-1980s.
- We believe that the use of "naked swaps", i.e. those positions that are a pure bet on rates, raises the whole question of whether the use of swaps is as integral a part of the banking business as everyone claims or whether it is just a new way for banks to play the yield curve without anyone knowing about it.
- It appears that the accounting profession and the Federal Reserve are woefully behind the "eight ball" in regard to swap activity -- we do not know where the rating agencies stand.
- The increased use of swaps has served to make the banking industry's asset/liability management virtually impossible for an outsider to analyze.

As we noted on the first page of this report, it is very difficult to determine which banks are taking inordinate risk with swaps and it is best to fall back on looking at growth as well as balance sheet and earnings exposure. In order to summarize the tables and prose that follows, we present below the top five companies in each category. (SP - Swap Portfolio)

<u>SP Growth</u> <u>Last 6 Mos</u>	<u>SP As a %</u> <u>Avg. Assets</u>	<u>SP Spread</u> <u>% Net Inc.</u>
Barnett Banks (a)	FirstFed Michigan	Meridian E
Key Corp. (a)	Banc One	CoreStates
NationsBank	First Union	First Fidelity E
Banc One	First Chicago	Society
First Union	National City	Bank of NY E

E -- Lazard Frères Equity Research Estimate (a) New position

Best Disclosure: FirstFed Michigan, Banc One

Worst Disclosure: Meridian, First Fidelity, Bank N.Y., First Interstate

On the following pages, we present eight Tables which form the basis for our conclusions.

SWAP PORTFOLIO GROWTH

In Table I, below, we have sorted our 18 bank universe by growth rates in swap portfolios from highest to lowest. While the growth trends in swap positions at the regional banks listed show a huge divergence, one point is clear: swap portfolios, in aggregate, are growing rapidly -- 59% year-to-year and 44% year-to-date (the latter figure is not annualized). At the top of the list are two banks with new swap exposures: Key Corporation and Barnett Banks. Aside from these two institutions, growth rates range from plus 400% at NationsBank (over the last six months -- not annualized) to minus 67% at Crestar. In all, 8 companies are up, 4 unchanged, and 6 are down. We note that despite the fact that swap exposures have declined at both First Fidelity and Mellon over the last six months, they are up 6% and 64%, respectively, from levels reported a year ago.

Table I
Interest Rate Swap Portfolio Growth
(\$ in Millions)

Institution	Total Swap Exposure			% Change	
	2Q '92	Y.E. '92	2Q '93	Year	Last 6 Mos (a)
Barnett Banks	0	0	150	new	new
Key Corporation	0	0	2,000	new	new
Nations Bank	1,000	2,000	10,000	900%	400%
Banc One	11,300	10,500	27,900	147%	166%
First Union	10,000 E	12,300	20,000	100%	63%
National City	3,500	4,000	6,000	71%	50%
Fleet Financial	2,429	2,522	3,677	51%	46%
Society	N/A	3,900	4,400	N/A	13%
Bank of New York	4,000	4,000	4,000	0%	0%
First Chicago	14,000 E	14,000 E	14,000	0%	0%
Meridian	1,900	1,900	1,900	0%	0%
SunTrust	850	850	850	0%	0%
FirstFed Michigan	3,906	3,806	3,756	(4%)	(1%)
First Fidelity	3,381	3,732	3,569	6%	(4%)
CoreStates	4,500 E	4,100	3,900	(13%)	(5%)
Mellon	3,822	7,401	6,255	64%	(15%)
First Interstate	2,000	1,500	800	(60%)	(47%)
Crestar	5,000	3,000	1,000	(80%)	(67%)
Total	71,588	79,511	114,157	59%	44%

Source: Company conversations; company reports

E - Lazard Freres Equity Research Estimate

(a) Not Annualized

As we show below, some banks may be growing swap books at thinner and thinner spreads in order to keep reported margins at current levels.

TOTAL SWAP EXPOSURES

In Table II below, we look at total swap exposure as a percentage of reported average assets. In addition, we have segregated swap positions into two pieces, swaps versus the balance sheet and swaps which are used as asset/liability "proxies".

What this table tells us is that a number of banks have sizable swap positions -- well over half the banks have positions greater than 10% of reported assets. Positions range from 39% of reported average assets at FirstFed to slightly above 0% at Barnett. The weighted average position aggregates 15% of reported assets.

Table II
Interest Rate Swap Portfolio Principal Balance

Institution	Swaps Versus Balance Sheet	Swaps As Asset/Liab Proxies	Total Swap Exposure (\$ Mill.)	Total Average Assets (\$ Mill.)	Total Exposure as a % Average Assets
FirstFed Michigan	3,756	0	3,756	9,706	39%
Banc One	11,000 (a)	16,900	27,900	73,686	38%
First Union	15,000 (b)	5,000	20,000	65,431	31%
First Chicago	14,000	0	14,000	56,951	25%
National City	0	6,000	6,000	28,321	21%
Mellon	0	6,255	6,255	34,421	18%
Society	0	4,400	4,400	25,544	17%
CoreStates	0	3,900	3,900	22,919	17%
Meridian	1,900	0	1,900	12,147	16%
First Fidelity	0	3,569	3,569	31,194	11%
Bank of New York	4,000 E	0	4,000	42,013	10%
Nations Bank	0	10,000	10,000	122,810	8%
Fleet Financial	3,677	0	3,677	45,343	8%
Crestar	1,000	0	1,000	12,395	8%
Key Corporation	0	2,000	2,000	31,655	6%
SunTrust	0	850	850	37,098	2%
First Interstate	0	800	800	48,990	2%
Barnett Banks	150	0	150	37,469	0%
Total	54,483	59,674	114,157	738,093	15%

Source: Company conversations; company reports

E - Lazard Freres Equity Research Estimate

(a) Includes \$1 billion of swap forwards and \$4 billion basis rate swaps at a negative carry.

(b) includes \$10 billion of non-earning hedges, forwards, floors & options on swaps.

Those companies with positions that aggregate more than 20% of reported average assets include FirstFed, Banc One, First Union, First Chicago, and National City. Those companies with positions aggregating less than 10% of reported assets include NationsBank, Fleet, Crestar, Key, SunTrust, First Interstate, and Barnett.

AGGREGATE SWAP SPREADS

In Table III below, we compare swap exposures, aggregate rates paid and received and the spread between the two rates. In addition, we look at aggregate spread income as a percentage of both net interest income and after-tax net income. The Table is sorted by swap contribution to net income, from highest to lowest.

With the exception of FirstFed and Barnett which have hedged against a rise in interest rates, the regional banks in our universe have set up swap positions in order to receive fixed rate payments and pay at variable rates. The fixed rates received range from a high of 9.00% at SunTrust to a low of 3.40% at First Chicago. Included in this range are our estimates for Meridian, First Fidelity, Bank of New York, and First Interstate since they would not disclose any yield data.

The wide variance of rates received (Column 3, Table III) is a matter of when the swap was put on the books (older swaps have higher yields) and the final maturity (longer maturities have a higher yield). The closest company to a current mark to market yield is Key Corporation which entered into a 2 year swap in the third quarter of 1993 at a yield of 4.42%. Using this yield as a benchmark indicates that many of the yields received are significantly above market.

Since the variable side of most of these swap positions is tied to LIBOR, the rates paid (Column 4, Table III) are in a very tight range. The exceptions here are Banc One and First Union -- both of which have hedging costs imbedded in their cost of funds.

Table III
Aggregate Swap Spreads
(\$ In Millions)

Institution	Swap Exposure (\$ MIL)	Aggregate Rates			Aggregate Spreads		Aggregate Swap Spread as a % of		--
		Rate Received	Rate Paid		Percent	Amount (\$ MIL)	Net Int. Income	Net Income	
Meridian	1,900	7.25%	F ED	3.25%	VL ED	4.00%	76.0	14%	34%
CoreStates	3,900	6.83%	F	3.25%	VL	3.58%	139.6	12%	27%
First Fidelity	3,569	7.25%	F ED	3.25%	VL ED	4.00%	142.8	10%	24%
Society	4,400	6.75%	F	3.50%	VL	3.25%	143.0	12%	24%
Bank of New York	4,000	E 7.25%	F ED	3.25%	VL ED	4.00%	160.0	12%	18%
First Chicago	14,000	3.40%	F	2.00%	VL	1.40%	196.0	16%	18%
Banc One	20,900	6.37%	F	4.85%	VL	1.52%	317.7	8%	18%
Crestar	780	7.30%	F E	3.34%	VLE	3.96%	30.9	6%	15%
First Union	10,000	6.04%	F	4.00%	VL(a)	2.04%	204.0	7%	14%
Mellon	6,255	5.17%	F	3.25%	VL	1.92%	120.1	9%	13%
National City	6,000	4.50%	F	3.25%	VL	1.25%	75.0	6%	12%
Fleet Financial	3,677	6.27%	F	3.75%	VL	2.52%	92.7	4%	11%
Nations Bank	10,000	4.82%	F	3.32%	VL	1.50%	150.0	3%	8%
SunTrust	850	9.00%	F	3.25%	VL	5.75%	48.9	3%	6%
First Interstate	800	7.25%	F ED	3.25%	VL ED	4.00%	32.0	2%	4%
Key Corporation	2,000	4.42%	F	3.25%	VL	1.17%	23.4	2%	4%
Barnett Banks	150	3.25%	VL	6.80%	F	(3.55%)	(5.3)	0%	(1%)
FirstFed Michigan	3,758	3.40%	VL	8.81%	VF	(5.41%)	(203.2)	(132%)	(256%)
Aggregate (b)	93,031 (b)					2.10% (b)	1,952 (b)		

Source: Company conversations; company reports
E - Lazard Freres Equity Research Estimate
D - Default due to the individual bank's reluctance to disclose the exposure
F - Fixed Rate

V - Variable Rate
L - Rates generally tied to 3- or 6-month LIBOR
(a) includes roughly 75bps of hedging costs.
(b) Excludes FirstFed of Michigan & Barnett

Given that the banks receive a wide range of fixed-rate payments and have a fairly homogeneous cost of funds, swap spreads vary widely -- the highest is 5.75% at SunTrust and the lowest positive spread is 1.17% at Key. This is not surprising since SunTrust's swap is the oldest position on the list and Key's is the most recent.

We want to emphasize three points here:

- **Swap activity can add significantly to both net interest income and the bottom line.** On balance, as shown in Table III, we estimate that swaps are currently contributing between 0% and 14% of reported net interest income (excluding FirstFed) and between -1% and 33% of after tax income. We consider anything over 5% of net income to be material (this occurs at 12 of our 16 banks) and wonder why there is little disclosure regarding swap activity in these banks' financial statements.
- Key entered into its swap in the third quarter of 1993 and agreed to receive fixed rate payments at 4.42% and pay LIBOR for 15 months at which point the swap will amortize at \$400 million per quarter for 5 quarters. In essence, Key's swap spread, at 1.17%, is the marginal return for the group. The average spread for all the companies listed (with the exception of the two negative spreads at Barnett and FirstFed) is 2.10% and this aggregate book generates nearly \$2 billion in annual net interest income. **Assuming that the group's notional balance remains the same and that the Key spread is the marginal one, we expect the aggregate net interest income at the 15 remaining banks to decline by \$900 million plus over the next, say, 2 years.**
- As these above market positions roll off the books and the banks look at narrower marginal spreads, **there is going to a huge temptation to "double-up" in order to keep the income flowing at historical levels.** We would think that at least some of the growth exhibited in Table I reflects this reality.

ADJUSTMENTS TO THE BALANCE SHEET AND HISTORICAL MEASURES OF RETURN

In the following five Tables, we make certain adjustments to these banks' earning assets, net interest margins, ROAs, and common equity-to-asset-ratios based on our estimates of "proxy" exposures. We do this because we believe that the existence of these asset substitutes have created distortions in banks' reported financial statements. To summarize, we believe that, at a number of financial institutions, earning assets are understated, while margins, ROAs, and tangible equity ratios are overstated. We also note that the adjusted numbers do not try to adjust for the income derived from above-market swaps against the balance sheet (see Table II).

ADJUSTED EARNING ASSETS

In Table IV, we show average earning asset levels as reported in the banks' second quarter 1993 financial statements and adjust them for those swaps that we classify as asset substitutes (i.e. "proxies"). The banks are then sorted, from highest to lowest, by the change that this adjustment causes. For example, were Banc One to include asset 'proxies' in reported earning assets, the adjusted level would be 26% higher than is currently reported in the financial statements. National City's adjustment would be 24% and so on.

Table IV
Balance Sheet Adjusted For "Proxies"

(\$ In Millions)

Institution	Reported Avg. Earn. Assets	Adjusted Avg. Earning Assets	
		Amount	% Chg Fm Historical
Banc One	65,278	82,178	26%
National City	24,887	30,887	24%
Mellon	29,548	35,803	21%
CoreStates	19,667	23,567	20%
Society	23,152	27,552	19%
First Fidelity	28,182	31,751	13%
Nations Bank	108,881	118,881	9%
First Union	57,645	62,645	9%
Key Corporation	28,508	30,508	7%
SunTrust	33,651	34,501	3%
First Interstate	42,292	43,092	2%
Meridian	11,008	11,008	0%
Bank of New York	36,336	36,336	0%
First Chicago	48,749	48,749	0%
Crestar	11,089	11,089	0%
Fleet Financial	40,961	40,961	0%
Barnett Banks	33,578	33,578	0%
FirstFed Michlgan	9,445	9,445	0%

Source: Company conversations; company reports
E - Lazard Freres Equity Research Estimate

On balance, eleven companies out of our eighteen bank universe have asset proxies and are therefore understating earning assets. In fact, six of these companies are understating their earning assets by more than 10% and, of these, four by over 20%.

In our opinion, the adjustment of earning assets is very important. The understatements distort reported returns. The income from swap positions is included in net interest income but the assets and/or liabilities generating the returns are not on the balance sheet.

ADJUSTED MARGINS

In Table V, below, we have restated these banks' margins to reflect the understatement of earning assets. In other words, we have taken reported net interest income and divided it over a grossed-up earning asset base. The banks are then sorted by the effect that this has on margins, from those most affected to those unaffected. We note at this point that this calculation does not include the contribution of swaps against the balance sheet even though some of these positions with above market yields are contributing an unsustainable level of earnings.

Table V
Net Interest Margin Adjusted For "Proxies"

Institution	Reported Net Int. Margin	Adjusted Net Int. Margin	
		Level	Absl Chg Fr Historical
Banc One	6.30%	4.99%	(1.31%)
CoreStates	5.83%	4.86%	(0.97%)
National City	4.84%	3.96%	(0.88%)
Society	5.35%	4.49%	(0.86%)
Mellon	4.30%	3.54%	(0.76%)
First Fidelity	4.92%	4.39%	(0.53%)
First Union	4.92%	4.52%	(0.40%)
Nations Bank	4.17%	3.81%	(0.36%)
Key Corporation	5.34%	4.98%	(0.36%)
SunTrust	4.87%	4.74%	(0.13%)
First Interstate	4.99%	4.89%	(0.10%)
Meridian	5.05%	5.03%	(0.02%)
Bank of New York	3.76%	3.75%	(0.01%)
First Chicago	2.56%	2.56%	0.00%
Barnett Banks	5.10%	5.10%	0.00%
Fleet Financial	5.06%	5.06%	0.00%
FirstFed Michigan	1.62%	1.63%	0.01%
Crestar	4.73%	4.76%	0.03%

Source: Company conversations; company reports
E - Lazard Freres Equity Research Estimate

Given its large position in swap "proxies", Banc One overstates its margin by the greatest amount (1.31%), followed by CoreStates (0.97%), National City (0.88%), et. al. In fact over half the banks in Table V overstate their margins in excess of 0.30% based on our estimates of the respective understatements of earning assets.

ADJUSTED VERSUS HISTORICAL MARGINS

As we discovered this whole phenomenon of balance sheet misrepresentation, it dawned on us that the lack of disclosure of hidden assets may be partially responsible for the fabled margin expansion of the early 1990s. In order to test this hypothesis, we compare our adjusted margins to those originally reported in 1989, a time, hopefully, before swap positions became widespread at the regional banks. Table VI, below, sorts our banks by the change in adjusted margin to 1989 margin from lowest to highest. It turns out that 7 banks have actually seen a decline in margins over the last three and one half years. Unfortunately, it is very difficult to tell whether this is because of a true margin contraction or because the banks have added these off-balance sheet swaps at narrower spreads than on-balance sheet items carry.

Table VI
Adjusted Margin Vs 1989 Margin

<u>Institution</u>	Adjusted Margin <u>2Q '92</u>	<u>Full Year 1989 Margin (a)</u>	
		<u>Amount</u>	<u>Change</u>
National City	3.96%	4.80%	(0.84%)
CoreStates	4.86%	5.50%	(0.64%)
First Chicago	2.56%	3.03%	(0.47%)
Society	4.49%	4.93%	(0.44%)
SunTrust	4.74%	5.05%	(0.31%)
Banc One	4.99%	5.20%	(0.21%)
First Interstate	4.89%	5.00%	(0.11%)
Key Corporation	4.98%	4.93%	0.05%
Fleet Financial	5.06%	4.96%	0.10%
Nations Bank	3.81%	3.61%	0.20%
First Union	4.52%	4.23%	0.29%
First Fidelity	4.39%	4.07%	0.32%
Crestar	4.76%	4.36%	0.40%
Barnett Banks	5.10%	4.69%	0.41%
Mellon	3.54%	3.10%	0.44%
Bank of New York	3.75%	3.09%	0.66%
Meridian	5.03%	4.36%	0.67%
FirstFed Michigan	1.63%	0.40%	1.23%

Source: Company conversations; company reports

E - Lazard Freres Equity Research Estimate

(a) As originally reported

We would like to point out that a number of banks have been successful in improving their margins over the last several years through better pricing, a decline in interest rates, the existence of a steep yield curve, improvements in the level of non-interest income, and lower levels of non-performing assets.

Again, we remind readers that Table VI above only adjusts for "proxies", not for the beneficial affect of above market swaps against balance sheet cash flows.

ADJUSTED RETURNS ON ASSETS

As with margins, we have adjusted returns on assets for the existence of these shadow assets. Along with improvements in margins over the last few years, the banks have enjoyed a substantial increase in returns on assets. As originally reported, banks have recently posted ROAs as high as 1.50%+ in comparison to the 1.00%-1.20% posted in the 1980s. In fact, reported assets in Table VII range from a low of 0.53% at FFOM to a high of 1.55% at Mellon with 11 of the banks reporting ROAs of over 1.20%.

Table VII
Adjusted Return on Assets (ROA)
(\$ in Millions)

Institution	Reported		Adjusted For "Proxies"		
	Avg. Assets	ROA	Avg. Assets	ROA	
				Adjusted	Vs. Rept'd
Banc One	73,686.4	1.53%	90,586.4	1.24%	(0.29%)
National City	28,321.0	1.45%	34,321.0	1.19%	(0.25%)
Mellon	34,421.0	1.55%	40,676.0	1.31%	(0.24%)
Society	25,544.0	1.52%	29,944.0	1.30%	(0.22%)
CoreStates	22,919.0	1.45%	26,819.0	1.24%	(0.21%)
First Fidelity	31,194.0	1.26%	34,763.0	1.13%	(0.13%)
First Union	65,431.0	1.39%	70,431.0	1.29%	(0.10%)
Nations Bank	122,810.0	1.00%	132,810.0	0.92%	(0.08%)
Key Corporation	31,655.0	1.26%	33,655.0	1.19%	(0.08%)
SunTrust	37,098.0	1.28%	37,948.0	1.25%	(0.03%)
First Interstate	48,990.0	1.11%	49,790.0	1.09%	(0.02%)
First Chicago	56,951.0	1.18%	56,951.0	1.18%	0.00%
Fleet Financial	45,343.0	1.05%	45,343.0	1.05%	0.00%
Crestar	12,395.0	1.09%	12,395.0	1.09%	0.00%
Barnett Banks	37,469.0	1.11%	37,469.0	1.11%	0.00%
Bank of New York	42,013.0	1.24%	42,013.0	1.24%	0.00%
Meridian	12,147.0	1.23%	12,147.0	1.23%	0.00%
FirstFed Michigan	9,706.0	0.53%	9,706.0	0.53%	0.00%

Source: Company conversations; company reports, Lazard Frères estimates
E - Lazard Frères Equity Research Estimate

When adjusted for asset "proxies", these returns come back down to more normalized levels although the "hit" to reported ROAs varies widely depending on the size of the swap portfolio in relation to reported assets. According to our calculations, Banc One, National City, Mellon, Society, and CoreStates are all overstating their return on assets in excess of 0.20%. In fact, while many individual banks have improved returns over the last 5-7 years, the group, when adjusted, shows ROAs that are not much better than those posted by the highest returning banks in the mid-1980s before real estate problems hit the industry.

ADJUSTED EQUITY RATIOS

Clearly, if the existence of asset "proxies" has distorted reported asset levels, then capital levels are somewhat overstated (if one assumes a bank needs capital against what are really treasuries or equivalents). In Table VIII, we adjust tangible equity-to-asset levels to include "proxies" and find that many institutions do not have as much capital as we think they did.

The banks are sorted by the hit to their respective ratios from greatest to least. Adjusted for "proxies", Banc One's tangible equity-to-asset ratio would decline 1.55%, National City 1.30%, CoreStates 1.12%, and so on. Six companies would have reductions in ratios of 40 basis points or more.

While we continue to promote the belief that there is way too much equity in the banking system, the table below clearly shows that there is a question as to the true level of tangible equity-to-assets.

Table VIII
Adjusted Tangible Common Equity-to-Assets

<u>Institution</u>	<u>Reported Average Assets</u>	<u>Adjusted Average Assets</u>	<u>Tangible Equity to Tangible Assets</u>		
			<u>Reported</u>	<u>Adjusted</u>	<u>Change</u>
Banc One	73,686	90,586	8.31%	6.75%	(1.55%)
National City	20,321	34,321	7.34%	6.05%	(1.30%)
CoreStates	22,919	26,819	7.70%	6.57%	(1.12%)
Society	25,544	29,944	6.46%	5.50%	(0.96%)
Mellon	34,421	40,676	5.95%	5.00%	(0.94%)
First Fidelity	31,194	34,763	6.53%	5.85%	(0.68%)
Nations Bank	122,810	132,810	6.12%	5.66%	(0.46%)
First Union	65,431	70,431	5.19%	4.81%	(0.37%)
Key Corporation	31,655	33,655	4.99%	4.69%	(0.30%)
SunTrust	37,098	37,948	7.03%	6.87%	(0.16%)
First Interstate	48,990	49,790	5.70%	5.61%	(0.09%)
First Chicago	56,951	56,951	4.74%	4.74%	0.00%
Fleet Financial	45,343	45,343	4.54%	4.54%	0.00%
Crestar	12,395	12,395	7.45%	7.45%	0.00%
Barnett Banks	37,469	37,469	5.94%	5.94%	0.00%
Bank of New York	42,013	42,013	6.39%	6.39%	0.00%
Meridian	12,147	12,147	7.07%	7.07%	0.00%
FirstFed Michigan	9,706	9,706	5.25%	5.25%	0.00%

Source: Company conversations; company reports, Lazard Frères estimates
E - Lazard Freres Equity Research Estimate

As we created these tables, we became, quite frankly, more and more amazed by the distortions caused by these swap portfolios. Why, when they are so material to the analysis of these companies, is there so little disclosure?

David N. Pringle Lazard Frères Equity Research (212) 632-6147 October 26, 1993

-- Appendix I and Stock Price Tables Follow --

Appendix I
Comparative Capital Ratios

Balance Sheet Assets (on \$1 Billion Principal Amount)

	<u>Ratio</u>	<u>\$ Capital Required</u>
Tier I Capital (a):	4%	\$40 Million - Maximum
Leverage Ratio (b):	5%	\$50 Million
Tangible E/A Ratio (c):	6%	\$60 Million

Swaps (on \$1 Billion Principal Amount)Less Than One Year:

In The Money:	0%	None
Out Of The Money		
Sovereign Gov'ts:	0%	None
Commercial Banks	20% of amount out of \$	Variable (d)
All Others	50% of amount out of \$	Variable (e)

More Than One Year:

Replacement Cost	Variable amount
Plus ½% Notional Principal Amount	plus \$5 million (f)

- (a) As per BIS guidelines for full risk-weighted assets
 (b) Level needed to be considered a well-capitalized institution
 (c) Rumored level to be a "player" i.e. acquirer - depends on CAMEL rating
 (d) To break even with on balance sheet leverage requirements bank would have to be \$250 million out of the money (i.e. in a 25% loss position)
 (e) To break even with on balance sheet leverage requirements bank would have to be \$100 million out of the money (i.e. in a 10% loss position)
 (f) To break even with on balance sheet leverage requirements bank would have to be \$45 million out of the money (i.e. in a 4.5% loss position)

RECENT PRICES AND TICKER SYMBOLS OF COMPANIES MENTIONED IN THIS REPORT

Banc One (NYSE: 40 - ONE)	Bank of New York (NYSE: 55 - BK)
Barnett (NYSE: 43 - BBI)	**CoreStates (OTC: 29 - CSFN)
Crestar (NYSE: 40 - CF)	First Chicago (NYSE: 45 - FNB)
First Fidelity (NYSE: 42 - FFB)	First Interstate (NYSE: 60 - I)
First Union (NYSE: 41 - FTU)	**FirstFed Michigan (OTC: 24 - FFOM)
Fleet Financial (NYSE: 32 - FLT)	Key Corporation (NYSE: 35 - KEY)
Mellon (NYSE: 56 - MEL)	**Meridian (OTC: 32 - MRDN)
National City (NYSE: 26 - NCC)	NationsBank (NYSE: 49 - NB)
Society (NYSE: 29 - SCY)	SunTrust (NYSE: 44 - STI)

**Lazard Frères & Co. makes a market in the these securities.

Moody's Special Comment
 Industry Group: Financial Institutions
June, 1993



Contacts

Analyst	Phone
New York Office	
Douglas Lucas	(212) 553-1653
Mara W. Hilderman	

MOODY'S ASSESSMENT OF DERIVATIVE RISK

June 8, 1993

Presented by
Douglas Lucas
Moody's Investors Service

Moody's Review of Derivative Activity

Moody's is an international rating agency that offers its opinions on the credit quality of industrial companies, financial institutions, structured transactions, mutual funds, and sovereigns. We are interested in derivatives because of the impact they have on the credit quality of the entities we rate. We have focused attention on this topic for some time and we wrote our first special comment devoted solely to derivatives in January 1991. I will give a general overview of the situations in which we find ourselves examining derivative risk. Then, I will concentrate on Moody's examination of derivative usage at commercial and investment banks.

Moody's looks at derivative activity, to take one example, when we analyze industrial companies that use interest rate products to hedge their liabilities, or use currency products to hedge their foreign cash flows or employ commodity derivatives to hedge the cost of their production inputs. In this context, derivatives are usually a minor, and usually a positive, factor in the overall credit picture of the industrial company.

There are exceptions, however, when derivative usage at an industrial firm becomes a more significant, and negative, factor in the industrial company's credit quality. Serious problems can occur when industrials have moved from the use of derivatives to hedge risk to the use of derivatives to assume speculative risks. We are generally skeptical of the claim that, as a user or producer of an underlying commodity, the industrial firm has a natural advantage in speculation. Our focus on derivatives in rating an industrial firm usually revolves around the degree to which the firm uses derivatives to hedge risks inherent in their business and the degree to which they use derivatives to speculate in those risks.

Moody's also looks at derivatives in the context of structured financings or asset-backed debt. Occasionally, the credit quality of a structured security we rate depends upon both the performance of underlying receivables and a derivative instrument. For example, a currency swap may be an integral part of a structure, translating the fixed interest payment on Italian Lira auto loans into U.S. dollar LIBOR payments reflective

of the terms of the structured security. In assessing the credit quality of the structured security in this example, Moody's would analyze (1) the match between cash flows generated by the underlying asset and those due the derivative counterparty, (2) the match between cash flows coming from the derivative counterparty and those due the holders of the structured security, (3) the credit quality of the derivative counterparty, and (4) the priority of the derivative counterparty as a creditor of the issuer versus the status of the rated debt.

Derivatives have also been used in structured finance transactions as credit enhancement. For example, Moody's has rated LDC debt-backed transactions that relied on a put option on the underlying LDC debt to guarantee a sale amount sufficient to retire the senior structured debt. In this case, Moody's analysis of the counterparty and the terms of the derivative mirrors the analysis of a letter-of-credit-backed transaction. The two broad aspects of this analysis are (1) establishing the credit quality of the put provider and (2) making sure the mechanical and legal structure of the transaction allows the credit substitution to work the way it is intended.

Moody's also examines derivatives in the context of rating mutual funds, both in the U.S. and internationally. In addition to our reliance on a Moody's rating, assigned to either the instruments themselves or to the counterparties, our focus is generally directed on whether the derivatives are used as hedging devices or for speculative aims. In each instance, the use of derivatives is examined within the context of each investment vehicle's published investment objectives and policies as well as local practices and regulations.

Recently, derivative product subsidiaries, designed to act as a Aaa counterparty to the parent financial institution's derivative customers, have been formed. These entities adopt extensive operating policies to mitigate the market and credit risk of their activities; rating them requires Moody's most focused analysis of derivative risk. A major component of the analysis is the degree of legal separation between the subsidiary and its lower-rated parent. These subsidiaries cannot be rated higher than their parents unless that legal separation exists. We rated the first of these subsidiaries, Merrill Lynch Derivative Products, in November 1991 and rated the most recent one, Salomon Swapco, in February 1993. Moody's reports on these entities describe our rating rationale. (Please see "Moody's Rates the Counterparty Risk of Merrill Lynch Derivative Products, Inc. Aaa" and "Moody's Assigns Aaa Rating to Salomon Swapco Inc. for Counterparty Risk.")

Moody's analysis of significant derivative proprietary - trading activity and of deriva-

Copyright © 1993 by Moody's Investors Service, 99 Church Street, New York, NY 10007.

EDITOR'S NOTE— All information contained herein is copyrighted in the name of Moody's Investors Service, Inc. ("Moody's"), and none of such information may be copied or otherwise reproduced, repackaged, further transmitted, transferred, disseminated, redistributed or resold, or stored for subsequent use for any such purpose, in whole or in part, in any form or manner or by any means whatsoever, by any person without Moody's prior written consent.

All information contained herein is obtained by Moody's from sources believed by it to be accurate and reliable. Because of the possibility of human and mechanical error as well as other factors, however, such information is provided "as is" without warranty of any kind and Moody's, in particular, makes no representation or warranty, express or implied, as to the accuracy, timeliness or completeness of any such information. Under no circumstance shall Moody's have any liability to any person or entity for (a) any loss or damage in whole or in part caused by, resulting from, or relating to any error (negligent or otherwise) or other circumstance involved in procuring, collecting, compiling, interpreting, analyzing, editing, transcribing, transmitting, communicating or delivering any such information, or (b) any direct, indirect, special, consequential or incidental damages whatsoever, even if Moody's is advised in advance of the possibility of such damages, resulting from the use of, or inability to use, any such information.

The credit ratings and other opinions contained herein are, and must be construed solely as, statements of opinion and not statements of fact or recommendations to purchase, sell or hold any securities. NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY SUCH RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER. Each rating or other opinion must be weighed solely as one factor in any investment decision made by or on behalf of any user of the information contained herein, and each such user must accordingly make its own study and evaluation of each security and of each issuer and guarantor of, and each provider of credit support for, each security that it may consider purchasing, holding or selling.

Pursuant to Section 17(b) of the Securities Act of 1933, Moody's hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's have, prior to assignment of any rating, agreed to pay Moody's for the appraisal and rating services rendered by it fees ranging from \$1,000 to \$125,000.

PRINTED IN U.S.A.

2 Moody's Special Comment

tive dealer activity usually occurs in the context of our rating of a commercial bank or security firm. This will be the topic of the remainder of my remarks. The goal of our analysis is to form a subjective opinion about the effect derivatives have upon the credit quality of the bank. We do not have any one set of ratios or mathematical formulae that can dictate an opinion. Just as we do not underwrite every asset in a bank's loan portfolio, we also do not examine each and every derivative transaction or recalculate their market value. Rather, we form an opinion about management's appetite for risk and the systems they have in place to monitor, report, and control the risk of derivatives at that institution.

Perhaps our approach can best be understood by describing the questions that we ask ourselves and management when we look at derivative risk at a commercial bank or security firm. The questions regard four main areas: an overview, market risk, credit risk, and operation risk.

Overview

As a general introduction, we first want to understand the purpose of the bank's derivative activity. Are derivatives used to take market views? The degree to which an institution is willing to assume market risks through its derivative or cash activity bears directly on its own credit quality. Are derivatives entered into to gain fee income from fulfilling customer orders? Besides providing a source of revenue, a bank's ability to service its customer's demand for derivative products is important in maintaining its franchise. Being able to offer interest rate and currency swaps, for example, makes the institution a more attractive underwriter and distributor of securities. Are derivatives used to hedge the risk of cash positions elsewhere at the bank -- an aspect of derivative usage that is part of the larger question of asset-liability management, including interest rate and currency risk? Moody's considers this aspect of a financial institution's management vital in assessing its credit quality.

Generally, financial institutions use derivatives for more than one purpose, and similar institutions use derivatives in similar ways. Regional banks use derivatives to hedge risk as well as to assume certain risks. Large money center banks and security firms use derivatives for these two reasons, but also earn a spread by servicing customer demand for derivatives. Moody's adjusts the focus of its questions and analysis according to the characteristics of the institution.

We next explore the specific derivative products the institution enters into and make sure we understand how they fit in with the purposes cited previously. We try also to understand the rationale of banks that use derivatives in place of cash items, and ask why derivatives are considered to be a more attractive investment. We are less concerned if the derivative is used in place of the cash item because it is cheaper or because it is easier to manage, but we are more concerned if the derivative is used because of some inefficiency in the measurement of capital sufficiency.

We would also like to understand how the derivative desks fit into the institution's organizational and reporting structure and how, within the firm's derivative activity, reporting relationships aggregate across products and geographical locations. What, for example, is the approval process for new derivative products? This will allow us to better gauge the effective dissemination of management policies. More specifically, we would like to know the number and experience of staff engaged in specific functional areas. A key consideration is whether back office support has kept up with front office staffing.

Market Risks

After the general overview, we address the measurement and control of market risk in the derivative portfolio. The first topic is the technical issue of measurement of current values. We explore with management the valuation models that are used and the selection of market variables that are put into the models. Concerns here are the as-

sumptions made regarding derivative market liquidity and the potential effect upon values arising from market illiquidity. We feel liquidity risk is often underestimated in commodity derivatives.

An even thornier analytical issue than the pricing of current values is the estimation of how those values could fluctuate with changes in market variables. For example, does the bank test market valuation changes with scenarios or do they use a simulation approach? If they use a scenario approach, what are the scenarios? If they test interest rate risk with parallel interest rate shifts, how far and how fast are the shifts? How are twists in the yield curve tested? What do they do to test for currency risk and option risk? How many scenarios are tested? How were the scenarios developed for each product? How conservative are they? If simulation methodology is used, how is volatility and correlation factored into the simulations? What number of sigmas are used as the test? And how, in fact, is all this market risk quantified? Is it measured in terms of accounting income or change in market value? Moody's would prefer that market value be used if accounting income measures would hide a permanent impairment in future income. Overall, Moody's examines whether the sophistication of a bank's analytical approach matches the depth of its involvement in the derivatives market and the complexity of its positions.

Another issue is the breadth of the market valuation process. Do the institution's computer systems allow it to aggregate both its estimate of current market values and the potential fluctuation in those values across all its locations and product desks? Does the sensitivity model simultaneously consider deposit and other liabilities, and what assumptions about the cost of funds are made? Moody's believes that the ability to measure the market risk of a derivative portfolio is a prerequisite for its control. But we are generally disappointed with the available analysis of market risk at financial institutions, especially the ability of banks to model their entire asset and liability structure simultaneously.

A management issue relating to market risk is the degree of separation between customer order flow business and the bank's risk trading. What traders are allowed to take a market position? Do the same traders do both risk positioning and customer order taking? How does the supervision of market flow traders versus proprietary traders differ? Would order flow traders be sanctioned for making market gains in their books? Moody's views separation of positioning and order fulfillment vital. Only then can the effectiveness of hedging in the order flow book and risk management in the proprietary trading book be measured.

We are also interested in the proprietary trading strategies that are used for each product and the way in which market risk is hedged in each product. What limits are in place for risk taking and how are they enforced? What is the process for a trader to get a higher risk limit generally or for a specific trade? Who has approval powers? The answers to these questions speak directly to the quality of controls at the institution.

A useful tool to quantify historic market risk is a histogram of daily trading profit and loss. This gives us a view of how risky the positions are on a day-by-day basis, before the portfolio effects of a longer time period. We would also ask about historic results during particularly volatile periods such as October 1987 for equity derivatives and August 1992 for currency products.

Credit Risk

The two main analytical issues explored in our market risk discussion, calculation of current market value and the calculation of potential fluctuation in market value, carry on into our discussion of credit risk and the calculation of counterparty credit exposure. Here, however, these analytical issues are complicated by netting. The problem is both one of system capability and legal enforceability.

4 Moody's Special Comment

As a systems problem, one issue is how easily and quickly all transactions with a particular counterparty can be aggregated together into a single net credit exposure. The problem here is combining information from all of the bank's geographical locations and products desks on a counterparty by counterparty basis. Moody's has found that the collection of this data and the compiling of exposures can take an inordinate amount of time at some institutions.

An even tougher problem is the calculation of future fluctuations in counterparty exposure taking into account offsetting characteristics among individual derivative contracts. For example, an increase in exposure to a fixed pay interest rate swap may be offset by decreased exposure on a floating pay interest rate swap so that the current mark-to-market does not change significantly in different interest rate environments. Moody's has found that many systems, while capable of netting current exposures, take shortcuts in calculating future fluctuations. Some large swap dealers, for example, use a fixed percentage of notional as the "add on" to account for future fluctuations in exposure. This would overestimate future fluctuations to the degree that swaps are on opposite sides of the same market variable. While this is a conservative measure, the degree of conservatism varies markedly from a counterparty with swaps on both sides of a market variable to a counterparty with swaps all on the same side of the market variable. It would then be hard to evaluate these results. Moody's prefers more accurate measures of risk rather than ones that might be too conservative, especially if the degree of conservatism is hard to judge.

But the system procedures in place to net current or future derivative exposure must be justified on legal grounds. Since the legal certainty of netting varies by country, Moody's is interested in how this is handled by the bank. Are there any counterparties, for example, that the bank deals with on a gross exposure basis rather than on a net exposure basis? This is prudent where the legal status of netting is especially unsettled. Moody's is also concerned that the institution's own swap documentation supports netting. We have been surprised at the large number of unsigned master agreements at dealers. In this case, netting would probably not be enforced even in those jurisdictions where it is most certain.

We also explore the way credit limits are determined and the role of the credit officer. Moody's feels that a good credit culture is more apt to exist where the credit officer has the maximum amount of authority and autonomy. And a real time calculation of credit usage, across all the sales forces of the international offices and product desks of the institution, will help avoid overexposure to a particular counterparty.

The use of collateralization can be a risk-reducing measure. Moody's is interested in how the demand for the bank's collateral could vary under two-way collateralization, especially in a collateralization system that demands more collateral in the case of credit downgrades. Here, the institution might have to put up collateral at the same time it is weakened by the effects of deteriorating credit quality.

Supporting documents we find useful in our credit risk evaluation include the gross and net exposures to the most significant counterparties, aggregate gross and net exposures to counterparties by rating, and sample master agreements.

Operating Risk

In our discussion of operating risk, we focus on accounting, compliance, and controls, and also on the level of management's expertise and involvement in the bank's derivative business.

One issue we bring up that may seem too simple to spend time on is position control—the recording of trades so that the bank knows what agreements it has entered into. While this may seem simple, it is not always done in a manner that protects the institution from a trader overstepping his risk limits. There have also been cases where an entire trading unit has left for another firm, and management has had a hard

time figuring out what was in the bank's book. We look for separate checks by accountants and separation of duties between traders and accountants. Anecdotal information about previous problems that were discovered by internal and external auditors and how they were resolved is useful to us in forming an opinion about internal controls.

Throughout all of our examination we have been listening to management answer our questions and gauging their level of expertise and involvement in the derivative business. Our concern is that, as stewards of the institution's risk exposure and credit quality, senior management be able to convey institutional values to the derivative traders. This cannot occur unless senior management is educated and engaged. We also want to know explicitly what oversight procedures are in place and what reports senior management regularly receives. We ask management how they view the capital needs of this business and how capital is allocated to specific product areas. We also ask management how they assess the performance of their derivative units, and what models of risk-adjusted return they use.

Conclusion

The large numbers, cryptic nature, and opaque disclosure of the derivatives market have been factors in bringing it to the attention of regulators, media, and investors. We at Moody's have worked hard to understand the risks inherent in the industry through our discussions with practitioners and regulators.

In summing up Moody's view of derivative risk at financial institutions, I would point out that, in the past, very few banks we rate have been materially affected by their derivative activities except in a positive way. Risk-adjusted returns to derivative dealers have generally been high and losses have not had significant credit implications. There will be losses at individual institutions in the future from bad risk analysis, bad controls and/or plain bad luck. In some cases, these may materially affect perhaps one quarter's earnings, but we believe it will be quite rare that derivative activity will threaten the credit quality of the institution. We don't think derivatives are a ticking time bomb for the banking industry as a whole.

It is also important to note that Moody's has never changed an institution's rating solely on the basis of its derivative activity. Typically, the factors arguing for an adjustment in our rating of a bank cut across its on balance sheet and off balance sheet activities. Risk policies and practices in the loan portfolio or in merchant banking activities usually find their reflection in the risk policies and practices in the institution's derivative activities.

I would say finally that our view of derivatives remains the same as it was over two years ago when we wrote that first special comment on the subject. Derivatives are usually used by financial institutions to produce income in ways that assume risks similar to the risks already undertaken by the financial institution in its other activities. Yet, as credit analysts we are downside oriented and it is the exceptions that concern us. To those who point out that derivatives do not create any new risks we nod yes but think to ourselves "Right. But they offer a new way to foul up in an old risk."

FASB VIEWPOINTS



A supplement to STATUS REPORT, the newsletter of the Financial Accounting Standards Board • December 31, 1993

Improving Disclosures about Derivatives

by Timothy S. Lucas and Janet Danola, FASB Staff

As 1993 wound to a close, a number of people in Washington, DC and elsewhere expressed interest in and concern about "derivative" financial instruments—swaps, options, forwards, futures, and a multitude of variants that have emerged as a part of our financial landscape. One element of that interest and concern involves financial reporting, which may be viewed as part of the problem or, more optimistically, as part of the solution. Some have suggested that financial reports do not contain understandable information about those newer forms of financial instruments and have urged the FASB to enhance disclosure requirements for derivative financial instruments.

In December, the Board agreed to explore the possibility of enhancing disclosures about derivative financial instruments by building on existing disclosure requirements in FASB Statements No. 105, "Disclosure of Information about Financial Instruments with Off-Balance-Sheet Risk and Financial Instruments with Concentrations of Credit Risk," and No. 107, "Disclosures about Fair Value of Financial Instruments."

On December 20, twenty-five individuals representing corporate users of derivatives, dealers that sell (and invent) derivatives, auditors, government regulators, academic researchers, and financial analysts met with the Board and staff to discuss possible improvements that could make disclosures about financial instruments more informative and easier to understand. The discussion was lively and covered a wide range of topics and views. The Board's project will be a significant challenge, aiming to issue an Exposure Draft early in 1994 and complete an improved standard in time for 1994 financial reports.

In the meantime, preparers of financial statements throughout the country are facing that challenge today. They have an opportunity to make their 1993 financial reports more meaningful and more useful. Many of the financial statement preparers we met with in December told us that they have already made plans to improve their

disclosures about financial instruments. The regulators and financial statement users strongly encouraged those voluntary efforts.

Based on suggestions made at the December meeting, reviews of 1992 annual reports, and various other information available to the FASB staff, we have developed some suggestions that we believe can improve disclosures about financial instruments including derivatives. Some of those ideas may find their way into the Board's project. Some may evolve beyond recognition. Some will not be applicable in all situations. If our suggestions contribute to understanding and dispel some of the confusion and concern surrounding derivatives, this paper will have contributed modestly to the FASB's effort to improve financial reporting.

To that end we offer the five suggestions on the reverse page for the consideration of those who are preparing 1993 financial reports.

We believe these ideas can bring 1993 financial reports more in line with users' needs. If you found them helpful or if you have other ideas, we would like to hear from you. We will be working hard over the next few months to develop a more formal proposal and your experience and views can be helpful to us. Also, please consider sending us a copy of your 1993 financial instruments disclosures (P.O. Box 5116, Norwalk, CT 06856-5116).

Timothy S. Lucas is director of research and technical activities at the Financial Accounting Standards Board. Janet Danola is an assistant project manager on the derivatives project. Expressions of individual views by members of the FASB and its staff are encouraged. The views expressed in this article are those of Mr. Lucas and Ms. Danola. Official positions of the FASB are determined only after extensive due process and deliberations.

Five Suggestions

1. Explain What You Are Doing

We have been told that one factor contributing to confusion and concern has been inadequate explanation of the reasons companies have entered into various types of financial instruments. A narrative description of the programs implemented with derivatives and the objectives of those programs would be very helpful.

If instruments are held as part of a risk management or hedging program, a discussion of the types of risk involved (for example, interest rates, foreign currency) and the strategies used to compensate for those risks would be a useful starting point. A few key numbers or comments assessing how well the strategies worked would be even better. If the risks involve anticipated transactions, we suggest disclosure of the periods in which those transactions will occur.

Dealers have an extra challenge because a snapshot view of positions at one date is not likely to tell the story. Separating disclosures about dealer activities from those for instruments held for other purposes is helpful. Some quantification of dealer activity during the year, such as the percentage of trading volume for each type of risk or each class of instrument would be most informative.

2. Pull It Together

Some companies have spread their disclosures about the fair value of financial instruments throughout the notes to the financial statements. An approach that puts those disclosures in one place is much more likely to achieve the objective of meaningful and useful financial reporting.

3. Relate the Fair Value Disclosures to the Balance Sheet

Statement 107 calls for disclosure of the fair value of financial instruments, including both on- and off-balance-sheet financial instruments. We understand that those disclosures are most useful when financial statement users can compare the fair value of a class of financial instruments with the corresponding book value and can understand where that book value appears in the balance sheet. This is another way to "pull it together." For example, financial statement users want to be able to compare the fair value of a loan portfolio with the net carrying amount of that portfolio. Financial statement users also want to know whether the fair value of a financial instrument is positive (an asset) or negative (a liability).

4. Don't Net or Group Unlike Financial Instruments

We believe that the more informative presentations under both Statements 105 and 107 report information for each class of financial instrument separately. It is helpful to explain the relationship between a derivative instrument and a related asset or liability (such as a fixed-rate loan and a swap that is intended to convert it to a floating-rate loan), but it is important to show the two related items separately. For example, if the derivative and the related asset or liability are combined in the fair value disclosures, the opportunity to understand the reason for and the effect of the derivative is lost. It is also important in our view to separate financial instruments in a loss position from similar instruments in a gain position. For example, a company would report interest rate swaps with positive fair values separately from those with negative fair values.

5. Go beyond Minimum Compliance to Communicate

Going beyond the minimum required by Statements 105 and 107 can contribute to effective communication. For example, it would be helpful to include ALL derivatives in the disclosures required by Statement 105 rather than limiting the disclosure to the specific instruments within the scope of that Statement. That is, consider providing the Statement 105 disclosures for options held, interest rate caps and floors held, fixed-rate loan and mortgage purchase commitments held, and swaps or other kinds of derivatives.

EITF Issue No. 91-4, "Hedging Foreign Currency Risks with Complex Options and Similar Transactions," requires disclosures for certain purchased option strategies. It would be informative to financial statement readers if a company extended those disclosures to hedges of other risks and those using other derivative instruments.

AMERICAN BANKER--January 11, 1994

Clinton Asks Regulators To Coordinate On Swaps

By CLAUDIA CUMMINS

WASHINGTON — To keep an eye on the burgeoning derivatives market and other financial issues, the Clinton administration has resurrected a high-profile interagency committee that was formed to study the stock market crash of 1987.

In a Jan. 3 letter to top financial regulators, Treasury Secretary Lloyd Bentsen requested that the so-called Working Group on Financial Markets refocus its efforts toward coordinating government policy in regulating the over-the-counter derivatives market.

Other Issues

He also asked the group to work together on other financial issues that cross markets and regulatory agencies, including risks in the payment and settlement systems.

"Although the initial impetus for forming the working group was the October 1987 sharp decline in equity prices, it is appropriate for the working group to consider other issues not directly related to that market event" Mr. Bentsen said in the letter.

"This is especially true since potential problems in financial markets may cross current jurisdictional lines among the relevant government agencies," he added. "The working group can serve to facilitate coordination of policies and actions of the various government agencies in response to significant new developments in financial markets and to market problems and emergencies."

The group — comprising the heads of the Treasury Department, Federal Reserve, Securities and Exchange Commission, and Commodity Futures Trading Commission — met Monday with presidential economic adviser Robert Rubin.

At that meeting, the participants hoped to spell out a more explicit set of objectives for the reinvigorated committee.

Congressional Pressure

The initiative marks the first formal governmentwide effort to coordinate derivatives regulation. It comes in response to increasing pressure from Congress to beef up oversight of the markets, and follows a series of high-profile studies that recommended the formation of such an interagency effort.

It also comes amid government efforts to more carefully coordinate all financial policy, with a recognition that the most important issues are broader than the oversight of any single agency. The most visible of these is the administration proposal to consolidate the bank regulatory agencies.

But while other key banking issues are expected to be taken up by the revamped committee,

Risks in the payment and settlement systems also are to be addressed.

the group hopes to keep away from this hot-button issue. The Fed and the administration are still fighting bitterly about the issue, with the Fed last week introducing a proposal of its own.

The working group on financial markets has met only infrequently since completing its review of the 1987 market crash.

Out of Mothballs

But the administration decided to bring the committee out of hibernation, figuring that a mechanism already was in place to coordinate policy across the agencies, which it wanted to do.

The executive order establishing the committee calls for it to undertake efforts "enhancing the integrity, efficiency, orderliness, and competitiveness of our nation's financial markets, and maintaining investor confidence."

Members of the committee have tried to keep the renewed effort low-profile, not wanting to convey the impression that they fear a disaster of the magnitude of the 1987 stock market crash is imminent.

In his letter, Mr. Bentsen said he saw the working group as a good way to carry out the Commodity Futures Trading Commission's recent recommendation to set up an interagency task force on derivatives oversight, which emerged from a congressionally mandated study.

Differ on Membership

But he did not mention a recent threat by Rep. Jim Leach, R-Iowa, to introduce legislation mandating the formation of a new interagency committee if the regulators did not create one on their own.

The administration's effort differs from these two calls in a significant aspect: membership. While studies suggested participation by all the banking agencies, the financial market working group excludes the heads of the Office of the Comptroller of the Currency, the Federal Deposit Insurance Corp., and the Office of Thrift Supervision.

The banking agencies have already set up an interagency task force on derivatives, which has been meeting for several months.

In his letter, Mr. Bentsen suggested that that group report to the financial markets committee on bank-related derivatives issues.

He also suggested that other staff groups be set up to consider issues like financial reporting of derivatives or derivatives use by nondealers.

Mr. Bentsen also asked the group to consider other issues "that may impinge on the effective functioning of U.S. financial markets."

"For example, the working group could usefully study the risks due to the time lag between the moment a securities trade is executed and the time the transaction is finally settled, and make consensus recommendations concerning ways of reducing these risks," he wrote. □

PAUL HEWITT

In 1990 and 1993, the federal government imposed two monster tax increases on American families in the name of deficit reduction. The medicine didn't work. America's national debt is still spiraling out of control.

At the beginning of fiscal 1994, the gross national debt stood at \$4.4 trillion, with projections to grow another \$311 billion this year. Net interest on the national debt reached \$198 billion last year, making it the third largest program in the budget — after Social Security and defense.

And Congress isn't even close to controlling the problem: The projected budget deficit for fiscal 1994 is \$253 billion, not including the costs of the Clinton health plan, which Harvard economist Martin Feldstein says could increase deficits as much as \$120 billion per year.

What does this mean for you and me? Consider: Last year the average American household paid \$1,700 in taxes just to finance interest on the national debt. Think about it: A 25-year-old who saves \$1,700 a year, earning 6 percent interest, can save \$263,000 by age 65. This is the money you and I won't have in the future for clothes, college tuition or family vacations.

It gets worse. Interest costs on the national debt are expected to grow by at least 65 percent during the next 10 years, pulling that much harder on your pocketbook. Meanwhile, over the next five years the Clinton administration plans to increase the nation's debt by another \$1.1 trillion, or about \$12,100 per

Not even close to a solution

Getting deeper and deeper in debt

household.

Mushrooming deficits are not only bad for taxpayers, but bad for the country. They make it harder to finance the investment we need to raise long-term living standards. In the early 1960s, federal borrowing absorbed 1 percent of net private savings in America — by 1992, it soaked up a whopping 71 percent. As a result, America now has the lowest savings rate in the industrialized world and must depend on foreign savers for its net investment.

Why such an explosion of the national debt? Payments for the elderly. During the next decade, annual federal spending is expected to grow by roughly \$900 billion — or \$8,700 more per family. The majority of that will go toward entitlement programs — Social Security, Medicare, Medicaid payments to the elderly, and federal pensions.

As a result, ever-increasing taxes and deficits are tied closely to the number of Americans in old age. The elderly population will skyrocket when the baby boom generation reaches the age of entitlement

in 2007. That's when the real debt crisis will begin. By 2030, the combined costs of Social Security and Medicare are projected to equal 48 percent of total U.S. payroll.

Future retirees need to be aware of the precariousness of the benefits they are being promised. More than \$1 trillion is owed by the Treasury to the various federal trust funds, such as Social Security, Civil Service Retirement and Medicare. Their listed assets are no more than IOUs, and Congress can liquidate the assets of these trust funds and any obligation to dispense the funds at its own discretion.

Significant reforms are needed now — before our national debt reaches critical mass. For one thing, deep new tax incentives should be granted to encourage personal retirement savings. At the same time, we need to rethink the amount of and eligibility requirements for entitlement benefits. A recent government study, for example, suggests that about \$150 billion in entitlements benefits last year went to households with incomes of more than \$50,000.

Incredibly, Congress is doing virtually nothing to address the problem. A total of 1,594 bills were introduced last session to increase government spending. Only two of the 332 bills to cut spending would have trimmed old-age benefits, and neither explained how to do it.

Meanwhile, every dollar of federal spending now adds 21 cents to the net national debt. Without reform of entitlement programs, Americans — young and old — face a financially uncertain and potentially disastrous future. Either we must willingly make the tough choices now, or we most certainly will be forced to make even more painful decisions later. And later is just around the corner.

Paul Hewitt is vice president for research of the National Taxpayers Union. This article is adapted from his article in the winter issue of Policy Review, the quarterly journal of the Heritage Foundation.

Noted Economist Sounds Warning On Weakness of Swaps Regulation

By JAMES R. KRAUS

LONDON — Major industrial nations should undertake a comprehensive review of financial regulation and supervision, according to Henry Kaufman, a New York-based money manager and economic consultant.

Speaking in London last week, Mr. Kaufman said that the rapid expansion of trading in derivatives has led to a "definite weak spot in official supervisory organizations and capabilities."

The economist, who gained renown for his pessimistic predictions about rising interest rates when he worked for Salomon Brothers in the early 1980s, is the latest prominent financial figure to warn about the dangers inherent in derivatives trading.

Prompt Action Urged

He emphasized that a new commitment to financial regulatory and supervisory reform should be made while financial markets are still relatively calm and there is no crisis to be dealt with.

"Continuing to put that off until some unforeseen shock exposes those inadequacies could inflict a great deal of financial pain and cost," he said.

Mr. Kaufman stressed that one of the main reasons the current regulatory system is inadequate is because it was designed for a segmented and compartmentalized financial world that no longer exists.

The economist added that although he recognized the benefits of financial derivatives including futures, forwards, interest rate and currency swaps, and related options, the risk involved with financial derivatives — not only the risks to individual participants but the broader risks to the economy and the financial system — may not be fully appreciated, either by market participants or by official financial supervisors and regulators.

List of Recommendations

Mr. Kaufman made six recommendations to improve the regulatory system and deal with the

expansion of derivatives trading and related issues.

- Bring together banking securities and insurance regulators to harmonize accounting, disclosure, and trading standards to reduce differences between countries.

- Extend regulatory coverage to financial institutions that are current unregulated, such as finance companies. If this is not done, Mr. Kaufman warned, there will likely be a shift in business away from regulated entities and the safety and soundness of the financial system will suffer.

- Clarify regulatory oversight of securitization and bring securitized credits under regulatory supervision.

- Strengthen capital standards with regard to

The expansion of derivatives trading has led to a weak spot in supervisory organizations, Henry Kaufman said.

evaluating market risk and risks associated with off-balance sheet activities.

- Reach an international agreement on the investment powers of universal banks.

- Establish a new international institution that would serve as the focal point for regulatory harmonization, possibly by creating a separate board that would oversee major international institutions and markets.

Trend to Permissiveness

Mr. Kaufman pointed out that the growth of financial derivatives is part of a long-standing movement toward permissiveness in financial regulation, technology-driven financial innovation, massive securitization of mortgages and other products, sweeping internationalization of trading in currencies, bonds, and equities, and a shift toward institutionalizing portfolio investment. □

Bundesbank warns of threat from growth in derivatives

By David Waller in Frankfurt

THE BUNDESBANK today warns that the growth of derivatives markets could endanger the stability of the world financial system.

In its monthly report, the German central bank argues that the increase in the use of options, futures and other complex derivative instruments has led to an interlinking of the world's financial markets that makes them more "vulnerable to crisis".

The bank's concerns echo fears voiced last year by regulators, including Mr Gerald Corrigan, then New York Federal Reserve Bank president. However, recent reports, including one by the Bank of England, have been more conciliatory.

Derivatives are financial instruments whose value is based on underlying assets, such as a currency, interest rate or share price. The Bundesbank calculates such transactions for German banks alone totalled DM6,116bn (\$3,775bn) in mid-1993, which is the equivalent of 90 per cent of the balance sheets of the entire German banking sector.

The notional amount of futures contracts traded on the world's exchanges every year has reached \$140,000bn while the notional outstanding amount of swaps (contracts entered directly between banks) is about \$4,500bn.

In today's report the Bundes-

Derivatives warning

Continued from Page 1

bank recognises the positive aspects of derivatives - that they can be used to hedge risks and allow banks and companies more flexibility in managing their assets and liabilities.

But it warns that the collapse of a leading market participant or extreme market turbulence could set off a "chain reaction", that could in turn prompt a liquidity crisis in the cash markets and endanger the whole financial system.

"Such developments can only be avoided if all market partici-

pants are aware not just of all the ways in which such instruments can be deployed, but also of the risks attached to using them," the Bundesbank says.

The central bank warns against "fair-weather" risk and control mechanisms for derivatives business. And it suggests ways of mitigating the risks.

Market participants should improve their risk recognition systems, and disclosure requirements should be improved so that banks can no longer hide much of such business "off balance-sheet", the Bundesbank says.

REGULATION

Temperature has cooled markedly

EIGHTEEN months ago, the approach of regulators and legislators to the over-the-counter derivatives market was, if not hostile, certainly combative.

The blunt warning about derivatives sounded in January 1992 by the then president of the Federal Reserve, Mr. Gerald Corrigan, still rang loudly in bankers' ears, and a small army of regulators from the US and overseas (including the New York Federal Reserve and the Bank of England) were stirring the lightly regulated OTC business.

At the same time, lawmakers in the US were getting in on the act. Badly burned by the multibillion dollar collapse of the US savings and loan industry and by the meltdown in the junk bond market in the late 1980s, and by the near-collapse of some of the country's biggest banks at the start of the 1990s, Congress did not want to be caught asleep on its financial watch again.

Eager to be fully informed of the growth of the over-the-counter derivatives business and its potential impact upon public policy, various key finance and banking committees originated their own inquiries, and several leading members of Congress hinted at the possibility of legislation to control, if not curb, the growth of derivatives.

At that time, the creators and users of derivatives were being put on the defensive. Essentially, regulators and US legislators were asking them to prove that the myriad of risks that banks and corporations take on when using derivatives did not threaten the health of an increasingly inter-connected global financial system.

Over the past 18 months, the banks and securities houses which create and sell derivatives, with the help of the corporations and institutions which use them, have helped answer some of the many questions surrounding the derivatives business. The result: the temperature of the regulatory climate surrounding the derivatives business, so hot 18 months ago, has cooled.

Mr. Joe Bauman, head of business development for global derivatives at Citibank

for the industry in his capacity as chairman of the International Swaps and Derivatives Association (Isda), says regulators and legislators are definitively taking a more "constructive and understanding" approach to the business today. "They have shown a willingness to take a harder look to get behind the generalities."

Mr. Bauman and other bankers point out that regulators were taking such an interest in derivatives primarily because they did not understand the complexities and intricacies of business. Having failed to track the early development of derivatives, regulators were behind from the start, and struggled to keep up with the hectic pace of innovation.

This is a point that the regulators have openly conceded. Last year the then US Treasury secretary Mr. Nicholas Brady referred to the "wide knowledge gap between regulators and regulated", echoing earlier comments from a senior Bank of England figure who said the gap was "too great for normal communication".

Since then, the knowledge gap has narrowed. Not only have the regulators started, and in many cases completed, their investigations of derivatives, but banks have gone out of their way to educate regulators about the business. When it comes to the question of whether new risks to banks and the financial system are posed by the growth of derivatives, Isda's message has always been that "the risks are there already, and what needs to be understood is the ways those risks are managed," says Mr. Bauman. With the help of a series of derivatives seminars hosted by banks for government officials, that message is now getting across.

In their mission to educate regulators, bankers have been helped by some of the recent studies on derivatives published around the world. None has been more helpful than this July's report from the Group of Thirty (G30). Although many of its authors were prominent members of the international banking community, and therefore deemed



Joe Bauman: a more constructive and understanding approach



Alexandre Lamfalussy: banks' balance sheets less transparent



Gerald Corrigan: set the ball rolling in January 1992. Photo credit: Ken Orr/Reuters

that was generating billions of dollars of profits for the industry, the G30's pronouncements were still eagerly awaited.

In the event, the study generally concurred with earlier reports by the Bank of England and the BIS and gave the derivatives business a clean bill of health, recommending only a series of management and operational reforms banks should undertake to reduce risks. Bankers said they hoped the study and its recommendations would become a blueprint for regulators.

The G30, however, steered clear of tackling the one issue that worries regulators most—the possibility that something may go wrong in the over-the-counter derivatives market that prompts a worldwide banking and financial crisis.

That this threat still troubles regulators was evident in June when Mr. Alexandre Lamfalussy, general manager of the BIS, called for the drawing up of common international standards on banks' disclosures of

Commodity Futures Trading Commission, and the General Accounting Office, are all conducting studies into derivatives. And in September, the Comptroller of the Currency, a key US bank regulator, announced it was establishing a task force to monitor the market's evolution.

The GAO study, which was expected to be released this summer but which probably will not be out until late this year or early 1993, is particularly important because the GAO is the investigative body of Congress, and Congress is where some of the tougher questions about derivatives are being asked.

For now, Congressional interest in derivatives remains at an educational level, with banks and end-users helping the legislators learn more about the business. As Joe Bauman of the Isda says: "We are finding that there is still a fair amount of education to be done, because as a group they have not been singularly looking at financial markets, and certainly not the derivatives market."

Bankers feel this educational process is paying off. Mr. Doug Kidd, who is responsible for government relations at Bankers Trust, says: "Members of Congress originally viewed derivatives as nothing more than new positioning tools for financial institutions to cause directional bets on markets. Now that education generally is better, and end-users have participated in seminars and talked about how they use derivatives, there's a new appreciation among members of what derivatives are used for."

Although they may now be better informed, legislators are still keen to learn more about derivatives, and a series of committee hearings on the business will be held this winter, including several by Mr. Henry Gonzalez, chairman of the senior Congressional banking committee and a regular thorn in the side of US banks. With him, other legislators and many regulators still on the derivatives trail, banks cannot relax.

Regulatory scrutiny of the derivatives business is by no means over. Three Washington-based bodies: the Securities

Comment

By David C. Cates

Wanted: a Way to Show Off-Balance-Sheet Strengths

Before the emergence of capital markets and their enabling technologies, the market standing of a bank could be roughly inferred from the assets and liabilities recorded on its balance sheet.

Such inferences today, however, can be quite misleading. The reason? More and more of a modern bank's profitable activities are not represented on its balance sheet at all!

The one hard clue to this immense shift of strategic focus lies in the rising contribution of noninterest income to the revenue stream of leading banks, often 40% (and more) of their operating income.

Unfortunately, given the inertia of bank financial reporting practices, the sources of this income are only spottily disclosed.

Worse, the even slower rule-making process in accountancy is based on very ancient and

THE ANCIENT

axioms of bank accounting spell a deepening information blackout.

deeply embedded axioms as to what assets and liabilities are recordable (everything else being nonrecordable - that is, off-balance sheet).

The adverse consequences of this myopia are several.

Public policy toward banks - to say nothing of the public perception of banks is distorted. Bank capital regulation, already illogical, becomes more so.

Enterprise-descriptive accountancy is thwarted, and investors in bank securities wind up playing with less than a full deck of data.

Even the chairman of the Federal Reserve Board has recently been seen in print mourning the steady erosion of bank loans and deposits relative to total finances and savings.

This may be true (and probably is) for the U.S. banking system as a whole. But how can we rely on such analysis if the off-balance-sheet volumes of securitized loans are ignored, to say nothing of savings controlled by banks in the form of off-balance-sheet mutual fund assets and annuities sold to bank customers?

To put it another way, the "business velocity" of aggressive banks today can no longer be measured by the size and growth of their balance sheets. The surgeon general should probably require warning labels.

But let's go beyond these simple examples of substitution (among which should also be included loan commitments and standby letters of credit) to categorize the total off-balance-sheet role of banks.

The full range includes:

- Asset-postponement products (notably loan commitments and letters of credit).

- Asset management (personal and institutional trusts, mutual funds, and securitized pools).

LARGELY because of the rising contribution of noninterest income, more and more of a modern bank's profitable activities are not represented on its balance sheet at all.

- Asset servicing (for example, mortgages, master trust and custody).

- Risk-management products ("derivatives") and associated trading portfolios

- Payment-system services (notably, cash management, securities portfolios, and ATM networks).

The reality is that the leading edge of the banking industry has rather rapidly reinvented itself in order to participate in the post-1980 explosion of capital markets, here and around the world.

To be sure, not many banks know how to fish in these turbulent waters, where the rate of product mutation is notoriously high. But some do. These in turn are rapidly setting a new pattern.

The day may come when "net interest income" - the backbone of basic banking - comes to be called "nonfee income" at banks where fees contribute over half of operating income!

Capital Ratios

The lynchpin of the FDIC Improvement Act of 1991 is a set of three capital ratios that purport to measure the soundness of individual banks.

Since the risk measurement concepts underlying these ratios were silly or obsolete years before this legislation carved them in stone, the further strategic evolution of banks will render them even more irrelevant.

Our argument, we hasten to add, is not that more capital is needed to support the newer activities of banks. It is that the governmental measurement system is flawed in its very theory of risk, to say nothing of the arbitrary computation thereof!

What is beginning to happen instead is that the private-sector practice of risk management is coming to ignore (except for compliance purposes) the shackles of the 1991 law in order to follow the lead of pioneers like Bankers Trust, whose system of integrating risk, pricing, and capital has revolutionized not only the theory but the practice of capital adequacy determination.

Crucial Omission

The baggage of existing rules and the glacial slowness of rule-making to accounting virtually guarantee a continuing commitment to the primacy of disclosing assets (what we own) and liabilities (what we owe).

The problem, in a nutshell, is that the assets representing a bank's commitment to postpone, manage, service, synthesize, or transfer financial assets are nothing but contracts - and the rules say that contracts, no matter how economically valuable, have zero statement value unless purchased.

To put this another way, the "historic cost" basis of asset determination is able to assign value only to an asset whose cost is documentable.

To illustrate, a chair, represented by its bill-of-sale, is a recordable asset, but a contract to manage money does not have identifiable development costs, and therefore has no asset value.

The same contract, however, sold to another bank, has an asset value - namely, the cost of purchasing the contract. This cost, moreover, includes the buyer's estimate of intangible asset value - that is, the often high potential for future profits based on the longevity of client relationships.

For all but the most expert users of bank financial statements, therefore, these ancient axioms spell a deepening information blackout as more and more activities of banks are conducted off balance sheet.

To be sure, off-balance-sheet products are subject to audit (we like to believe). But these receive only scattered notice in foot-

A DISCLOSURE plan could be organized by product type, associated asset volumes, and revenues.

notes, with no linkage to revenue and no overall trashp diagram.

The blackout is deeper to the extent that substantial intangibles are buried therein.

Financial Reporting

Our one ray of hope is that the less rule-bound cousin of accounting we call "financial reporting" is free to publicize useful supplementary data that go unrecognized within the temple of the certified financials.

How does this work? Much financial reporting is discretionary - for example, disclosure and discussion of the total of managed credit card receivables, on and off balance sheet (the best way to describe overall portfolio performance).

Useful as this occasional sunshine may be, it is not customary disclosure, and thus the opportunity for comparison is limited.

Enter the Securities and Exchange Commission, which has developed a series of "guides" mandating supplementary disclosure in several industries.

Guide 3 (the most extensive of the seven) mandates rather a lot of "nonstatement" disclosure by publicly held bank holding companies.

Developed in 1976 and based largely on the advice of a task force of bank stock analysts, Guide 3 has begun to show its age. It fails completely to address the post-1980 financial products that are so large a part of bigger banks' strategy.

Accordingly, the SEC has recently determined to revise the guide, again welcoming the recommendations of analysts.

The imminent revision of Guide 3, which the SEC wants to implement as soon as possible, could be momentous.

In the Dark

Even if the truly expert among bank stock and debt analysts knew all about off-balance-sheet product families and the associated income (they don't), the same couldn't be said for:

- Portfolio managers (for whom bank stock is typically less than 5% of a stock portfolio).

- Buy-side analysts (who nowadays cover at least several industries).

- Retail brokers (whose vast knowledge tends to be two inches deep).

- Individual investors.

For these users of financial information, the balance sheet continues to loom large in any discussion of investment opportunities.

And for them the only evidence of the existence and profitability of off-balance-sheet products is just a one-liner in the income statement: "noninterest income."

To be sure, some very superficial breakout of this income by type is to be found in annual and quarterly reports.

Since this income often exceeds 40% of total operating income, has not the time finally come for analysts and investors to pierce its veil?

The first fruits of this effort would be the beginning of understanding and comparison. The second result would be the asking of good questions. And the third, and most important, will be a surer basis for assessing the value of bank securities.

Degrees of "Assetness"

To visualize a proposed off-balance-sheet disclosure scheme by product type, associated asset volumes, and revenues, imagine a series of five concentric circles with a sphere at the center. The ordering of these rings is based on their closeness to "assetness."

- The innermost circle defines the recorded assets, liabilities and capital of a banking company, on a generally accepted accounting principles basis.

- The first outer circle represents the potential future assets of a bank, in the form of loan commitments and standby letters of credit.

THE SEC's guide for supplementary disclosure by bank holding companies fails to address the post-1980 financial products. The upcoming revision could be momentous.

- The second circle summarizes the various assets that a bank manages under contract: securitized notes, personal and institutional trusts, and mutual funds.

- The third ring contains the asset volumes serviced under contract: mortgages, securities in custody, trusted student loans, and master trust agreements covering pension assets.

- In fourth place is the circle containing derivatives, that is, instruments that reshape the risk profile of an underlying instrument, whether for sale to others, for "own account" risk management, or for "own account" profit seeking. (We are assuming here that associated trading portfolios - such as foreign exchange - are booked as recorded assets.)

- The outermost ring includes financial transfers for third parties: securities clearance, cash management, money transfer and ATM/ACH operation.

Spreadsheet Disclosure

What should usefully be disclosed about these categories? To begin to answer this question, let's set aside the "concentric rings" image in favor of standard spreadsheet disclosure.

Each major category of disposed assets, managed assets and so on should be further subdivided as indicated above, even though this means putting trust products (like money management and custody) alongside bank products (like credit card portfolios and mortgage servicing).

The first three major categories should throw off asset volume and revenue information by major subtype. In the case of credit card and other loan securitizations, there should also be "memo" disclosure that sums the assets under management, whether booked or not.

The final two categories, those most removed from "assetness," do not lend themselves to asset disclosure, for two reasons.

First, trading portfolios are already recorded.

Second, derivative volumes are meaningless when shown gross, since it is their "netted" relationships to one another (and to assets) that measure their significance. However, their revenue production is disclosable.

The sum of revenue from all off-balance-sheet products should then correspond to total noninterest income except for (a) fees and products generated from recorded assets and liabilities and (b) fees generated from the sale of third-party contracts, such as externally-managed mutual funds and annuities. □

Copyright 1993 Investment Dealers' Digest, Inc.

Investment Dealers' Digest

Investment Dealers' Digest, Inc. makes no warranties, express or implied, including those of merchantability or fitness for a particular purpose.

September 6, 1993

SECTION: COVER STORY; Pg. 14

LENGTH: 3945 words

HEADLINE: The Shadow War at AIG;
Regulators aren't the only ones worried about the risks being taken by derivatives subsidiaries

BYLINE: By Cheryl Beth Strauss

BODY

In the early months of 1993, Hank Greenberg was worried. The chairman and chief executive of American International Group Inc., regarded as one of the best managed financial services companies in the world, didn't fully understand what one of his subsidiaries was doing.

AIG Financial Products Corp., which Greenberg had helped to launch in 1987 by hiring swaps pioneer Howard Sosin, was raking in huge profits -- a reported \$ 200 million in operating income in 1992 -- but it was doing so by taking big risks. How big, Greenberg didn't know for sure. That was what worried him.

Fearing he could not get a straight answer from Sosin, who himself owned a 20% share of the subsidiary -- a \$ 40 million paper profit last year -- Greenberg formed a shadow unit: a covert operation of auditors, derivatives experts, and other professionals to infiltrate Sosin's operation and learn what kind of risks were being taken. That group's findings helped lead to the abrupt departure of Sosin and most of his staff three weeks ago. The terms of the separation are going to arbitration at the American Arbitration Association.

Sosin gave notice and filed for arbitration on February 23 of this year. Although no date was set for either Sosin's leaving or the arbitration hearing, the filing may have played a role in Greenberg's decision the next month to form the shadow group. If the shadow group discovered inaccurate accounting or incorrect swap valuations, either could have an effect on the arbitration proceedings.

Whether or not Sosin's group did indeed take inappropriate risks is debatable. But the fact that Greenberg had to form the shadow group -- that he couldn't simply examine the books of his own subsidiary -- is remarkable. It speaks volumes about the derivatives business and its new, uneasy role in the financial community.

Investment Dealers' Digest, September 6, 1993

As financial derivatives have boomed, transforming the capital markets and enriching innovators, fears about them have grown. The fear is basically fear of the unknown: the more complex the transactions become, the more difficult they are to understand.

Practitioners have been trying to convince the public that fears about the business are overblown. The recently released report on derivatives by the Group of Thirty -- a blue chip financial services industry association -- essentially said that the new financial technology is nothing to be scared of, as long as it is used with appropriate controls. It also made specific recommendations that top management play a direct role in managing derivatives units.

But the story of AIG Financial Products shows that controls are easier said than done. Some of the more exotic derivatives require an advanced knowledge of mathematics to be truly understood. The rocket scientists who design the financial models underpinning the products may hold the keys in their heads. And in any organization, the desire for profit tends to blind people to the risks they may be taking.

Did Sosin go too far with his risk-taking? Now that he is gone, a definitive answer may never be known. Maybe AIG simply lost its nerve, and folded when it would have been better to stand pat. (An AIG spokesman wouldn't comment on the Sosin affair other than to say that "AIG will not comment on the circumstances under which any employee left AIG Financial Products." Greenberg did not return calls seeking comment, nor did Sosin.)

Whoever was right wrong, the critical thing was that AIG's perception of the group's risk increased to the breaking point. And the only way for AIG to test its perception was to create a covert operation -- within its own company.

A member of Sosin's now-departed team argues that to call AIG's team a "shadow group" is a misrepresentation. He claims the group was a "training operation" to prepare replacements for the departure of Sosin and his people. Told of this characterization, sources involved with the shadow group laugh uproariously. The chronology of events, the sources indicate, speaks for itself.

Giving birth

Maurice (Hank) Greenberg recruited Sosin and a team of professionals from Drexel Burnham Lambert in 1987 to create AIG Financial Products. Sosin, an energetic associate professor at Columbia Business School in 1982-1983, had joined Drexel in 1984 to form an interest-rate swaps group. A Drexel colleague recalls that Sosin's group was profitable, but the firm was reluctant to commit as much capital to the operation as Sosin wanted, which led to some friction.

The offer from AIG was enticing. The new unit would be structured as a joint venture, giving Sosin a 20% stake in the venture and the title of chief executive officer. Sosin and Greenberg also agreed on a lengthy wind-down period of three years, in the event either party decided to sever its ties to the venture. The new unit was to be located in Westport, Connecticut, near the home of Sosin and several other executives at the new unit.

Investment Dealers' Digest, September 6, 1993

AIG Financial Products quickly came to be known as an aggressive and innovative derivatives shop, specializing in municipal bond derivatives and in long-dated products. In 1990, the group was ranked third, behind Bankers Trust and JP Morgan, as "overall most professional," in a Swaps Monitor poll of swaps dealers. In a Euromoney poll in 1992, AIGFP was ranked first by its peers as "best at plain-vanilla, US dollar interest-rate swaps longer than 10 years 'maturity.'"

Senior AIG Financial Products management included: Randall Rackson, a former Drexel employee and head of systems for the group; Barry Goldman, also a Drexel veteran and a capital markets pro; Randall Kau, AIG Financial Product's legal expert; Kelley Kirklin, who joined from Bankers Trust as the head of new products and global risk management based in London; Thomas Savage, risk manager and managing director of Banque AIG in Paris; and Joseph Cassano, also from Drexel, who became chief financial officer and administrative officer of the new group.

AIGFP is said to be the moneyspinner in AIG's Financial Services Group, which also includes AIG Trading Corp., a commodity and foreign exchange trading unit, and International Lease Finance Corp., one of the world's biggest lessors of aircraft.

AIGFP now engages in a wide array of standard and customized interest rate, currency, commodity and equity derivative products. The company for the most part could only keep securities with a double-A rating or better on its books.

AIGFP is and has been quite active in the swaps market. In AIG's 1992 annual report, the company reports that the notional principal amount of swaps outstanding for AIGFP increased by 31%, from \$ 62.7 billion at year-end 1991 to \$ 82.4 billion at the end of 1992. In a worst-case scenario, that is if all counterparties on all contracts were not able to honor their side of the deals. AIG estimated that the maximum potential loss jumped 54%, from \$ 2.8 billion in 1991 to \$ 4.3 billion in 1992.

The annual report noted that such a scenario was "unlikely," and added that to date, there had been no significant defaults in the portfolio.

Nonetheless, some of AIGFP's investments have significantly decreased in value. Sosin's group had dealings with the troubled Edper Enterprises Ltd., the Toronto-based company owned by the Bronfman family. Edper has been undergoing a reorganization in past months, and reportedly met several times at the AIGFP offices in Westport to work out problems caused by the company's financial troubles. Several other AIGFP investments are reported to be weakening, with some credit ratings slipping to double-B or even triple-B, sources say.

Sosin's group emphatically denies that some of its investments are near default. "All of them are totally performing," says one AIG Financial Products employee. "We always have on-going discussions with our counterparties." However, notes the employee: "Certainly AIG would like to get out of owning some of these assets."

'Wild things'

Not only were some of AIGFP's investments headed south under Sosin, but the

group was also engaging in ever-more exotic derivatives -- "wild things," as one AIG official calls them. "His stuff became so convoluted and complex that it worried us."

In particular, Sosin's group was writing swaps with longer and longer maturities, some beyond 30 years -- very rare in the swaps business. Of course, the return on long-term swaps is much greater than short-term swaps because of 'the risk. The long-dated deals boosted AIGFP's revenues, but exposed parent company AIG to respectively greater risk.

Kirklin, the London-based new product whiz for AIGFP, was one of the first to "blow the whistle on Sosin," according to sources at AIG. Reportedly, Kirklin wrote a memo to Sosin as early as the fall of 1992, saying that Sosin was taking too many risks with his investments. Sosin seemingly ignored the memo, sources say. It was th first of many internal memos at AIGFP on the same subject. Kirklin did not return calls for comment on this story.

Not surprisingly, as he learned of the going-on at AIGFP, Greenberg started to pay closer attention, sources say. He wanted assurances that Sosin and his group were putting aside appropriate reserves for these risks, and that their deals were based on sound financial models.

The relationship between Greenberg and Sosin soured, and at some point in early 1993, Greenberg confronted Sosin with his concerns. The result was an argument between the men that AIG employees say became a nasty shouting match.

In mid-February, according to a source close to Sosin, Greenberg tried to take control of AIGFP, which led to an irreconcilable split between the two. "He tried to limit some of the things that we were doing at AIGFP. He wanted to get the company and we thought that he had overstepped his bounds," the source says.

On February 23, Sosin filed for arbitration to end the relationship. While the original agreement between AIG and Sosin had called for a three-year winddown period, the filing asked to accelerate the process, sources say. It also gave Sosin's accounting of his payments due upon termination.

In March, AIG filed its arbitration counterclaim, with its accounting of payments due to Sosin -- considerably less than his claim, though the exact amounts have not been made public. Meanwhile, Greenberg looked for a way to learn, to his own satisfaction, what exactly AIGFP had been up to.

The shadow knows

In early March, Greenberg and Petros Sabatacakis, AIG's senior vp responsible for all the financial service businesses, formed a secret group to monitor all of AIGFP's dealings. The shadow team was composed of some of the most senior level executives at several of AIG's subsidiary companies.

Sabatacakis rented office space at an undisclosed location in "the metropolitan New York area" roughly halfway between Manhattan and Westport to house the shadow operation sources say. He avoided Westport itself because it is a small town, and members of the shadow group might bump into AIGFP staffers on its picturesque streets. He named about eight individuals to work on

developing a parallel computer system to AIGFP in order to evaluate Sosin's financial models and estimate the risks that he had taken.

The core group was composed of Sabatacakis; Rajiv Nanda and X.D. Pang from AIG Trading (AIG's currency and commodity dealership); Robert Conry, the head of AIG's auditing functions; a team of accountants from Coopers & Lybrand, a senior litigator from Sullivan & Gromwell; a computer consultant; and a derivatives pro from FX Concepts named Gregory Young who had just been hired by AIG as a global 'risk manager.

Within six days, this shadow group had created a computer system similar to Sosin's. Now they needed a way to get Sosin's data to evaluate his models. The shadow operators decided to disguise their work as an electronic data processing audit. Their project was passed off as a routine check-up on AIG Financial Products' operations.

The EDP audit required the AIGFP group to not only keep, but also to hand over, magnetic tapes containing information about all of the group's daily activities. The first set of tapes were received on April 18. (An AIG official says the tapes had been requested weeks earlier, but were seemingly stalled by Rackson, who claimed that his secretary lost them. It was not until Rackson was personally served with a formal written request that he handed them over, sources say.)

The shadow group claims that Sosin's men never knew what the tapes were really being used for. Sosin's group claims that these tapes were all part of a "training operation" to familiarize other AIG management personnel about IG Financial Products.

"AIG put together a group of people to train them about how to run our operation once we left," maintains one AIG Financial Products source. "We gave them back-up tapes to look at because they didn't expect to get cooperation from us about how to run our company."

Sosin's group viewed AIG as one of its shareholders. "We weren't responsible to teach our shareholders how to use our systems," says another AIG Financial Products source. "They were entitled to copies of the systems, but there was no provision about training them on our time."

AIG, for its part, never expected Sosin's group to cooperate. But the shadow group was still surprised at the amount of resistance that they encountered.

When they finally received that first batch of tapes on April 18, "we realized we had walked into a goldmine," says one AIG source.

"Unsettling things"

The tapes revealed that Sosin was a meticulous record-keeper, apparently he never erased anything. Not only had Sosin kept files of virtually every E-mail, memo, travel correspondence, business meeting and personal matter concerning his employees, but he had kept them going all the way back to the inception of AIG Financial Products in 1987.

According to sources, the details of Sosin's notes were so overwhelming that

Investment Dealers' Digest, September 6, 1993

at one point Sosin had meticulously documented a golf lesson that he had taken, recording everything that the golf pro said in the lesson. He wrote a similar type of memo about a conference that he held for AIG Financial Products personnel last summer in Nantucket, documenting all of the expenses incurred there.

At the shadow group read through the 40,000-plus memos, it became evident that there were some "unsettling things" going on at AIG Financial Products an AIG official said. Not only did the shadow group have questions about the 'quality of AIGFP's models -- and thus some of its hedge positions -- they found virtually no reserve pool to back Sosin's positions, according to the official.

AIG was stunned that Sosin could have left AIG so exposed, sources say. If the positions were not adequately hedged, that again would be increasing the profits of AIGFP in the short term, but exposing AIG to increased risk in the long term.

The company quickly set up a reserve pool that would not only back up some of the positions, but might also pay for expenses if AIG were to lose the arbitration case.

In addition, the shadow group realized the sensitivity of their findings, and tried to make sure that no one would leak information about the operation to anyone outside the group. It was so concerned about security that it wouldn't hire a group secretary. At the same time, it looked for selected new recruits from among Sosin's employees.

On April 1, AIG announced internally that it had formed a risk management committee to oversee and approve long-term transactions executed by its subsidiaries. The new three person committee consisted of Sabatacakakis, Edward Matthews, vice chairman and CFO of AIG, and William Dooley, treasurer of AIG. The reason for the new committee's formation was obvious to people familiar with Sosin's group.

By April 3, three of Sosin's senior lieutenants had switched allegiance from Sosin's group to the shadow group. Cassano chief financial officer of Sosin's group and one of the original Drexelite founders in 1987, decided to throw in his lot with AIG, as did Kirklin, the London head of risk management, and Savage, head of AIG's Paris office.

While it is unclear how these individuals were contacted or alerted to the existence of the shadow group, it is suspected that an AIG senior auditor may have been the shadow group member responsible for convincing them to join AIG against Sosin.

As the shadow group grew in numbers, it became all the more imperative to check for leaks and to make sure that none of the shadow group members could have been working for Sosin instead of the parent company AIG. The group, sources say, became slightly paranoid about its own members.

Indeed, one of the computer experts reportedly ran a check on all the other members in the shadow group. The computer pro did this by running a search on all of Sosin's tapes to check for references to shadow group members by Sosin and his team. Everyone in the group checked out, but when other shadow members

Investment Dealers' Digest, September 6, 1993

found out about the search, they were angry about it, a source says.

April showers

By the middle of April, the shadow group, despite internal grumbling, had gathered enough information that Greenberg was convinced Sosin had to go. AIG decided to "cut its losses," a source says, and told Sosin that it wanted to speed his departure. At that point, the shadow group became a sort of transition team as well, sources say, readying its members to take over the operation that they had so carefully duplicated.

At about the same time, AIG mailed out its 1992 annual report which delicately states that "the chief executive officer, who is also the minority shareholder of AIG Financial Products, has recently informed AIG and AIGFP that he intends to leave AIGFP, and AIG concurs with this decision. AIG is fully committed to the AIGFP business and expects an orderly transition of management responsibilities."

This was the first time that the information about Sosin's departure became public. Reportedly, several AIG executives were furious that the information was disseminated in this way, and blamed Sosin's group. For their part, Sosin staffers claim innocence in the matter. "It was their annual report, sniffs one Sosin lieutenant.

May's flowers

Conflicts within the shadow group itself continued. Some AIG officials claim that a lawyer on the shadow group took some documents from the tapes and then told shadow team members that the tapes from the week "were had." They say the tapes were fine, and that the attorney delivered the information to Sosin's attorney.

"The tapes were highly incriminating," says one AIG source. "There were some questionable documents, and things that shouldn't have been there." One of those things, the source claims, was Sosin's complete business plan to start a new company after leaving AIG Financial Products, and his search to find potential triple-A rated backers.

The week Sosin's attorney got this information, sources say, roughly 750 documents turned up missing from AIGFP's records.

Although someone in Sosin's group had started to remove documents from the AIGFP system, Sosin continued to leave a paper trail of meetings, travel documents and notes about his investing strategies. "He just didn't catch on that AIG was reading it," says an AIG source.

For instance, one of the pieces of information that Sosin's group left on the tapes was the size of Sosin's compensation -- much of which had been kept secret so as not to cause jealousy among AIG executives -- as well as job offers that had been made to various members of the group and other personal information about AIGFP staffers.

In addition, information about possible credit shenanigans came to light. According to an affidavit now in AIG's possession, one of Sosin's top

Investment Dealers' Digest, September 6, 1993

lieutenants allegedly pressured an AIGFP portfolio manager to change the credit rating on the books of a deal Sosin was trying to do. Sosin's group was not allowed to make any investments with less than a double-A rating. According to the affidavit, several sources say, the portfolio manager swore that he had been asked to hide information.

On August 16, AIG held a board meeting scheduled for its AIG Financial Products groups, but none of the inside directors showed up, sources say. Sosin had left AIG Financial Products, and taken 22 employees with him. AIG fired back, officially firing Howard Sosin for cause. By doing so, a source close to Sosin says, AIG was trying to put a cloud over Sosin's arbitration by saying that AIG had a reason for firing him.

On the same day, AIG prepared a press release regarding the reorganization of AIG Financial Products and the resignation of Sosin as its president and chief executive officer. The release included the names and titles of the new management committee for AIG Financial Products, including Sabatacakis, the new president and chairman; Cassano, the CFO and administrator officer; Kirklin, the London-based head of risk management for AIG; and Savage, risk manager and managing director of Banque AIG to Paris -- all shadow group members. Only one programmer from Sosin's AIG Financial Products remained with the company.

As AIG and Sosin await the arbitration hearing, AIG and AIG Financial Products personnel are acting as if it is business as usual. When Sosin and his group left, they left all of their computer systems in place. And while many things are undocumented since April, the new AIG Financial Products group has been able to figure out what was happening until virtually the moment that Sosin and his group quit AIG.

In the end, some AIG employees are not sure who won the battle. While Greenberg gave a speech before many AIG employees two weeks ago to say that AIG is still committed to the derivatives business, he mentioned greed three times in the speech, sources say.

Some insiders feel that Sosin was not the only greedy one, but that AIG is equally guilty for letting Sosin go too far, because of the huge returns it saw coming in.

In any event, the shadow group is still up and operating. That makes some members unhappy. Grouser, one shadow group member who has been shuffled up to AIGFP headquarters in Westport: "I'll be here until whenever, I don't know when we'll be done here."

And now that the matter is in arbitration, the facts may become victims to each side's financial interests. One AIG source comments that AIG has falsely accused Sosin of doing some things without permission that AIG had actually given him clearance on earlier.

As for Sosin and his group, they are not far away from their past. They have set up a new company, VHGO Corp., located on the Post Road in Westport, Connecticut, not far from AIG Financial Products.

The new company will be a financial products company that plans to compete head-on with AIG Financial Products.

Investment Dealers' Digest, September 6, 1993

VHGO was named after a computer program that Sosin's group developed to hedge the company's positions. VH stands for "value hedging." At the end of each business day at AIGFP, when Sosin wanted to hedge his final positions, sources recall, he typed in VHGO and hit the enter key on his computer.

It is not clear if Sosin has arranged financial backing to set up his new operations. But his chief lieutenants are virtually the same as they were at AIG Financial Products Rackson, Goldman and Kau. Also, many of the company's new computer systems are in place.

"We are finalizing our arrangements," said one of Sosin's team. "We'll be open for business soon."

'GRAPHIC: Picture 1, AIG's Greenberg; confrontation with Sosin turned into a nasty shouting match; Graph; Financial Services Group Operating Income (in millions); Picture 2, AIG tries to position itself in financial services sector.

LANGUAGE: ENGLISH

FRANK McDONALD'S

Cutting costs of hamburgers

like world of derivatives, McDonald's Corporation is a typical user. It is a large company which, because a lot of its earnings and borrowings emanate from overseas, faces currency and interest rate risks in many markets.

What makes McDonald's particularly interesting, however, is that there can be few companies where the benefits of derivatives are so clearly apparent - not just to the chief financial officer and corporate treasurer but to the thousands of people across the world who visit restaurants under the famous yellow arch. They, as much as anyone, have been able to enjoy the rewards of derivatives.

Mr Carlenton D Pearl, McDonald's treasurer, explains how its franchisees are able to use derivative instruments to cut the cost of their borrowings. There are programmes run by our banks that finance the franchisee, which include a cap on the cost of the loan. What is interesting about that is that, where a small or medium-sized business owner, and someone trying to put a cap on a prime rate loan in the US, you would have to figure out how many options you would need to buy on an exchange. Now, how could they possibly deal with that? What the banker

can do, is make a loan at 150 basis points over commercial paper, or a loan at 175 over commercial paper, and promise you that you'll never have to pay more than 10 per cent."

In other words, says Mr Pearl, "derivatives can deliver value to small- and medium-sized businesses by enabling them to manage risks that they're not equipped to manage. Most people think deriva-



tives are for large companies with big staffs. Our banks have found a way to deliver these instruments so that the small business owner can use them."

Mr Pearl clearly likes to spread the derivatives gospel. He was one of the contributors of the Group of Thirty's report. Into derivatives published this summer, a report that essentially gave the business a clean bill of health.

One point on which the G30 placed particular emphasis, was the notion of accountability - the need for the financial

officers at companies who use derivatives to keep their senior managers and boards of directors fully informed, both of their activities and the extent of their company's exposures.

It is a message that Mr Pearl says McDonald's has always taken seriously. "We have extensive discussions with the board of directors about these instruments. It's been an ongoing dialogue. In the early days we reported on each transaction we did. To this day, every time they meet we give them a report on our derivatives portfolio marked to market. And for our own senior management, we prepare a report which looks at not only the exposure on a marked to market basis, but which also provides an analysis of our potential exposures."

He has been McDonald's treasurer since 1986, but the company first began using the products in the early 1960s. Back then, it was a natural progression from the risk management techniques McDonald's was already using, says Mr Pearl.

"We started doing parallel loans in the early 60s, and the next step from parallel loans to swaps was relatively straightforward. If you have been doing three-month foreign exchange contracts, the move

out to five-year forward contracts is one that carries some what of a different risk but you're moving along a spectrum, and thus not doing something totally new."

Mr Pearl says the company embraced derivatives early on because they offered a better, and often cheaper, way to control risk, and since the early days it has not strayed that far from the plain vanilla derivatives products that hedge interest rate and currency risk. A look at its derivatives portfolio would show that the company is involved in almost 100 transactions, with 23 different counterparties in 12 currencies.

The chief motivation has always been saving money. "It's critical to understand this about what we do here - our job is to reduce all the costs as much as possible, so we can deliver the best value hamburger to our customers. Therefore if we can reduce the cost of financings and land acquisitions and construction, we can lower the cost of selling hamburgers to our customers. That is our objective. We are not here to run another business trading derivatives."

The cost savings can come in a variety of ways, says Mr Pearl. "For example, if our cash flows and cash needs change, and our view of markets change, to go out and call a bond issue, or buy it in the market, and release shorter-term or longer-term floating debt, can be a very expensive proposition. However, doing it through derivatives is very much easier and much less expensive."

Derivatives also provide the company with more flexibility in its financings. "We did a Danish krona financing - fixed rate krona with US dollar commercial paper. Therefore, we got Danish krona fixed-rate loans at 100 basis points below local financing sources. Thus, at a time when the local bond market did not do fixed rate financing." Mr Pearl also cites an example of how the company used equity options to reduce the cost of a \$700m stock buy-back programme.

Occasionally, McDonald's employs more complex, hybrid forms of derivatives, such as a

floating interest rate note with coupons that if interest rates went down the rate went up. We swapped those into commercial paper borrowings. It was pretty exotic, but the essence of the deal was that we created financing below the cost of our commercial paper financing."

McDonald's does not use derivatives in a speculative fashion, to earn a profit from the products. "I've often been asked about whether we make money. Well, we don't keep track of it that way. We think of each financing and ask does it make economic sense relative to the alternatives?"

The number of staff working with derivatives at McDonald's is small. Mr Pearl has five with him, one director, two managers and two analysts - out of a total of 30.

It was different in the early 1980s when derivatives were still new and only a few corporations were using them. Mr Pearl can get nostalgic about the early days. "The economics used to be much better. We used to be able to do some swaps that got us 100 basis points below libor. Sadly, those days are gone forever."

Patrick Harvarson

Portfolio Surprise

Many Americans Run Hidden Financial Risk From 'Derivatives'

Exotic Investment Contracts
Increasingly Permeate
Pension, Mutual Funds
Big Bets and High Leverage

By BARBARA DINNELLY GRANITO
AND CRAIG TORRES

Staff Reporters of THE WALL STREET JOURNAL

When the securities first showed up in a brokerage-firm confirmation statement for the account of an elderly widow, John S. Leech recalls thinking they looked "odd."

"I'm accustomed to looking at confirmation statements, and I didn't understand what it was," says Mr. Leech, a Smith Barney broker in Fort Lauderdale, Fla., who was serving not as the widow's broker but as trustee of her \$500,000 portfolio. The securities—some 20% of the portfolio—were listed as triple-A-rated bonds issued by a quasi-federal-government agency. There weren't any obvious risks.

But risky they were. While most bond prices were rising, the value of these securities plummeted about 50% in just seven months, wiping out 10% of the widow's portfolio. Mr. Leech, who is battling with lawyers to recoup the loss from her independent investment adviser, didn't realize the securities were a form of "derivatives"—strange, hybrid investments that look like one thing and act like another. Once used solely by sophisticated financial institutions, derivatives have mushroomed in the past decade and are surfacing in the investment mainstream.

Broad Exposure

Many Americans are far more involved in derivatives than they realize. Their pension funds, mutual funds and insurance companies are knee-deep in the market, and wading in further.

"Most buyers of fixed-income mutual funds, for example, already own derivatives indirectly, whether they know it or not," says Kenneth Sullivan, who heads the derivative-products group at Republic National Bank of New York. Fixed-income, or bond, funds in the U.S. have some 12 million individual shareholders and \$673 billion of assets.

What are derivatives, exactly? Though some of them resemble ordinary investments, they really are financial arrangements rather than securities. Their values are derived from changes in one or more underlying variables, such as stock markets here and abroad, interest rates, currencies and commodity prices. Some are standardized contracts, such as futures and options on stock indexes and Treasury securities listed on exchanges. But most are customized contracts traded privately among consenting investors.

Several Risks ✓

The riskiness of derivatives depends not only on how they are used but on what safeguards funds have in place to limit potential glitches. In private deals, the main risk is that the party on the other side of the transaction won't live up to the bargain. And because derivatives transactions may involve several markets, problems in one corner of the playing field can rock other markets as well.

A case in point: The last big derivative fad on Wall Street was the mid-1980s boom in "portfolio insurance." That hedging strategy aimed to profit from market declines through craftily timed selling of Standard & Poor's index futures. It worked like a graduated stop-loss order: Whenever the market dropped by a certain amount, futures would be sold, and if the market continued to fall, more futures would be sold, so that the investor would be wholly out of the market if prices fell to a predetermined level. Thus, portfolio insurance effectively created a put option—the right, without obligation, to sell an asset at a set price over a specified period.

That was fine in theory, but the market crash of 1987 showed how things can go awry when such bets lurking in derivatives markets spring out on an unsuspecting public. In October of that year, declining stock prices triggered the strategy, and the effect was akin to yelling "Fire!" in a crowded theater. The sudden sale of billions of dollars worth of S&P futures so startled investors that everyone rushed to the exit at once; sellers couldn't find enough buyers, and what followed was trading gridlock as prices plunged.

A Vast Market

But portfolio insurance, at its peak, involved no more than about \$200 billion—far less than the \$5 trillion market capitalization of all U.S. exchange-listed and over-the-counter stocks. By contrast, the Federal Reserve estimates that the banks it regulates alone hold some \$7 trillion of privately negotiated derivatives. Exchange-listed derivatives add up to another \$4.5 trillion of contracts world-wide. In addition, about a third of the \$1.2 trillion mortgage-backed securities market consists of mortgage derivatives.

Although banks and large institutions account for most of that activity, small investors are becoming players in derivatives, too. For instance, Citicorp, the big New York bank, is heavily promoting certificates of deposit that pay interest only if the U.S. stock market goes up. That is a derivative—a CD whose performance is derived from what stocks do. Since first offered earlier this year, these CDs have drawn in more than \$50 million.

At least these CD buyers presumably understand the risk: If the stock mar-

Please Turn to Page A6, Column 1

Portfolio Surprise: 'Derivatives' in Pension Investments And Mutual Funds Put Many People at Risk of Loss

Continued From First Page
ket doesn't go up, they get no interest. But more and more investors are unknowingly exposed to derivative risks through mutual funds. For example, the \$50,000 sharehold in the Fidelity Asset Manager fund collectively own \$511 million of derivatives, or 8.3% of the fund's \$6.1 billion of assets.

Even investors in proaic government bond funds own a growing chunk of derivatives. The Strong Government Securities fund at the end of 1992 had 8% of its \$82 million of assets in a single holding of currency-linked derivatives: bonds issued by the Federal National Mortgage Association that bet on the difference in exchange rates between the Spanish peseta and the Swiss franc.

Are these derivatives risky? They can be, as the Florida widow discovered. The securities her money manager bought were a form of mortgage-bond derivatives called "interest-only strips." They entitled her only to the interest payments on the mortgages underlying the bonds, someone else owned bonds based on the principal payments on the mortgages. (Stripping or separating the components of securities is one way to create derivatives.)

An Unexpected Problem

What went wrong? Interest rates fell, and the borrowers paid off their mortgages early and took out new ones at lower rates. That caused a plunge in the prices of the interest-only strips, which were predicated on the mortgages being around for a while; because those interest payments were being cut off sooner than expected—and the interest payments rather than any of the principal are all the investors were going to get—the securities quickly became worth less and less. Their triple-A rating, a duly considered sign of safety, turned out to be meaningless at best and misleading at worst. Credit ratings gauge the ability to repay debt, and that simply wasn't an issue in this case.

Even presumably sophisticated investors can get trapped. Merrill Lynch & Co. lost \$50 million in trading related to principal-only mortgage securities several years ago. In early 1992, J.P. Morgan & Co. dropped \$50 million on interest-only mortgage derivatives. In the first two months of 1993, Salomon Inc. lost \$250 million, understood to be mainly in mortgage derivatives. Also this year, Showa Shell Sekiyu K.K., a Japanese oil company, admitted to losing some \$1.59 billion from trading currency derivatives, and last month, Nippon Steel Chemical Co., a unit of Nippon Steel Corp., reported losing \$135.4 million in currency derivatives.

So, are derivatives bad for investors? In many respects, they can be good for investors. Derivatives give money managers enormous flexibility in mixing and matching features of stocks, bonds, currencies, commodities and other assets. Derivatives also can reduce the cost of administering a portfolio and enable man-

agers to buy and sell big positions without distorting prices. And they enable managers to rev up or scale back their portfolios risk exposure in unprecedented ways. Some use this capability conservatively, others aggressively. Investment funds' derivatives strategies range from plain-Jane hedging to barefaced speculation.

"I don't think the risk should be attributed to derivatives themselves, they're just the way to accomplish it," says Thomas Lucey, chief of institutional management at Putnam Investments. "If you give a 10-year-old a high-powered Porsche and he gets in an accident, do you blame the Porsche?"

Stepped-Up Leverage

However, too many Porsches may be roaring down the investment highway at once. Many derivatives allow dealers and investors to make huge market bets without paying full price, indeed, no money at all on these hands in some derivatives trades. That is one way derivatives reduce investors' costs, but it also means "they create a lot of leverage in the system," says Frank Rabinovitch, managing director at Pacific Investment Management Co., which runs \$46 billion of pension and mutual funds. "It's why we're extra careful about whom the firm trades derivatives with in private transactions."

No wonder, considering the firm's exposure. Futures, options and other derivative positions amount to 38% to 45% of its flagship \$3.4 billion Total Return mutual fund—and that is not counting the 20% in mortgage-securities derivatives. "That's about consistent with our pension accounts," Mr. Rabinovitch says.

Investors can use derivatives both to shake stocks they don't want and to bet more boldly on risks they do want. For instance, opportunities for traditional stock pickers, such as James Craig, manager of the \$8 billion Janus Fund, are no longer restricted by national boundaries now that he can hedge currency risks.

Like most other big mutual funds, Janus has changed its prospectus to allow use of currency contracts and other derivatives. So, last fall, Mr. Craig was able to protect his largest investment, 90,000 shares of Swiss drug maker Roche Holding AG, from a drop in the Swiss franc.

It was a shrewd move. From October to February, the Swiss franc fell 15.2%; the hedge saved Janus Fund about \$26 million. Of course, if the Swiss franc had risen instead, the hedge would have cut the fund's return on the Roche investment. But that is not the point. "The currency decision isn't what I'm here to do for a living—I'm here to pick stocks," he says.

Dividing the Workload

Increasingly, U.S. pension funds are inclined to agree. They want their stock pickers to pick stocks and to cede management of currency and other market risks to other pros. The funds use derivatives to pry those functions apart.

Pension funds at such organizations as Shell Oil Co., Dayton Hudson Corp., General Motors Corp., Los Angeles County, International Business Machines Corp. and Monsanto Co. use derivatives representing \$70 billion of underlying securities to engage in a market-timing strategy called tactical asset allocation. But although big pension funds tend to be prudent, they worry about potential abuse of derivatives. My concern is that someone will get sloppy about the risks and get burned and go screaming to Congress—just because they weren't looking after their fiduciary responsibility and didn't understand what they were getting into," says John M. McLaren, senior investment officer at the \$15 billion Virginia Supplemental Retirement System.

Already, many mutual funds are experimenting on the fly—and sometimes at investors' expense—with derivatives to boost yields. One especially cites the growing reliance on "structured notes," hybrid securities that look like bonds but are designed to track anything from currency moves to silver prices. Many funds use these and other derivatives to sidestep restrictions on their investments.

Exotic Bets

Fidelity Investments' Asset Manager fund, one of the hottest-selling mutual funds, is an active player in structured notes. It has used them to make exotic bets on such things as the volatility of silver prices, the rate charged for buying gold bullion on margin, the gap between short-term and long-term oil prices, and foreign interest rates.

In one structured note, Asset Manager is betting on higher U.S. taxes and interest rates, with a note based on the spread between the interest rates on short-term taxable and tax-exempt investments. It is basically a bet that this spread will widen; that could happen either if tax-exempt yields drop or if taxable yields rise. An increase in tax rates is one thing that might cause that, by spurring demand for tax-free investments and thus raising prices of tax-exempt bonds and depressing their yields relative to those of taxable issues. Another way the spread might widen is if interest rates rose, because taxable investments tend to respond to interest-rate changes more quickly than tax-exempt investments; higher rates would cause taxable yields to rise, relative to tax-free yields, until the latter caught up.

If the taxable tax-exempt spread does widen, Asset Manager's notes multiply the payoff by a factor of 40. If the spread narrows, the notes will drop in value just as fast, but a floor fixes the maximum loss at 67%. Fidelity's Thomas Steffani, director of fixed-income investments, says the leverage gives the note no more risk than that of 20-year bonds.

Although exotic bets may not be out of line for Asset Manager, even the most

slinging style, structured notes of a "tax" position is prospective otherwise wouldn't allow SEC firms effectively bar mutual funds from short selling. Mr. Steffani explains that is, a fund can't sell borrowed securities in the hope that a price drop will enable it to buy them back later at a lower price. Fidelity says that problem with structured note derivatives that amount to make made short positions usually along with another bet. The notes provide a more customized way to express investment views than simply buying securities or selling short, he says.

Fidelity limits Asset Manager's exposure to structured notes to 5% of assets, but some funds use them liberally. The \$2.5 billion Merrill Lynch World Income fund sailed into last year's European currency turmoil heavily freighted with notes that had embedded foreign-currency swaps. Almost 10% of the fund's assets were in structured notes and derivative-linked CDs from issuers such as Bankers Trust Co., General Electric Credit Corp., Goldman Sachs, Harvard University and Fannie Mae. Those seemingly innocuous holdings were double-barreled bets—many of them leveraged—in favor of the Spanish peseta, Italian lira and other currencies in countries with high interest rates, and against low-yielding currencies such as the yen.

Hill by Derivations

Those bets backfired with the devaluations accompanying the turmoil in Europe's Exchange Rate Mechanism last year. Prices of many such notes fell as much as 80%. Merrill says it jettisoned most of the notes, but evidently not before World Income took a hit. The fund's track record fell from well above average to lag behind 80% of rival world bond funds in the three months ended in September 1992, according to mutual-fund tracker Morningstar Inc. Merrill says the fund was "insignificantly affected" by the summer's currency upheaval because most of its portfolio is now tied to the dollar.

Global bond funds, which generally aren't for the faint-hearted, weren't the only ones to speculate in notes linked to currencies. Lots of funds, many with no risky foreign mandate at all, found the notes high yields irresistible. Among them were Shearson's Managed Government fund, Diversified Strategic Income fund and Government Securities fund, Keystone B-I High Grade Bond fund and B-I Diversified Bond fund, Stein Roe Government Income fund and Intermediate Bond fund, and Strong Income fund.

More and more, you will see a mix profile that has nothing to do with one- or two-year security, popping up in safe-sounding bond funds, says Theresa Havill, general partner at money manager Newberger & Berman. Derivatives such as structured notes are introducing leverage and speculation into mutual funds.

Sometimes funds use other derivatives such as floors, to instate adjustable-rate problems. For instance, adjustable-rate

Common Terms in the Derivatives Market.

- **DERIVATIVE:** A financial contract whose value is designed to track the return on stocks, bonds, currencies or some other benchmark. Generally, derivatives fall into two broad categories—forward-type contracts and option-type contracts—and may be listed on exchanges or traded privately.
- **OTC DERIVATIVES:** Derivatives that are transacted "over-the-counter," or off organized exchanges, and usually by telephone.
- **FORWARD:** An OTC contract obliging a buyer and a seller to trade at a set price on a future date a fixed amount of a particular commodity, currency or other financial instrument. Forwards are "price-fixing" contracts, because they saddle the buyer with the same returns as owning the underlying asset. Normally, no money changes hands until the delivery date; then, the contract is usually settled in cash rather than through exchange of the actual asset.
- **FUTURE:** Basically, an exchange-traded forward contract. Futures contracts are highly standardized, and the exchange acts as counterparty to both buyer and seller, guaranteeing payment in case one of them defaults. In return, buyer and seller are required to put up collateral, or margin, equal to a certain percentage of the contract's underlying value, which is marked to market daily.
- **SWAP:** A forward-type contract in which two parties agree to exchange streams of payments over time according to a predetermined rule. In an **inter-rate swap**, one party agrees to pay a fixed interest rate in return for receiving a floating interest rate from another party. An **equity-index swap** may involve swapping the returns on two different stock-market indexes, or swapping the return on a stock index for a floating interest rate.
- **OPTION:** A contract for which the buyer pays a fee in exchange for the right, but not the obligation, to buy or sell a fixed amount of a given financial instrument at a set price within a specified time. Options are "price-insurance" contracts because they protect buyers from adverse swings in the price of the underlying asset. The buyer can never lose more than the price paid for the option, but the seller's losses are potentially unlimited.
- **CAP:** An option that protects the buyer from a rise in a particular interest rate above a certain level.
- **FLOOR:** An option that protects the buyer from a decline in a particular interest rate below a certain level.
- **EXOTIC OPTIONS:** A wide variety of options with unusual underlying assets or peculiar terms or conditions. For example, a **lookback option** confers the retroactive right to buy a given financial instrument at its minimum price, or sell it at its maximum price, during a specific "lookback" period. A **compound option** is an option such as a put on a call, a call on a put, a put on a put, or a call on a call.

Sources: Federal Reserve, Group of Thirty Study, Dictionary of Financial Risk Management

mortgage funds, which have been hurt by falling short-term rates, can't get the higher yields on fixed-rate bonds without violating federal securities rules requiring them to meet their stated investment objective of holding at least a certain percentage of their assets in ARMs.

Making an End Run

By purchasing through Wall Street dealers an option-like derivative called a "floor," ARM funds can protect their returns from declining yields. Floors ensure that an investor's interest income won't fall below a given fixed-rate floor. Combined with adjustable-rate bonds, floors can provide the same return as fixed-rate bonds. "If we had just sold ARMs and bought fixed-rate securities, that would knock us out of compliance," says Benjamin Rinke, a Piper Capital executive.

All this activity may leave investors without a clue about what risks their funds are taking. Derivatives listed in funds' annual reports explain little about potential hazards — if they are listed at all. Meanwhile, most big funds' prospectuses have been amended to allow broad, unspecified use of such instruments.

Regulatory guidelines, which predate

the derivatives boom, set a low standard. For instance, "swaps are off-balance-sheet; they're not disclosed at all," says Gene Gohlke, who heads the Securities and Exchange Commission's inspection of mutual funds and investment advisers. He adds: "Nothing in our rules spells out what needs to be disclosed by way of description of securities" with derivatives embedded in them. "It's up to the funds."

What can small investors do?

They can try to look beyond a mutual fund's historical returns and investigate the risks it has taken to achieve those returns. Investors could do so more easily if the funds disclosed explicitly the risks of the derivatives in their portfolios — measured not just in terms of credit risk but also in terms of how volatile these instruments can be. Rating agencies such as Standard & Poor's and Fitch Investors Service are trying to develop just such a way of assessing funds' riskiness.

J. Carter Beese, an SEC commissioner, expects investors to show "greater concern with risk-adjusted return as time goes on." But he doesn't expect action very soon. He notes that a big market disruption "has traditionally been one of the ways people focus on these issues."

FW
 Financial
 World

OCTOBER 26, 1993 • VOLUME 162 • NO. 21

Bankers in a Box

With declining margins and falling asset yields,
where will tomorrow's earnings come from?

by Leland Montgomery

INVESTORS IN 1994 ARE SURE TO LOOK BACK AT THE FIRST THREE quarters of 1993 as a golden time for banking. Everything went in their favor. Money was cheap, interest margins were wide, fees from mortgage and loan refinancings was strong, and sales of the banks' newest product, mutual funds, were soaring. And after years of rising problem loans, the banks began seeing a decline in their nonperforming assets. Some were even able to draw off excess funds in their problem-loan reserves.

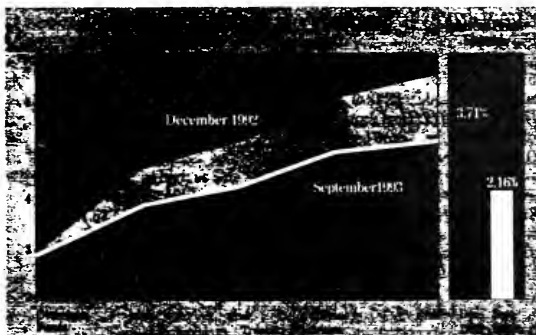
No wonder the banks' earnings were so strong. With the reporting of second-quarter results in July, the largest banks saw their earnings rise an average of 35% from the second quarter of 1992.

But current bank earnings are unsustainable because banks are already experiencing a big squeeze in their net interest margins. As George Salem of Prudential Securities warns,

the yield curve has already flattened since December 1992, when the difference between yields on seven-year Treasury notes and the cost of borrowing Fed funds produced a huge 3.71% net interest spread.

Since then, short-term yields have remained at 3%, while some medium and longer-term yields have fallen by nearly 1.5% (see chart below). The result, says Salem, is a far smaller spread between borrowing costs and investments. Spreads have narrowed from 3.71% to 2.16%," says Salem. "This flattening is a major

negative for banks' interest rate swaps activities." Swaps are the derivative instruments banks and corporations use to alter their mix of financing between fixed rates and floating rates in their loans and investment portfolios (see page 3). By exchanging fixed rate debt for floating rate (or vice versa) through



Source: Prudential Securities, FW

the use of a swap, banks and corporations are able to secure the lowest-cost funding available. Banks use swaps to lower their cost of borrowing short-term money, to offer customized lending to their corporate clients and to offer variable rate mortgages with interest rate caps. And in recent years banks have been using swaps to bet on the one-way fall in interest rates.

David Pringle, banking analyst with Lazard Freres, goes a significant step further. "The most important determinant of margin performance in 1993 and 1994 will be interest rate swap activity," Pringle announced in a groundbreaking report issued in November 1992.

By contacting a number of banks known to be active users of interest rate swaps, Pringle drew up estimates of the effect of swaps on bank income statements. Pringle determined that most banks were betting on lower rates. By using interest rate swaps, they contracted for income in the form of fixed rates while agreeing to borrow on floating rate terms.

As it turned out, that was a smart move: The Federal Reserve began forcing short-term rates lower in 1989. With each drop, the banks made even wider spreads on their swaps positions. That meant huge one-time drops in the cost of their funds.

"A number of banks have experienced windfall profits in their swap positions over the last few years, due to a decline in interest rates and an increase in the slope of the yield curve," Pringle maintains. "This enhancement can represent up to 30% of a bank's reported after-tax earnings." These swaps are now maturing, and they can't be replaced on their older, more favorable terms. Many of them begin repricing in the second half of this year, so banks are facing the loss of large amounts of their income as their swaps portfolios mature.

For example, Pringle estimated that because of swaps repricing, NationsBank could lose some \$150 million in interest income, or 8% of its per-share earnings. First Union and First Chicago could suffer drops of 14% to 19% of their net income.

The first Wall Street analyst to finger the large role played by swaps in banks' earnings, Pringle concedes even now that his report was based on many guesstimates. But he stresses that investors don't have a hope of understanding bank earnings without learning more about how interest rate swaps and derivatives have enabled the banks to increase their exposure to interest rate risk without being subject to on-balance-sheet disclosure.

Management consultant Sanford Rose of New York City-based Oliver Wyman & Co. agrees. After many conversations with bank managements in the past year, he has concluded that "they are mismatched" between assets and liabilities, the result of using short-term liabilities to buy long-term Treasuries.

HOW BANKS USE SWAPS

T.J. WITHERSPOON, CHAIRMAN OF MEGABANK, WAS JUST FIRING UP HIS BREAKFAST cigar when his treasurer, David Mullins, entered with last week's branch office report.

"One hundred million dollars of adjustable-rate mortgage applications!" cried Witherspoon. "Doesn't anybody borrow fixed-rate anymore?"

His problem: 90% of Megabank's deposits are long-term, fixed rate CDs. If he lends more in floating rate mortgages, the bank will be paying fixed-rate and receiving floating-rate. A dramatic drop in interest rates would not only squeeze his profits; it could put him out of business.

"What do we do, Mullins? Can't we convince some of these people to borrow fixed?"

"No way," replied the treasurer. "But I've just been on the phone with BankTwo, the guys across town. They say they have too many fixed rate commercial loans on their books. Don't you think they'd be willing to swap?"

So MegaBank and BankTwo, each with different customer bases and loan portfolios, agree to swap the interest payments on \$100 million worth of loans. MegaBank will pay variable rates for seven years on \$100 million to BankTwo, based on the standard adjustable rate mortgage index. It will receive, in return, fixed rate interest on \$100 million from BankTwo. No principal changes hands, however.

That way MegaBank can make the new variable rate mortgage loans and ensure that it will earn a steady spread between the variable rate income of the mortgages and the variable rate payments to BankTwo. And BankTwo locks in the spread between its fixed rate commercial loans and the fixed rate payments to MegaBank.

"But Mullins," demanded Witherspoon. "What if they fold? We'd be more exposed than a dancer at a Times Square peepshow!"

"Naw," said Mullins. "You'd stop paying them as soon as they stopped paying us. Worst case, we're out one month's interest on the \$100 million."

"Plus one treasurer," snickered the chairman.

—L.M.

Despite the historical evidence, Rose explains, "many CEOs and certainly CFOs believe themselves to be superior rate forecasters in the short run." And currently Rose finds most bank managers are sure that there is little chance of interest rates rising. So they continue to use swaps to receive high fixed rate income while paying out lower floating rates on their cost of funds, thus boosting their earnings.

The trend is not just evident among the top 10 banks. Says Eugene Ludwig, the comptroller of the currency: "In recent years we have seen U.S. regional banks becoming more active in the markets." William Demchak, head of derivatives marketing to small and midsize banks for J.P. Morgan, agrees: "Derivatives are much more important than they were even two years ago, particularly for the regional banks."

For four years now, using swaps and derivatives to pay falling floating rates and receive fixed rates has paid off in spades. But bank managements have come to rely enough on profits from their swaps strategies to make some analysts worry. Because swaps contracts are not on the balance sheet and not subject to disclosure rules, analysts and investors can only guess how much of any bank's profits come from these one-time gains on their swaps positions.

The credit rating agencies should be more help here, but they aren't, according to Craig Bouchard, global head of derivatives for First Chicago. "They aren't the best watchdogs."

A BANKER'S DOZEN

THE TABLE BELOW LISTS THE 12 LARGEST U.S. banks and the relative amount at risk in their interest rate swaps, options, futures and forwards contracts.

Interest rate swaps are the most common type of bank-traded derivative today. They are typically created when banks exchange a floating rate asset, or an obligation, for one with a fixed rate. A bank that has too many loans tied to variable rates may choose to trade these with another bank that made too many fixed rate loans.

For example, Bank A has \$100 million of loans yielding prime (currently 6%) plus 1%. But if these floating rate assets don't match well with their liabilities, which may be five-year certificates of deposit at a 5% fixed rate, the bank would be mismatched between its assets and liabilities.

The solution? Trade these floating rate interest payments with another bank with too many fixed rate loans.

In such a trade, Bank A will still service its loans with its customers, but because of the swap will pay Bank B these loans' interest, prime plus 1%, on

\$100 million. In return, it will receive from Bank B the fixed 7% in interest on Bank B's \$100 million of loans.

The table measures each bank's use of swaps as the amount of principal involved (the notional amount), and as the amount of credit at risk. The latter represents the bank's ultimate exposure if the other party fails. If that happens, all Bank A would have to do is go out and replace the swap in today's low interest rate environment.

If interest rates have fallen since the swap was put on, the value of the swap to Bank A is higher; therefore, the amount of at-risk exposure is higher. Thus, the value of a swaps position fluctuates with changes in interest rates.

Banks use swaps in different ways. Acting as brokers, Bankers Trust and J.P. Morgan book huge profits from swaps as trading income. Their net interest margins may be low, but they boast extraordinary ROEs of 21%. Chemical Bank and Citicorp have large books of more traditional swaps businesses: the fixed versus floating rate swaps described above. At the other end of the spectrum, Wells Fargo, NationsBank and Banc One use swaps and derivatives only to manage their own interest rate risk. The

net interest margins of these banks, enhanced via skillful swapping, are among the highest in the industry. For example, Banc One's latest net interest margin is 6.3%, using swaps. Without swaps, estimates Prudential Securities' George Salem, that margin would be 5.1%.

But, according to banking analyst David Cates, none of these are the riskiest users of swaps.

"The big users of derivatives, like Bankers Trust, are highly skilled. They know exactly what they're doing. If they're taking risk they know it.

"Where the danger arises," says Cates, "is farther down the ladder of size, where an asset-liability manager with a swelled head might be using derivatives in a manner that he or she doesn't really understand."

Most banks insist they are not adding risk by using interest rate swaps and derivatives, but only hedging their existing risk. But can a hedge really produce a profit for the bank without any risk?

Nonsense, retorts George Handjinicolaou, head of BankAmerica's financial engineering and risk management group. "The only perfect hedge exists in a Japanese garden." —L.M.

A BANKER'S DOZEN: DERIVATIVES AT THE 12 LARGEST BANKS

BANKS	INTEREST RATE SWAPS AND DERIVATIVES*			NET INTEREST MARGIN	RETURN ON EQUITY	TOTAL ASSETS (MIL.)
	NOTIONAL AMOUNT (MIL.)	AT-RISK EXPOSURE (MIL.)	AT-RISK EXPOSURE AS % OF EQUITY			
CITICORP	\$611,400	\$6,200	62%	3.49%	7.2%	\$213,701
BANKAMERICA	379,808	7,070	58	4.49	12.2	180,814
CHEMICAL BANK	1,066,354	7,500	83	3.32	12.0	139,655
NATIONSBANK	30,984	255*	3	3.67	15.7	119,806
J.P. MORGAN	890,200	8,300	126	1.74	21.0	102,941
CHASE MANHATTAN	412,800	5,700	95	3.71	10.7	95,862
BANKERS TRUST	696,460	8,363	230	1.70	21.0	72,448
BANC ONE	21,602	253	6	6.34	18.2	61,332
WELLS FARGO	15,500	395	11	5.12	7.9	52,537
PNC BANK	8,622	106	3	3.64	15.0	51,523
FIRST UNION	44,075	153	4	4.32	14.8	51,327
FIRST INTERSTATE	19,411	577	19	4.09	9.5	50,863

Note: All figures as of 12/31/92. *Derivatives includes all interest rate swaps, forwards, futures and options. %W estimate. Sources: S&P Information Services Inc., annual reports.

he says. "A Moody's or a Standard & Poor's can't analyze your swaps book every month. They only review swaps portfolios in detail when they are asked to consider a rating upgrade."

How can investors avoid banks that depend too much on swaps for their earnings? Look at management, argues David Cates, chairman of Washington, D.C.-based Cates Bank Rat-

ing Service. He insists that the real risks of derivatives are not the instruments themselves but the people who manage them.

After all, says Cates, "for a long time bankers have been prone toward lemming-like rushes to the sea, and there could be a lemming rush to the sea going on [in swaps] that we can't identify."

HOW RISKY ARE THEY?

ALARMED BY THE EXPLOSIVE GROWTH IN the use of swaps and derivatives by banks, Eugene Ludwig, the comptroller of the currency, announced on Sept. 27 his agency's requirement that each bank have in place a "no surprises" risk management policy, with concrete systems and controls.

In a speech before the Institute for International Bankers, Ludwig explained: "In a volatile rate environment, the market risk on some types of derivatives contracts could increase." Ludwig is particularly concerned about interlocking, or systemic, risk, whereby a loss at one bank could spill over to other banks.

"Imagine circumstances," said Ludwig, "in which some 'common event' occurs that simultaneously exposes a large number of market participants to higher risk. The higher exposures for those participants creates still higher exposures for other market participants."

"The fact is that while we are not all in the same boat, we're all on the same lake."

Ludwig's warning follows the alarm first sounded by E. Gerald Corrigan, former president of the Federal Reserve Bank of New York, in a January 1992 speech. Corrigan cautioned that high-tech banking and finance isn't all it's cracked up to be, adding: "If that sounds like a warning, it is."

Much the same conclusion was reached by major swaps players in a study of derivatives risks under the aegis of the Group of Thirty, an economic think tank. Headed by Dennis Weatherstone, chairman of J.P. Morgan, the group's report, issued in July, recommended greater self-regulation. That coincided with another crescendo of concern, as further currency and rate instability in Europe left analysts and regulators worried about the potential for banks to fail on their swap agreements.

"We frankly see the report generating healthy peer pressure," Weatherstone recently told a meeting of the International Swaps Dealers Association,

the industry grade group. "The Group of Thirty report will help by giving dealers and end users a benchmark against which to assess their own risk management practices."

So far, the swaps and derivatives markets have given little cause for concern. Apart from one celebrated default totalling some \$500 million by the suburban London municipality, Hammersmith and Fulham, the interest rate swaps market has grown to \$4.6 trillion in volume largely without mishap. According to data compiled by the International Swaps Dealers Association, the historical default rate on swaps is only 0.46% of the market value of swaps outstanding.

But despite the good track record of the instruments used by bankers—interest rate swaps, options, futures and forwards—they generate tremendous distrust because of the lack of disclosure on banks' financial statements. That's not the fault of the banks, argues William Demchak, head of derivatives marketing for J.P. Morgan.

"I think everybody would be in favor of disclosing accurately derivative risk and amounts. The problem is how do you accurately disclose it in a way that's understandable to the average reader of an annual report?"

For its part, the Federal Reserve hopes that greater self-regulation will ensure safety in the burgeoning derivatives marketplace. "We're hoping, and keeping our fingers crossed, that the industry will address it themselves and not really require any regulation," said one Federal Reserve official recently.

However ostrich-like that may sound, the Fed knows all too well that the explosive growth of off-balance-sheet swaps and derivatives in recent years owes much to—what else?—regulations. In particular, swaps enable banks to circumvent the international capital guidelines issued by the Bank for International Settlements (BIS) and adopted by the Federal Reserve Board in 1989. These rules were instituted as a means of deleveraging bank balance sheets. But swaps and derivatives return a high degree of credit risk and market risk to the system by neatly sidestepping the balance sheet ratios laid down by the BIS.

"The capital standards caused [the banks] to drive many of their activities off the balance sheet into derivatives instruments," declares Paul Isaac, chief economist with Mabon Securities. After all, off-balance-sheet activities require no regulatory capital, so bank managements have a completely free hand in how they arrange their interest rate swaps positions and risks.

Some question whether management is up to the task. According to the *Investment Dealer's Digest*, a Wall Street trade publication, accountability for swaps risk became a key bone of contention between American International Group and its own subsidiary, AIG Financial Products Corp. AIG, one of the most sophisticated risk management firms anywhere, was trying to determine what risks its subsidiary was taking in the very-long-term interest rate swaps market. Run by pioneering swaps trader Howard Sosin, formerly of Drexel Burnham Lambert, the subsidiary was highly independent. As owner of 20% of the subsidiary, Sosin was pulling down huge bonuses on the current earnings of the firm's swap positions. But according to *IDD*, while the subsidiary was reported to be making large amounts of money for AIG, CEO Maurice Greenburg was concerned that the wrong kind of swaps could produce profitability now, and losses only after Sosin was long gone from the operation. By setting up an internal unit to investigate the subsidiary and to duplicate its interest rate modeling software, Greenburg confirmed some of his worst fears: questionable rate-risk assumptions, the assumption of risks for interest rate moves unforeseeably far in the future, and no reserve pool backing up the riskier derivatives positions.

Sosin and his team subsequently left AIG, and his profit participation contract is currently in arbitration. But there's a lesson in this tale for the managers of interest rate swap departments. "I think of AIG as being one hell of a bunch of smart guys," says Mabon Securities' Isaac. "So if they felt they didn't understand what was going on, do you really think that banks—with their track records—are really going to be a lot better off?" —L.M.

IRS to ease tax rules on hedging transactions

By Laurie Morse In Chicago

THE Internal Revenue Service has issued regulations that will allow hundreds of US businesses to count gains and losses from hedging transactions as ordinary income for tax purposes, rather than capital gains, which are taxed at a higher rate.

The decision represents a defeat for the agency, which since 1988 has attempted to collect taxes on hedge transactions, which are used for risk management purposes by industries as diverse as farming, banking, and energy, at the higher rate. Its actions were based on a 1988 supreme court ruling in a case called *Arkansas Best*, which reversed 40 years of tax practice in the treatment of contracts used to protect business risks.

The IRS also issued a temporary regulation which will give immediate relief to companies embroiled in disputes with the agency over its method of hedge taxation. They include

giants like General Motors, which uses hedging to protect itself from foreign currency and interest rate risk, and Ralston Purina, which produces cereal products and animal feeds, and hedges its raw materials costs with forward contracts and futures transactions.

The regulations are also a relief to the nation's futures exchanges, where many hedge transactions are executed. "It looks as if Treasury has recognised hedging is a legitimate business expense," said Mr Jerrold Salzman, outside counsel to the Chicago Mercantile Exchange.

The IRS turnaround follows a June 17 tax court ruling involving the Federal National Mortgage Association. That ruling gave tax relief in limited cases, but could not be broadly interpreted. The new IRS regulations are much broader, and are an important step toward rationalising the tax treatment of hedging transactions, said Mr Patrick Arbor, Chicago Board of Trade chairman.

⑨

3RD STORY of Level 1 printed in FULL format.

Copyright 1993 Institutional Investor, Inc.
Institutional InvestorFebruary, 1993SECTION: DERIVATIVES; Pg. 94

LENGTH: 2954 words

HEADLINE: The daffier side of derivatives

BYLINE: BY IDA PICKER

HIGHLIGHT

A spate of new products pushes the envelop of financial technology -- and some stretch credulity. But others show real promise.

BODY

The governors of the Chicago Mercantile Exchange were desperate. Investors had lost their appetite for the contract that provided the Merc's primary sustenance during the 1960s: egg futures. So the exchange added contracts on frozen shrimp and ham to its menu, but investors still wouldn't bite. Increasingly anxious, the Merc in 1971 came out with a noncomestible contract: currency futures. Investors took to this new product, and in time the financial derivatives market of course evolved into a smorgasbord of exotic options, futures, swaps, swaptions and on and on.

That same spirit of do-or-die innovation is alive and well on Wall Street and LaSalle Street today. Indeed, it may be a little too healthy. Derivatives, at the fringe, are getting positively wacky. Consider: You can now buy catastrophe futures, pollution-rights swaps, a barge freight-rate index and swaps (fixed or floating) on a paper-pulp index. Restless rocket scientists at investment banks have experimented with such esoterica as net revenue hedges, management stock-option hedges and synthetic instruments to supplant interest- and principal-only mortgage strips, as well as real estate options, volatility futures and even business cycle contracts.

Really, is all this necessary? Assessments of the more far-out derivatives range from laudable to just plain silly. In fact, more than half of the innovations are almost sure to end up on the scrap heap. One banker who has stuck fiercely to plain old equity, fixed-income and interest rate derivatives (which of course were cutting edge in their day) scoffs that the derivatives pioneers are dreamers "searching for the next holy grail." Yet even the maddest financial scientists have their staunch defenders. Leo Melamed, chairman emeritus of the Merc and himself the inventor of currency futures, declares with some heat: "It's difficult to introduce a revolutionary idea. I'd like to know which of the pooh-pooers ever did anything."

A skeptical look at the latest batch of instruments suggests that many do indeed have the potential to generate a market, albeit a modest one. But others may go the way of the Wankel engine, the Betamax videocassette recorder and the electric ear muff.

The creative impulse where derivatives are concerned has a distinctly mercantile bias. Even the strangest derivatives don't pop full-blown from some supernerd's brow. Techies scour the world for inefficiencies, volatile markets and clients' dilemmas -- needs to be met with new products. The great challenge, though, is to meet two different kinds of needs -- those of sellers as well as buyers -- to ensure a liquid market.

Figuring out how to price an exotic instrument can be as complicated as designing it. Logically, the trading price should be based on the amount of risk a counterparty shoulders. Something customized can cost a client a bundle in design fees, but with no market in the unique instrument, the buyer can't lay off his risk. As Moody's Investors Service analyst John Kriz puts it: "What's the secondary market value for a custom-tailored suit? Absolutely nil."

Critics contend that in some cases investment bankers' fees for, say, options on Latin American indexes, account only for market risk, not counterparty credit risk. Thus, the writers of those options -- whether commercial or investment banks -- may be setting themselves up for unpleasant surprises.

Here's a review of developments on the frontiers of derivatives innovation.

PUSHING VOLATILITY

Buyers, sellers and exchanges alike usually disdain off-the-wall stuff. Although the idea for volatility futures has been around for years, no exchange was willing to list the instruments. Last month, though, the Chicago Board Options Exchange said it would soon introduce options (not futures) based on a new index that tracks volatility. But many continue to question the concept of a volatility derivative. Says one prominent futures exchange member, "We didn't see any great demand for a specific futures contract that lets you profit when volatility goes up and lose when volatility goes down, because you can already do that."

In any case traders and investors tend to have a view on the market and like to gamble on their hunches; they want volatility. Yet another drawback to volatility derivatives is that they're disconcertingly abstract. As Merc chief economist Todd Petzel asks, "When you have an underlying basis that's somewhat less tangible than 40,000 pounds of cattle or short-term interest rate, are the traders going to trust it enough?" The developers of volatility futures counter that for those who do seek to limit volatility, their invention is more efficient than a put-call straddle.

COPING WITH CATASTROPHE

The launch of catastrophe futures in mid-December, following a public relations hullabaloo, was itself a timing disaster: The Nor'easter that lashed New Jersey and New York at the time was a vivid reminder of the new contracts' potential risks. Yet the futures, while flawed, attracted attention -- if, ultimately, not much business.

The impetus for catastrophe futures for insurance companies arose from the squeeze on reinsurance, particularly after Hurricane Andrew. Insurers were bating the bushes for "every possible avenue for augmenting traditional coverage," says Bruce Thomas, Travelers Insurance Co.'s director of corporate

Institutional Investor, February, 1993

strategy and research. In response, the Chicago Board of Trade devised several geographic futures and options known as national catastrophe and eastern catastrophe contracts. The intended buyers: insurers for homeowners, commercial business owners, farmers and commercial inland marine companies that need coverage for wind, hail, riot, earthquake and floods. The putative sellers: mainly speculators. Each contract represents unlimited potential losses on \$ 50,000 worth of premiums. Contracts to cover the Midwest and West are in the works.

In theory, says Traveler's Thomas, catastrophe futures allow for efficient price discovery and risk transfer. An insurance company risk manager could look over his portfolio of risk and decide to buy or sell coverage through the futures market. The assumption is that the transaction costs of risk shuffling through a futures exchange would be a lot cheaper than going through brokers. The contracts, because they organize coverage by region, allow insurers to transfer risks readily; it's easier to find parties willing to absorb, say, East Coast storm damage risk than national exposure, largely because companies' risks tend to be geographically concentrated. And, in an insurer's ideal world, catastrophe futures would reduce capital costs, since they would allow it to hedge away certain risks rather than setting aside reserves to cover them.

Could any insurer resist such a deal? Apparently so. A two-inch notice by the CBOT in the December 16 Wall Street Journal, five days after the contract's launch, stated that that day's volume for March '93 National Catastrophe futures was precisely zero. The previous day's volume? One contract. For Eastern Insurance, the December 15 volume was better but hardly earthshaking: four contracts. Volume did pick up somewhat the following month.

Fundamental problems plague catastrophe futures. From an insurer's perspective, Thomas points out, the most basic question is "how much symmetry there is between the risk specific to one's own portfolio and the risk that ultimately exists from the underlying pool of risk on which the contract is based." If the correlation is poor, the insurer would actually be playing a speculative game.

The accounting treatment of catastrophe futures is potentially more damaging to their prospects. Regulatory bodies have yet to agree on whether the futures are a bona fide hedge or a speculative investment. If they're deemed to be hedges, then they would reduce insurers' need for risk capital and improve their ratings, while reducing their operating costs. If, however, regulators brand the contracts as speculative, then insurers would have to put up capital against them, which defeats the purpose of the futures.

Insurers aren't the only ones who have problems with the new contracts. The prospective sellers -- the speculators who are supposed to make up the other side of the market -- have yet to materialize, according to market sources. Their chief reservation: How can you hedge a Hurricane Andrew? Concedes CBOT director and Kidder, Peabody & Co. executive managing director Richard Sandor, "This contract will develop very slowly."

AUCTIONING POLLUTION

Pollution-rights swaps, which begin trading March 29 on the CBOT's electronic system, aren't as farfetched as they sound. The Environmental Protection Agency

has authorized the exchange to administer auctions in which companies and utilities buy and sell emission allowances for sulfur dioxide, a prime cause of acid rain. Companies can decide if it makes ore economic sense to install costly scrubbers to reduce emissions to permissible levels or, in effect, buy the right to pollute by purchasing allowances from another plant that exceeds Clean Air Act standards. The CBOT's so-called SO₂ futures let companies lock in a price for allowances while they make up their minds on clean-up alternatives. (Futures and options on emission allowances are slated to start trading in late summer.)

The EPA's objective in the swap arrangements is to provide financial incentives for companies to curb pollution. Those that cut back their emissions to below the relevant clean-air requirement can profit by selling excess allowances.

Not to be outdone by its archrival, the Merc is thinking about going the CBOT one better by introducing a comprehensive emissions-allowance market that would deal in futures-based contracts on several pollutants, not just sulfur dioxide -- also to meet the Clean Air Act.

BARGING IN ON CLIENTS

Nobody expects the barge freight-rate index to take off in a big way. But that's not the point. The obscure index provides a valuable service for its niche clientele -- grain firms and barge companies reliant on the inland waterway formed by the Mississippi, Illinois and Ohio Rivers. The index covers the cost of shipping one barge of grain anywhere on the system, with prices weighted according to the time of year. As grain firms want to lock in low prices and barge companies high ones, the index caters to a natural market of buyers and sellers.

At investment banks a hot new product category is strategic derivatives, which zero in on individual companies' corporate finance needs. Maybe a better name would be "foot-in-the-door" derivatives, since the instruments are essentially high-tech calling cards concocted to establish business relationships.

Bankers Trust Co.'s brain trust has devised a strategy for hedging paper-pulp prices that involves swapping fixed-rate pulp for a floating-rate pulp index published by a trade paper. Managing director Bruce Tully's fledgling strategic - derivatives group has talked up the idea to pulp companies from Maine to Brazil to Japan, and expects to launch the product this month. Operating in a cyclical business, buyers would lock in pulp prices with the swaps. The real reason to offer the derivatives, Tully readily admits, is not the money from the trades but the chance to cultivate corporate finance work.

HEDGE OF HEDGES

One of the more intriguing strategic derivatives is the net revenue hedge, a kind of hedge of hedges. It's an option that functions like a portfolio of hedges against a company's collective risk in multiple areas, such as commodities, interest rates and foreign exchange.

Normally an airline, say, would have a fuel-cost risk and an interest rate

risk, and would hedge them by buying call options on jet fuel and caps on interest rates. The bankers at J. P. Morgan & Co. asked themselves: Instead of buying a batch of options, why not buy an "option on the portfolio of risk that underlies a business?" recounts Morgan vice president Richard Timbrell. The net revenue hedges assesses a company's exposure to sundry risks and hedges against their combined potential revenue loss.

Timbrell contends that from a shareholder perspective, a "net revenue hedge is much less costly and more efficient" than individual options, since it can be custom-designed and avoids "overhedging." (Correlations among underlying risks are not normally recognized when a company hedges each risk individually -- hence, overhedging.) The hitch for the client is that a custom-designed net revenue hedge will provide a lower payoff than individual option positions under certain market conditions.

The stricter disclosure rules that now require companies to be more forthcoming about stock options awarded to top managers -- and thereby reveal previously hidden costs -- inspired Bankers to come up with management-stock-option hedges. The rules require the options to be valued according to standard option-pricing models (usually Black-Scholes). These tend to "exaggerate the theoretical cost" of stock options to the company, says the bank's Tully; most have ten-year maturities but are exercised earlier, and the regulations ignore the tax deduction a company receives for "nonqualified" stock options when they're exercised.

Of course the true cost of the options is unknown at the time of the grant, but is potentially limitless. The Bankers product offers a way of hedging this risk for a cash cost substantially less than the amount disclosed on the proxy, Tully says.

Suppose a company gives its managers 1 million ten-year stock options pegged to today's share price. The proxy might value the grant at \$ 10 million. Yet the company can virtually eliminate this exposure by purchasing offsetting call options on its stock at a much lower cost than the proxy amount. Since the exercise of these purchased options on its own stock is tax-exempt for the company, it need purchase only 600,000 options (assuming a 40 percent tax rate), dropping the cost from \$ 10 million to \$ 6 million. Moreover, by taking into account the likely early-exercise pattern, the company could purchase options with maturities of just two to seven years, saving a further \$ 2 million.

PROTECTING STRATEGIC STAKE

Costless collars, a technique born in the interest rate markets a decade ago, can now be used by companies wanting to hedge equity stakes in other companies. A company buys a put option from Bankers struck at or close to the money, and to pay for it sells a call struck out of the money. If the share price of the company in which the stake is held is \$ 30 and the collar -- or maximum exercise price -- for the relevant call option is \$ 45, the stake-holding company can earn up to that sum while protecting itself against a fall in the stock price below \$ 30. If the stock price declines, the company "puts" the stock to Bankers, which gives the company the put exercise price. No money changes hands, but the company protects its balance sheet against swings in the value of its ownership stakes.

What's more, by fixing a minimum value for its stake, the company effectively creates an asset against which a lender may well feel comfortable lending. The disadvantage: a limit to how much the company can earn on its stake if the share price really takes off.

BEYOND BRADY BONDS

Latin America has been fertile ground for derivatives engineers, who've designed instruments that offer plays on stocks and stock indexes, as well as on fixed-income instruments and currencies (predominantly in the Mexican peso). Options on Brady bonds are available for Argentina, Mexico and Brazil. And last year about \$ 1 billion of equity warrants were issued on the Mexican bolsa and on individual Mexican companies.

Now, for the more adventurous, comes the J. P. Morgan Emerging Markets Bond index, which tracks the market for dollar-denominated floating and fixed-rate sovereign restructured bonds of several countries and several sorts: Brazil Exits and Brazil New Money; Mexico Aztecs, Mexico Discounts and Mexico Paris; Nigeria Pars; Venezuela DCBs (debt-conversion bonds); Philippine New Money Bonds and more. Morgan offers options, swaps and warrants on the bond index itself.

The bank says the index, embodying the "most liquid" of the Brady bonds, returned 53 percent over the nineteen-month period ending July 31. Of course, big returns imply big risks. A case in point: Venezuela's government barely survived several coup attempts last fall that could have played havoc with its debt payments. Significant currency risk also exists.

Among the dicier Latin derivatives are the forward contracts U.S. banks now offer on currency options on the Mexican peso. Mexico City is nervous about triggering a run on the peso by devaluing it, and has extended only limited credit lines to sovereign borrowers. Plus, the country slaps a 15 percent withholding tax on any profits. So the contracts, which carry significant forex risk, are not for the squeamish. As Credit Suisse First Boston managing director Ben Weston observes, "With very few exceptions, there is no way to hedge these things."

Another derivative device run amuck? Maybe. The current creative ferment is welcome nonetheless. Who's to say which harebrained-sounding idea will turn out to be the next currency futures? As for the instruments' irrepressible inventors, perhaps the best advice for them is that given to Butch Cassidy by a bemused Sundance Kid: "Keep thinking, Butch, that's what you're good at."

GRAPHIC: Picture, Have a few innovators lost touch with reality? Jim Fittipaldi

Regional Banking

AMERICAN BANKER
Friday, October 22, 1993

Banc One's McCoy Tries to Calm Fears over Heavy Use of Derivatives

BY STEVE KLINERMAN

COLUMBUS, Ohio — When John B. McCoy recently was asked why the stock of Banc One Corp. had lost some of its luster this year, he quickly fingered the company's heavy use of financial derivatives as one possible culprit.

Speaking at a Cleveland investor conference held by McDonald & Co., Banc One's chairman and chief executive acknowledged an outpouring of concern about the company's \$31 billion in off-balance-sheet activities.

"We've got to do a lot better job of explaining that to the markets," Mr. McCoy said.

Controversial Activities

His response highlights the persistent controversy surrounding the banking industry's growing use of sophisticated financial contracts, such as options and interest rate swaps.

Salomon Brothers Inc. reports that the nation's 150 largest banking companies swelled the face value of their options portfolios by \$400 million to more than \$1 trillion during the two years ended Dec. 31, 1992.

In the same period, the 150 banks boosted their portfolios of futures and forward contracts by roughly \$1 trillion, to a face value of \$1.75 trillion.

Changes in interest rates drive the value of these financial instruments. The off-spread concerns that a rate shock might trigger send the entire derivatives

Investors are

suspicious of the

transactions.

market into a spasm or land certain participants in deep trouble.

No Clear Picture of Risks

Further muddying the waters, derivatives don't show up on bank balance sheets, and standardized supplemental reports have not yet been put into place. That often leaves everyone from accountants to analysts, investors, and regulators guessing about the risks being taken by an institution.

"You think you begin to understand, and then you hear something more, and then you look at the financial statements, and there is no real way to pull it out," said Henry Dickson, a banking analyst with Smith Barney Shearson Inc. in New York.

Recent publicity has stoked fears by evoking visions of callow MBAs spitting out volatile financial contracts, using computers powerful enough to guide the space shuttle.

"Investors hear the word 'derivatives' and think we must be rolling the dice, shooting up, and taking big risks," said Richard



"We've got to do a lot better job of explaining [derivatives] to the markets."

JOHN B. MCCOY
Chairman and CEO
Banc One Corp.

"Investors hear the word 'derivatives' and think we must be rolling the dice, shooting up, and taking big risks."

RICHARD LODGE
Chief investment officer
Banc One Corp.

Lodge, chief investment officer at Banc One.

It is understandable that Banc One would command a fair degree of attention on derivatives, given its large position in such instruments and the highly visible ways in which the financial contracts have altered its reported performance characteristics.

In addition to the roughly \$75 billion of assets held on its balance sheet, Banc One has roughly \$31 billion of interest rate swaps. About a third of the book consists of forward swaps, or contracts whose performance will commence in future periods.

But Banc One is not alone in attracting greater investor scrutiny. Felice Gelman, a banking analyst with Dillon Read & Co., says North Carolina's First Union Corp. and Ohio's Society Corp. are spending more time explaining their use of derivatives.

The analyst says she has confidence in Banc One. But she says it still might get caught in a backlash if less experienced rivals get



into trouble with derivatives. "If an explosion occurs, everybody will be rounded up," said Ms. Gelman.

The concern is that a rate shock could play havoc with the swaps market.

The majority of Banc One's contracts involve a pledge to exchange variable-rate interest payments for fixed-rate payments supplied by counterparties. In practice, the swap partners periodically exchange the net difference in the amount of pledged cash flows.

Falling rates and a steep yield curve have boosted the value of such contracts to the point that they are often viewed more as speculative investments than as risk management tools. For example, Banc One's swaps portfolio currently is bulging with more than \$500 million of unre-

alized gains.

But Mr. Lodge says people who focus on derivatives in isolation are missing the point.

Banc One is typical of most banks, he says, in that it has heavy concentrations of variable-rate loans and fixed-rate deposits. That leaves it in a position where assets personally are repricing more quickly than liabilities. This is precarious in an environment of falling rates.

In the traditional approach, Mr. Lodge says, in periods of falling rates banks counterbalance "natural" maturity mismatches by amassing a portfolio of long-term, fixed-rate securities investments, funded by short-term, floating-rate liabilities.

Two big problems with this approach, he says, are that gorging on securities strains capital ratios, and the assortment of securities available in the market may not be the most desirable. Transaction costs are a further drawback.

A Different Story

If Banc One had used traditional means in the achievement of its 69.17% ratio of net interest income to average common equity in 1992, for example, the company would have reported a markedly different balance sheet.

Instead of a reported 11.12 times average common equity, earning assets would have ballooned to a highly leveraged 13.02 times equity. Purchased funds—the "hot money" whose availability hinges solely on interest rates—would have soared to 25.4% of earning assets. From a reported 12%,

Perhaps most significantly, Banc One's vaulted net interest margin of 6.22% would have collapsed to 5.31%.

What About a Rate Spike?

The obvious question is whether all the apparent advantages offered by derivatives would be reversed in the event of a rate spike. And Mr. Lodge says this is the crucial point about Banc One's strategy.

If rates go up, he openly acknowledges, "the economic value of the derivatives book will fall." At the same time, he

quickly adds "the value of the core bank will rise, because assets reprice more quickly than liabilities in the core bank."

Examining Banc One has done a good job of offsetting maturity mismatches in its core bank with interest rate swaps, says Mr. Lodge, profitability will be unperturbed if rates climb.

Failure to Pay Up

The larger short-term issue surrounding swaps, Mr. Lodge contends, is the risk that other parties in the contracts will fail to deliver on agreements which leave them on the losing end. To address that possibility, Banc One has extracted collateral.

The bank holds

\$75 billion of

assets and has

\$31 billion of

interest rate swaps.

al from counterparties that exceeds their liabilities under the financial contracts. In addition, Mr. Lodge said, the bank has obtained unsecured lines of credit with major swap partners.

These arrangements are crucial, Mr. Lodge says, given that Banc One's \$500 million unrealized gain on such contracts represents an identical loss for counterparties.

"If everybody could fail today—everybody—and it would not affect the economics of our book," he said.

Of course, some larger questions remain about derivatives, even with regard to Banc One. Banks already have been pinched with regard to their securities investments by the imposition of partial mark-to-market accounting.

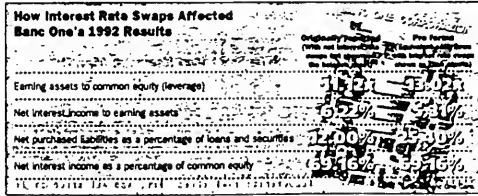
Avoiding Volatility

Forced to recognize changes in the market value of securities investments, but barred from recognizing potentially offsetting changes in the value of liabilities, they are shortening maturities—and forfeiting yield—so as to avoid volatility in earnings statements.

Freedom from this accounting disparity with regard to swaps is what enables Mr. Lodge to say there would be a neutral effect on Banc One's equity if rates rise.

From the standpoint of reported results, it is easy to envision how the bank's risk management strategy could unravel if rising rates pull his swaps book under water—and accountants chronicle that event to the exclusion of corresponding appreciation in the value of the company's core bank.

"The Securities and Exchange Commission, some regulators, and the Financial Accounting Standards Board, I am afraid are going to use mark-to-market accounting as the panacea for all the ills they perceive in the derivatives market," says Mr. Lodge. "That would spend a lot of my time leading off accounting and regulatory reform."



Financial Derivatives and Banking: A Primer

Derivatives are specialized financial instruments that enable corporations and financial institutions to deal with the interest rate, foreign exchange and commodity price risks they encounter in the everyday conduct of their businesses.

These instruments make it possible to hedge against fluctuations in revenues and costs that arise from changes in currency exchange rates, interest rates and commodity prices. The rapid growth of derivative instruments over the past decade and their acceptance around the world offer compelling testimony as to their usefulness.

Derivatives are so named because their value is derived from the values of one or more underlying assets (e.g., currency prices, interest rates, commodity prices). Derivatives take the form of contracts between two parties.

The principal types of derivatives are currency swaps, interest rate swaps and commodity swaps. Each of the terms of a swap — duration, timing of periodic payments, determination of the nature of the payment obligation, and the underlying amount of the contract on which payments are based (notional principal amount) is subject to negotiation. This is why a swap can be crafted to fit the individual needs of the counterparties with respect to their unique exposures.

Swaps are known as over-the-counter derivatives because the absence of standardization makes it impossible for them to be traded on an exchange. However, the exposure generated by a swaps portfolio can be (and frequently is) hedged in part by instruments such as futures contracts, which are exchange traded.

There are two major categories of swaps users — dealers and end users. End users include corporations, commercial banks, thrift institutions, foreign governments, local governments, quasi-governmental entities and international organizations. A swap dealer is an intermediary who meets the specific needs of end users by arranging swaps with individual counterparties. This is known as making markets.

Dealers typically act as a counterparty to an end user by creating a swap tailored to that entity's needs. The dealer manages and hedges the portfolio of risks transferred from the various end users, in part by entering into contracts with other counterparties to offset all or part of the exposure incurred in a particular transaction and in part by using exchange-traded instruments or trading the underlying asset itself.

Banks act as swap dealers for their customers as part of their role as financial intermediaries and because of their traditional expertise in managing interest rate and currency exposures. Accordingly, swaps do not create new kinds of risks for banks; the risks are of the kind traditionally assumed and managed by financial intermediaries. These risks must be assessed and managed by banks acting as

dealers in virtually the same manner as they are assessed and managed in other lines of business. In particular, there are credit, market, documentary, and legal risks.

Specific examples of how end-users use derivatives:

- *To reduce funding costs:* A mid-sized corporation has a \$50 million loan from a U.S. regional bank and pays a floating interest rate of 1% above the London Interbank Offered Rate (LIBOR). This company, anticipating that interest rates will rise in the future, wants to lock itself into fixed-rate funding. So it enters into an interest rate swap in which it pays the dealer a fixed rate of 11.5% and receives LIBOR + 1% in return. To square its position, the dealer arranges another swap with a government-sponsored entity that has more fixed rate funding than it desires. This second swap enables the government entity to convert a \$50 million fixed-rate bond issue it has made into floating rate financing with an all-in cost of LIBOR less 3/8%. In effect, the swaps have enabled both the corporation and the government entity to achieve lower-cost funding than they could otherwise obtain.

- *To smooth out a revenue stream:* An oil producer expects to sell 20 million barrels of oil at prices ranging between \$16 to \$20 per barrel. To avoid fluctuations in his monthly revenue, the producer enters into a swap arrangement whereby he pays a swap dealer the West Texas International (WTI) spot average price per barrel per month and receives from the dealer in return a fixed payment of \$20 a barrel for \$20 million barrels. In effect, he has swapped his variable payments from customers for a fixed payment from the dealer.

- *To protect against adverse moves in currency rates:* A manufacturer of aircraft that will be sold overseas under long-term contracts for pounds, francs or deutsche marks, but whose workers will be paid in U.S. dollars, uses currency swaps to help create relative business certainty. The manufacturer cannot know what the exchange rate will be between the dollar and other currencies at the time the aircraft are delivered, but a currency swap can create a fixed exchange rate.

The Principal Users of Derivatives

The universe of derivatives dealers, including banks and broker-dealers (see attached list) is relatively small. The bulk of derivatives business around the world is conducted among these dealers in conjunction with an also relatively small universe of end-users.

The credit ratings of counterparties in derivatives tend to be solidly investment grade — much higher than the average

Primary Member
February 1993

AIG Financial Products Corp.	Caisse Nationale de Credit Agricole
AKROS Mercantile	Canadian Imperial Bank of Commerce
ABN-AMRO Bank, N.V.	Cariplo - Cassa di Risparmio delle Provincie Lombarde SpA
Allied Irish Banks PLC	Chase Manhattan Bank
Asahi Bank, Ltd.	Chemical Bank
Australia and New Zealand Banking Group Limited	Christiania Bank
Banca Commerciale Italiana	Citibank, N.A.
Banca CRT - Cassa di Risparmio di Torino	Cofiri Servizi Finanziari SpA
Banca Del Gottardo	Commerzbank AG
Banca di Roma	Commonwealth Bank of Australia
Banca Nazionale del Lavoro	Confederation Treasury Services Ltd.
Banco Bilbao Vizcaya	Continental Bank, N.A.
Banco di Napoli	Compagnie Financiere de CIC et de L'Union Europeene
Banco Espanol de Credito, S.A.(BANESTO)	Credit Commercial de France
Banco Santander - New York	Credit Lyonnais
Bankers Trust Company	Credit Suisse Financial Products
Bank Mees & Hope NV	Dai-ichi Kangyo Bank
Bank of America NT & SA	The Daiwa Bank, Ltd.
Bank of Boston	Daiwa Europe Bank plc
Bank of Ireland	Den Danske Bank Aktieselskab
Bank of Montreal	Deutsche Bank AG
The Bank of New York	Deutsche Genossenschaftsbank — DG Bank
The Bank of Nova Scotia	DKB Financial Products, Inc.
Bank of Scotland Treasury Services PLC	Dresdner Bank AG
Bank of Tokyo Capital Markets Limited	Elf Trading S.A.
The Bank of Tokyo, Ltd.	Enron Corporation
Banque Indosuez	Euro Brokers Capital Markets Inc.
Banque Nationale de Paris	Finacor
Banque Paribas	First Interstate Bank Limited
Barclays Bank PLC	The First National Bank of Chicago
Baring Brothers & Co., Limited	First Union National Bank of North Carolina
Bayerische Hypotheken und Wechsel Bank AG	The Fuji Bank Limited
Bayerische Landesbank Girozentrale	Fuji Capital Markets Corp.
Bayerische Vereinsbank AG	Garvin GuyButler Corporation
Bear Stearns Capital Markets Inc.	General Re Financial Products Corp.
Berliner Bank Aktiengesellschaft	GiroCredit Bank Aktiengesellschaft der Sparkassen
BFG Bank, AG	Goldman, Sachs & Co.
BHF Bank	Godsell Astley & Pearce

By Michelle Celarier

New Catastrophe Scenarios Bedevil Derivatives

Doomsday is not necessarily coming, but it certainly could be. That's the bottom line from regulators, who have found something new to worry about with derivatives: market risk. Risk in the global derivatives market is as complex and interconnected as the derivatives themselves, of course. Until recently, worries focused

on the credit exposure of the small group of financial institutions that dominate the business. Now the attention is shifting to the market risk—the danger of losses due to movements in interest rates, exchange rates, or equity values. In the last year, reports from organizations as diverse as the Bank for International Settlements (BIS), the Bank of England, the Group of 30, and Salomon Brothers have highlighted significant concerns about this exposure.

Market risk is difficult to quantify, requiring advanced mathematical systems that even some derivatives players argue are imperfect. Moreover, the level of market risk taken by any one financial institution is virtually unknown to outsiders. In addition, market risk can lead to credit risk. Regulators fear that, if not managed and capitalized adequately, a market meltdown could have a cascading effect on the creditworthiness of major players, precipitating a systemic crisis in the international banking system.

Since derivatives were created largely for the purpose of managing market exposure, concerns about it have lessened, regulators acknowledge. But at the same time, derivatives have been among the many factors—along with the growth in financial transactions, the institutionalization of savings, and international diversification—that have lowered transaction costs and increased liquidity. "All that has made for a more active trading environment, which can create more market risk," says one of the central bank economists who worked on the BIS's 1992 study on derivatives' risk, known as the "Promisel report."

If a bank has a large open position, and prices move against it substantially and quickly, it can incur losses, the economist explains. Such a situation would most likely hap-

pen during a major political upheaval—such as a war in Russia—that could pummel many markets at once, eroding liquidity even for positions that are ostensibly hedged. If a bank doesn't have a capital cushion to absorb those losses, counterparties worried about the bank's creditworthiness would refuse to deal with it, causing a funding crisis at the bank. Particularly if it is a key player, the bank's inability to meet its commitments could put other banks in similar difficulty, precipitating a crisis in the entire banking system.

"Market participants [surveyed for the Promisel report] noted that global information systems disseminated news about problems at a speed that left market participants and central banks very little time to react in the event of a crisis situation," the report states. "These systems also could spread rumors and misunderstandings before they could be countered by denials, clarifications, or explanations. This could affect liquidity in markets where trust was an important ingredient." The report said further that the default of a player was one of the events most commonly cited by participants as capable of triggering systemic problems, adding that bankers were "complacent" about systemic risk, believing that central banks would intervene in the markets to avoid any major calamity.

The fact that the global derivatives business is a highly concentrated one, with a mere 50 banks reporting any activity at all, is a major factor in the BIS committee's concern. These banks deal with each other in the over-the-counter market, not through any central exchange or clearinghouse that serves to absorb risks in other markets. "Since it's a concentrated market, problems could spread rapidly, giv-

en the fact that technology has integrated financial markets all over the world," adds another regulator.

Most derivatives risk managers think such catastrophic scenarios highly exaggerate the risks that derivatives pose. "I would not agree that the market risk alone could lead to the type of systemic problems that the regulators refer to," says Jim Garnett, senior vice president at Chase Manhattan in charge of global market risk. He bases his opinion on the belief that "the majority of the participants in the derivatives market are well aware of and acknowledge their market risks and have appropriate systems and techniques to manage those risks."

However, some of the studies on risks and risk management in derivatives that have been undertaken recently indicate that such sophistication is certainly not universal. Both the Bank of England and Salomon Brothers this year released studies based on surveys of bankers that found risk management tools lacking in many banks, albeit not in the case of the largest market players. "For every bank like Bankers Trust, which has successfully introduced a bankwide risk evaluation framework, there are many more that have failed to do so because of the complexity of the formula, lack of management commitment, and the resistance of traditional managers," concluded the Salomon survey of 50 banks worldwide. It specifically noted that some non-US banks lag in sophisticated risk analysis.

Regulators may be overzealous, but their job is, as one banker put it, "to look for the worm in the apple." Accordingly, the BIS's Basel Committee on Banking Supervision has come up with a set of international capital proposals for market risk in derivatives as well as in the underlying foreign exchange, debt, and equity instruments. For the cash market, the capital charges for open positions will vary, depending on the perceived riskiness of the instrument—from 0.2% for interest rate risk in debt instruments three months or less in maturity to 8% for equity and 12.5% for debt securities with maturities of more than 20 years. Capital requirements for each derivative will be calculated by reference to its underlying instrument. In addition, the

regulations call for estimating market risk on a portfolio basis, rather than transaction by transaction, and they will take hedging into account. For example, the capital charge of a long position in the spot or forward foreign exchange markets would be 8% of the position being hedged by a put, minus the amount by which the option is in the money (if any).

Currently out for industry comment, these regulations are scheduled to go into effect at the end of 1996, supplementing the 1988 capital rules that incorporated the credit risk of derivatives into the regulatory framework for the first time. "We don't want any products that banks are using to escape capital treatment," says one European regulator.

The inevitability of capital constraints on market risk is making bankers nervous about the future profitability and growth of the business. "It's going to have an impact on the extent to which certain firms can trade or on the returns they can achieve," says Alan Wood, global head of derivatives for Barclays Bank in London, who adds that "the leverage will be lost." Regulators admit that market players that are big position takers will likely have

to ante up more capital, but they say the overall effect will be muted by the Basel committee's acceptance of some form of netting—the offsetting by counterparties of the positions they hold against each other—in calculating the capital they must put up for the credit risk of their positions.

The regulators also plan to allow banks to issue a new form of subordinated capital that will provide a cheap source of funds to ease their burdens. The most sophisticated derivatives players do set aside capital internally to cover the market risks of their derivatives books. These calculations are based on models that enable them to maximize their return on equity. But they don't want regulators—who they think don't really understand the business—dictating the precise terms. One US banker refers to such capital requirements as "state-imposed friction costs."

Many observers view the industry-written Group of 30 report on derivatives "practices and principles," which was released this summer, as an attempt to slow down the regulatory process. "It definitely looks that way," says Tanya



Azarchs, who follows the derivatives activities of US banks for Standard & Poor's (S&P). "If the industry can prove it can self-regulate, that will slow down the regulators."

MANAGING RISK

The G-30 report specifically avoided the topic of capital requirements. Instead, it focused on the need for strong risk management systems and made 20 recommendations to derivatives dealers and their corporate and institutional investor clients, all of which regulators laud. The report's first recommendation is that senior management should approve procedures and controls on derivatives operations. It says positions should be marked to market and that dealers should quantify their market risk under adverse market conditions, performing stress simulations and forecasting cash funding and investment needs. A stress simulation measures the likely performance of a given portfolio over a specific length of time, assuming variations in certain parameters such as interest rates or currency devaluations.

The debate over management of market risks was heightened by the past year's turmoil in the European currency markets, as it pointed up the fallibility of the basic building block of options pricing systems, the Black-Scholes model. Currency options were the instruments that raised the red flag during the ERM crisis. Says one European regulator: "By all accounts, the over-the-counter foreign exchange options did not perform particularly well. The traditional Black-Scholes model used in options pricing didn't work." The regulator notes that options' complexity makes them far more difficult to manage than swaps. Trading in currency options has tripled over the past year, making them the biggest growth market in derivatives.

While many banks profited from the ERM turmoil, particularly in their spot currency trading business, not all did so. That's because some banks were writing options for their customers and attempting to hedge these positions dynamically—that is, by constantly buying and selling the underlying currencies. "Their belief in the liquidity of markets and in their hedging capabilities made them feel more comfortable taking larger plays," the regulator says. It was a false security. Options that were written on ERM bands and strike prices out of the bands came into the money as various European currencies were devalued, which meant the banks were obliged to meet the demands of customers who had bet on devaluations. As they scrambled to adjust their hedges in the underlying market, demand caused liquidity to disappear. "There's no question that a number of bank players lost money," he adds. Société Générale, a major options player, acknowledged later that it had lost money during the crisis, as did S.G. Warburg.

Unfortunately, traders and regulators say in retrospect that the Black-Scholes model measures volatility based on historical standard deviation and assumes continuous pricing. As a result, it doesn't take into consideration the possibility of liquidity lapses—what are called gaps. "The models are still in a state of evolution," says one regulator. "We're all waiting for mathematical advances."

The Bank of England's report, based on a survey conducted after the ERM crisis, found that even in normal mar-

ket conditions, the bankers interviewed questioned their ability to price currency options. Some bankers noted that there was no agreed model for pricing interest rate products. "Sophisticated players viewed some of the widely used models as weak," the Bank of England said in a report on its findings, adding that "the weaknesses in pricing/valuation methodologies are likely to carry over into weaknesses in hedging and position management, since basically the same model is used for both."

While bankers nevertheless told the Bank of England that "market risk was not an issue," and the bank agreed that it provided no "major cause for alarm," the study's authors found that "some of [the firms interviewed] had experienced difficulties in managing their risk, even though they can all be considered relatively sophisticated players." The institution was particularly concerned that no two players seemed to use the same model for valuing various derivatives.

George Handjinicolaou, risk manager for dollar interest rate products worldwide at Bank of America, plays down these variations. He says that the differences in models are largely competitive ones. "Some people think they have a superior method, but it doesn't give rise to such differences in valuations that would give concern." He says that the bank is "trying to come up with an interest rate for every day for the next 10 to 15 years [for its model]." He adds: "Inevitably, there is a degree of approximation. But this is a minor technical detail, not a major discrepancy."

Many bankers say they have been fine-tuning their models extensively since the ERM crisis. They are factoring in items such as "event risk," which would take into account the effect on markets of a major catastrophic event. The more sophisticated perform stress simulations. Even so, bankers say they don't depend on models alone. "The models only look at 95% of the risk, and we're paid to manage the other 5%," says one US banker who asked not to be identified. Chase's Garnett takes a similar view. "Our feeling is simply not to push a button on a system and have the model react to adverse rate scenarios. We like to deal with reality and therefore incorporate the judgments of our professionals."

THE DEBATE OVER REGULATION

Perhaps nothing better illustrates the degree to which the definition, and therefore management, of market risk is subject to interpretation than the gulf between regulators and bankers over the minutiae of the new regulatory proposals. Robert Gumerlock, managing director of market risk control for Swiss Bank, says the Basel capital proposals could force some banks that consider themselves as taking little market risk to double their capital. He argues, for instance, that the proposals for interest rate risk are too onerous. In a period of three to four years, a bank would consider its book matched if it had two opposing positions—say, if it found itself making payments at an interest rate of 6% and receiving payments at 5%. "The difference of 100 basis points is really a tiny amount of risk," he claims. However, Gumerlock says the regulatory proposal would impose a capital charge of 20 basis points on such a portfolio. "That's wider than the spread in the swaps

markets." He thinks the result of such a capital rule would be a retrenchment of the interbank business.

In general, regulators take a more conservative approach than many of the banks' models. One example is stress simulations. The regulators want banks to consider the possibility that a major event might roil markets over a two-week period, which Gumerlock says is the time frame both Swiss Bank and Bankers Trust use in their simulations. The Group of 30 report, following the practice of J.P. Morgan (whose chairman, Dennis Weatherstone, headed the study), suggested a one-day framework, which requires far less capital. Many market participants say a one-day framework is adequate because market shocks that would erode liquidity are short-lived, and much position taking is done on an intra-day basis.

Moreover, the regulators appear to want to incorporate a worst-case scenario into the model. Assuming a catastrophe such as a war in Russia, when it's likely that all European stock and bond markets would fall at once, the Basel committee would add the market risk of all the positions of a portfolio together. Gumerlock instead suggests taking a smaller number—the square root of the sum of the squares of the exposure, which might be reasonable on the assumption that the markets wouldn't all move in the same direction at the same time. Most times, Gumerlock argues, the markets do not all move together.

As the regulators have noted, the most difficult instruments to analyze and thus capitalize properly are options. The problem is that the price of an option does not move in a one-to-one relationship with the underlying instrument. It is sensitive to changes not only in the price of the underlying instrument, but also in interest rates and volatility as well as to the so-called time decay of the option—the time left until expiration.

But the biggest problem is posed by the difficulty of hedging options portfolios. Says the Bank of England report: "They require dynamic hedging," meaning that "constant trading is necessary to reset hedges to desired positions." That adds another risk—liquidity—to the options business. For just when an options trader needs most to hedge—such as during the ERM crises—liquidity dries up, and it is impossible to do so.

Liquidity, which has also been facilitated by derivatives, is the trickiest part of the business. "Derivatives instruments have made it possible to create positions that span many market segments and that would have been considered too expensive, risky, or unwieldy if created in cash market instruments," the Promise report stated a year before the ERM crisis erupted. "While such transactions enhance arbitrage between markets and thus contribute to

market integration, they involve a presumption that liquidity in all linked markets will permit agents to adjust or close positions at a time of their choosing. However, a significant disruption in one market may upset that presumption, exposing the position to market risks that cannot easily be hedged, and in the worst case, forcing an abrupt liquidation of contracts in other markets with adverse consequences for market liquidity in them."

As off-balance-sheet items, derivatives were originally designed to avoid regulatory constraints imposed on banks in their traditional lending business. And many observers think any attempt to capitalize and further regulate derivatives will continue to have the same migratory result. "It may leave the playing field to investment banks and securities houses not subject to these capital requirements," says Paul Spraos, editor of *Swaps Monitor*, a US newsletter that closely follows the industry.

Some think that the market risk taken by such players is even greater than that of the banks. The concern over the credit ratings of counterparties in recent years led several US securities firms whose ratings had fallen to set up separately capitalized subsidiaries with triple A credit ratings for derivatives operations. Competitors say that has just pushed the parent into riskier market positions to make the business profitable. For only the credit risk is absorbed by the subsidiary. By doing back-to-back transactions with the parent, says Roger Taillon, an S&P analyst who follows the dedicated derivatives units, the subsidiary transfers all its market risk to the as-yet-unregulated parent.

No matter what action bank regulators take, the lack of supervision of securities firms and insurance companies derivatives activities creates what the Bank of England has called a "regulatory hole" in the supervisory structure. Bank regulators had hoped that IOSCO, the International Organization of Securities Commissions, would follow them in adopting capital requirements, as there is general agreement that some harmonization of standards is necessary. Thus far, IOSCO has been unable to agree with the specifics of the Basel proposals. While some securities regulators think the capital levels on equity derivatives are too high, Richard Breedon, outgoing chairman of the US Securities and Exchange Commission, thinks they are too low.

Equity derivatives, including equity swaps, options on stocks, stock indexes, baskets of stocks, and equity-linked fixed income instruments such as convertible and warrant bonds, are considered some of the riskiest derivatives. These instruments—primarily on US, German, and Japanese stocks—are increasingly used by institutional investors seeking to invest in foreign equities when they are prohibited from buying them outright, according to the BIS.



PENALTY

Swiss Bank's Robert Gumerlock says some banks would have to double their capital charges for market risk if regulators have their way.

Moreover, the products are highly customized and markets in them are illiquid. As a result, the Basel proposal gives them a large capital cushion: 8% for a net open position, which could be lowered to 4% if the portfolio is diversified and the equities are liquid.

A critical area that the new capital proposals don't address is disclosure. While banks are now disclosing some approximations of their credit exposure in many countries, no such requirements exist for market risk. Analysts and regulators alike are dependent on the bankers' word. "They'll tell you their book is completely hedged, and if I was born yesterday, I'd believe them," says S&P's Azarchs. (She estimates that the banks with the largest long-dated books and the biggest options positions, Bankers Trust and J.P. Morgan, have the most market risk of US banks; both also have the most capital to absorb risk, as well as sophisticated risk management systems.) "Everybody in the financial markets is pretty much in the dark about the market risk the other banks are taking," says one regulator.

The inability of accounting practices to adequately define market risk complicates the issue. "Financial statements only measure something in an instant of time," notes Price Waterhouse partner Andrew Coleman, a member of the

working party for the Group of 30 study. "What we really need to know is the average risk" over a period of time. Moreover, the traditional way banks have disclosed their interest rate sensitivity doesn't shed much light on the market positions of international banks with large options positions, he says. And accounting standards and practices differ from country to country. For example, he notes that some European (and Japanese) banks still do not mark to market all of their derivatives books.

Coleman nonetheless thinks that most derivatives players don't have a large market risk. Since OTC derivatives aren't generally tradable, he explains, "if you have a position you don't like, you go out and buy something going the other way. Then you have zero market risk but still have credit risk." But as Azarchs notes, a complicating factor is that derivatives are only part of a bank's global trading operation. While a bank's swaps dealer may try to match his book, for example, much of an institution's derivatives market risk is taken elsewhere—in the trading rooms where most of the huge profits have been made recently.

But Bank of America's Handjinicolau argues that if derivatives instruments have allowed bankers to take more market risk, they've been able to do so in a greater variety of ways than before. "Before, the main way to take market

risks was to go long or short. Now there are spread and volatility plays with different currencies—spreads between swaps, cash, and futures instruments—you name it." That way you can afford to take small risks in many different areas, which are not necessarily correlated, he adds.

Handjinicolau says the market risks undertaken by any individual bank are relatively small, compared with credit risks. He estimates that a \$100 billion derivatives portfolio would typically have a net market risk equivalent at most to a \$50-100 million bond position, although it would have a \$1-2 billion credit exposure.

Although the BIS plans to allow banks to "net" their positions with one another in countries where the procedure is legally recognized, reducing absolute credit exposure for capital purposes, the value of those credit exposures can change as markets move. As a result, bankers say, they will have to add a capital charge, called an add-on, which would depend on an instrument's perceived market risk. Interest rate contracts will have an add-on of 0.5% of the notional amount for contracts with a residual maturity of a year or more, whereas exchange rate contracts will have an add-on of 1% for those with a residual maturity under one year and 5% for those with a

residual maturity of a year or more. The intent is to ensure against adverse market movements in the future that would affect the underlying credit exposure. Even with the add-on, bankers say, netting should alleviate current capital charges by 25-40%.

With or without heftier capital charges, many industry participants say that the industry seems headed toward increased risk taking. "The world's major banks and investment banks will, in the years ahead, assume more risk, not less," Deryck Maughan, chairman and chief executive officer of Salomon Brothers, told a group of central bankers and industry executives meeting in Stockholm earlier this year. "Global competition, excess capacity, further deregulation, and advances in technology will mean that in the 1990s the key to success—or failure—will be the capacity to define, price, and hedge the substantial market and credit risks inherent in matching the global sources and uses of capital."

As much as derivatives players hate the attention they're getting from regulators, maybe it will make their risk-taking easier and safer. Says Chase's Garnett: "The more familiar people become with the overall management of market risk as a portfolio as opposed to stand-alone positions, the more comfortable they'll be with understanding the potential losses that could be incurred." ■



SKEPTIC

Standard & Poor's analyst Tanya Azarchs says, "[Banks] tell you their [derivatives] book is completely hedged, and if I was born yesterday, I'd believe them."

DERIVATIVES

The development of derivatives business has become the most important strategic goal of the 1990s for banks and securities houses with global ambitions. Tracy Corrigan examines one of the most dynamic growth areas in financial markets

Moving on to centre stage

ONLY three years into the decade, the 1990s are already being dubbed the decade of derivatives. Virtually all banks, securities houses and other financial institutions with international ambitions have identified the derivatives market as a crucial strategic area.

Non-financial companies are making increasing use of derivatives to hedge their exposure to foreign exchange and interest rate fluctuations. Slower of the mark, institutional investors are also starting to warm to derivative instruments, which can be particularly useful for asset allocation.

At the same time, the new emphasis on derivatives is having a strong impact on other areas within the banking and securities business, fuelling, for example, advances in technology, and causing banks to reassess their attitudes to risk.

"The strategic question to ask about any bank right now is: have they embraced derivatives? And if not, have they found anything else to embrace instead?" says one analyst.

The market has already come through a period of rapid development. The notional amount of futures contracts traded annually on the world's exchanges is around \$140,000m, while the notional amount of over-the-counter swaps outstanding is about \$4,800m.

Futures and options listed on exchanges are standardised contracts, based on an underlying market, which are traded on and cleared through an exchange.

Over-the-counter products, such as swaps and options, can be tailored to suit a particular

user's needs, and are bilateral agreements between two separate counterparties.

There are now liquid futures contracts based on most of the world's large stock and bond markets. In some cases, the futures markets are more actively traded than the underlying instruments on which they are based.

New markets are still developing in Asia and Latin America, but in the US, and to a lesser extent in Europe, futures exchanges are already highly developed.

"The real emphasis has to be on organic growth," said Mr Daniel Hodson, chief executive of the London International Financial Futures Exchange, who admits that after establishing a range of European products over the past 10 years the universe of potentially active new contracts has shrunk.

Futures exchanges are now trying to adapt products from the over-the-counter market, so that they can offer standardised contracts which have some of the flexibility of the OTC market.

For example, the Chicago Board Options Exchange's flex options, which allow standard contracts to be adjusted to suit individual needs, are being imitated by other US exchanges. The line between standardised contracts and highly customised OTC products has become blurred.

"Some would say we compete (with the exchanges) but I see a complementary relationship from which the financial markets benefit. Risks we take from our clients often flow back to the exchanges," says Mr Joseph Bauman, head of business development, global derivatives, at Citibank, and chairman of the International

Swaps and Derivatives Association (ISDA), the over-the-counter market's trade association. Industry experts believe there is room for further growth, especially in the less mature over-the-counter market.

"If you look at the compound annual growth rates" of notional principal volume (in swaps) - 85 per cent per annum for the past three or four years - it's hard to foresee this pace continuing forever, but growth rates will stay high because the community of users continues to expand," said Mr Bauman of Citibank. Many market participants are confident because they believe that, particularly outside the US, only a small portion of the potential base of fund managers and corporate treasurers has so far been tapped.

"It's like being a car manufacturer, at a time when only 5 per cent of the population has learned to drive," said one specialist. But there is no doubt that the market is becoming increasingly competitive, and products which were once at the cutting edge are now widely available, and at tighter margins.

"The pace of innovation will remain high as dealers continue to devote a large amount of resources to new products," predicts Mr Patrick de Saint-Aignan, chairman of Morgan Stanley SA in Paris, and a senior member of the Group of Thirty committee which recently reported on the derivatives market. "This is an activity where the dealers have a solution-oriented approach rather than trying to push standardised products."

One reason for this is that banks can charge higher fees for innovative products, particularly when they have stolen the march on their competitors temporarily. "The rate of growth is slowing but the base is growing from its getting bigger," said Mr Malcolm Basing, president of SBC Canada and a former chairman of ISDA.

However, he identifies a number of areas where growth potential remains strong, such as commodity swaps and perhaps insurance or credit derivatives.

As well as fending off competitors, the derivatives industry has also come under attack from regulators, who are concerned about the speed of the market's growth and about potential systemic risk to the banking system.

However, a number of reports this year, for example from the Bank of England,

have adopted a more conciliatory tone. "I would not characterise what they (the regulators) have done as backing off. They have taken a major look at derivative activities over the past year and there has been a tempering of the rhetoric that characterised early 1992," said Mr Bauman.

The Group of Thirty report on derivatives published earlier this year set out detailed guidelines on how to manage the risks involved.

"We are still very much under a regulatory glare, but we have convinced them it's a worthwhile business and that it can be managed effectively," said Mr Basing. "We still have to convince them that it is possible for controls to be put in place by smaller players down the line which may have fewer resources."

However, the much lamented regulatory scrutiny has undoubtedly had some positive effects.

First of all, it has concentrated the attention of bankers at board level, some of whom had risen through the ranks in a pre-derivatives era.

Second, the development of risk management techniques for derivatives has in many cases been applied to other areas of banking. "There has been a real awakening to the need to manage risk throughout an institution," said Mr Paul Reyniers, the Coopers & Lybrand partner in charge of global risk management. "If they [banks] can manage risk they have the key tool for capital allocation."

While the continued growth of the market seems certain, it is more difficult to predict the technological changes which will accompany its development. Although the technology of futures trading systems has already advanced substantially, many traders say that no electronic system yet replicates conditions in a trading pit.

However, many traders do believe that electronic trading of some sort will be an increasingly inherent part of the derivatives market in years to come.

Globex, the 24-hour futures trading system jointly developed by Reuters the Chicago Mercantile Exchange and the Chicago Board of Trade, is yet to establish itself as a global network for trading outside normal exchange hours. But if CME chairman Mr Jack Sander's vision of "a global trading village" is eventually realised, it could prove a vehicle for a further net increase in trading volume.

DERIVATIVES 2

Laurie Morse on the burgeoning market in interest-rate derivatives

A two-pronged development

INTEREST rates are hitting rock bottom, the US government is serious about trimming its deficit, and portfolio managers, stung by unthinkably low returns, are bailing out of the bond markets for more profitable venues.

Does this mean the burgeoning markets in interest-rate derivatives, one of the more stunning financial phenomena of the eighties, are close to peaking? No, say dealers. Fixed income derivatives, which are proliferating rapidly, are thriving on the uncertainty created by a 300-basis-point drop in US interest rates in a year, the volatility in European currency differentials following the demise of the ERM, and a massive restructuring of corporate debt.

Last year US corporate treasurers moved en masse to switch fixed-rate obligations, which looked very attractive only a few months earlier, to lower-cost floating rate debt. Even the US government, confident of its own ability to keep inflation low, shifted its debt sales to shorter maturities. The phenomenon is now hitting Europe as rates there fall.

To hear some bankers tell it, on a quiet day in London you can almost hear the scurrying

as corporate treasurers, locked into fixed-rate debt at 8 and 9 per cent, rush to swap into adjustable-rate deals, to take advantage of falling interest rates. Reversing once-attractive fixed rate deals is expensive, although they ultimately lower financing costs, and dealers have become creative about embedding option-like features into the contracts to bring down their cost.

"Interest rate derivatives are developing into a two-pronged market," says Mr Leon Tavossian, vice-president for derivatives research at Salomon Brothers. "New products are evolving to meet ever more complicated risk management needs, while the use of structured transactions by asset managers to enhance portfolio yields is another big growth area."

Once the provinces of US government securities dealers who used the Chicago interest-rate hedge their wholesale bond purchases, the use of derivatives trickled down from banks to corporate treasurers, then to asset managers, and now even to individuals seeking higher yields by investing in derivative-driven mutual funds.

Derivatives dealers who once

1994, requires that securities be classified as either "held to maturity" or "available for sale".

"held for trading". Securities in either of the two latter categories must be regularly marked to market, a factor that makes them suddenly vulnerable to even small fluctuations in long-term interest rates.

The new requirements are expected to throw many more securities into the "available for sale" accounting bin, and the marked-to-market process will not absorb through income statements. It will affect equity and capital requirements.

"A company that is capital sensitive will have to keep a closer eye on what is happening in the available-for-sale account. It's just one more risk they'll have to manage," says Marjorie Marler, a senior manager and derivatives specialist for Arthur Andersen.

She believes derivatives will play a large part in helping these companies mitigate this new market risk. However, conservative organizations, mainly small banks, will simply move assets into shorter maturities, an action that will trim the margins they now reap in the spread between borrowing customer funds at 3 per cent interest and lending them to the government at 6 per cent.

Far from stealing business from organised futures and options exchanges, the evolution and diversification of

interest-rate derivatives has fuelled tremendous growth in exchange-traded products.

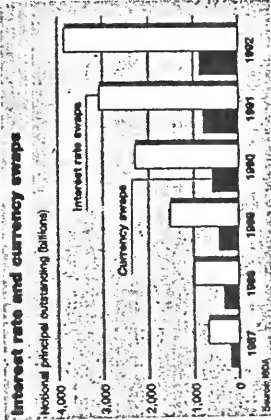
Even the most exotic derivatives, such as structured notes designed for a single customer or essentially distilled into a risk a dealer will hedge in a future or options pit.

Sometimes when the custom transactions are for long maturity periods or require frequent rate adjustments the over-the-counter deal will be hedged and covered and re-hedged repeatedly on an exchange.

This helps explain why the total notional value of interest-rate swaps outstanding at the end of 1992, at \$3,900bn, is supported by the trade group ISDA was smaller than the same measure of current open positions in US-exchange-traded interest-rate derivatives, and far smaller than the value of exchange-traded government debt worldwide.

The exchanges are best described as wholesale debt management markets, and their growth rates expand in concert with custom-tailored derivatives.

The Chicago Mercantile Exchange had a 143 per cent year-over-year growth rate in interest-rate futures and options at the end of the third quarter, while at the Chicago Board of Trade, interest-rate transactions grew by 17.8 per cent. This compares with ISDA estimates that over-the-counter interest rate swaps, in all currencies, grew at a 19 per cent rate last year.



focused exclusively on designing vehicles for customers who wanted to hedge liabilities are now reaching out to asset managers who are beginning to use manufactured securities as investments. Shrewd futures traders have been speculating in derivatives for years, but for the portfolio manager who does not want to be exposed to daily market moves, a tailored over-the-counter deal is more suitable than an exchange trade.

Creating a healthy "buy side" audience for structured debt will provide balance to the derivatives industry, although some critics say asset

managers, by piling into the instruments in a frantic search for yield, could get burned if there is an unexpected interest rate shock.

And the liability management ride of the derivative utility equation is nowhere near being exhausted, in the US or elsewhere.

In the US, a new accounting regulation known as FAS 115 is likely to pull conservative regional bankers, insurance companies, and other capital-sensitive businesses who have resisted the trend, into the derivatives fold.

The regulation, which becomes effective in January

CURRENCY PRODUCTS

ERM crises quicken activity

SINCE THE late 1980s, the trade in currency derivative products has been one of the fastest growing sectors of the foreign exchange business. But successive crises in the European exchange rate mechanism in the past year have given this sector a stimulus that few dealers could have anticipated.

Until a few years ago, the personnel on a bank's derivatives desk were often regarded as unusual figures - more akin to rocket scientists than currency traders. In its infancy, the currency derivatives market was a supply-led business, with banks spending huge sums on the research and development of products which, they hoped, would allow customers to hedge risks.

The growing participation of institutional investors in currency dealing over the past five years gave currency derivatives an initial boost. Institutions such as pension funds and insurance funds have greatly increased their purchase of overseas assets in recent years.

They have been keen to hedge the exposure of these assets - like bonds and equities - to exchange rate moves. That is why they have purchased derivative products

which allow them to lock in to established exchange rates.

But it was the recent crises in the ERM that led to an explosion of interest in this area.

The departure of sterling and the Italian lira from the system in the autumn of 1992 was followed by the momentous decision to widen the bands for most ERM currencies to 15 per cent on August 2 of this year. With currencies fluctuating over much wider areas, investors have rushed to hedge their exposures.

"There has been a 5 to 10 per cent increase in the use of these products over the past 12 months," said Mr Patrick Alloway, managing director of Global Foreign Exchange at Swiss Bank Corporation in London. "Institutions are facing volatility in European cross-rates for the first time, and that is making derivative products much more attrac-

tive."

One of the principal instruments that investors use is the forward contract, which allows him or her to purchase or sell a currency at an exchange rate that is set at a fixed date in the future.

The other popular alternative is the currency "option". This gives the customer the opportunity to buy or sell a currency if it should "strike" a certain exchange rate. The contract is paid for by means of a premium which is set by the bank.

The main customers for these instruments tend to be leading institutional investors or multinationals with payments and receivables in different currencies. It is selective clientele - and that may be derivative products are not cheap. There are two reasons for this:

■ The increase in exchange rate volatility in recent years has made it riskier for banks to write options. In August 1992 and July 1993 - the height of the ERM crises - premiums were selling at some three times above their normal levels. The volatility has subsided, but premiums on European currency options are still higher than normal.

■ Second, options can be expensive because they are often tailor-made for a particular customer. Options can be bought on an exchange, but the most attractive variants are "over-the-counter options" (OTCs) which a bank designs for an institution's particular requirements.

According to Mr Alloway, the most attractive options today are "basket" options, which allow a currency to be hedged against a group of European currencies. That option might be bought by a customer who is unsure what specific trades he will be making in European currencies over a given period of time.

Another popular variant is the "down-and-out" option. This allows a customer to let the option lapse if the exchange rate moves in a direction which is favourable to him. The attraction of these options is their lower premium.

However, if these are tools increasingly used by the principal customers, then they are also being provided by an ever smaller élite of commercial banks.

The research and development investment required to be at the forefront of the derivatives business is so great that only a handful of players can afford it. Mr Alloway says that some 80 per cent of the turnover of the business is controlled by just six banks with a strong presence in London - and their market share is increasing.

Moreover, banks have to be very careful about participating in a business where losses can - theoretically - be astronomical. In the ERM crisis of September 1992, some French banks were thought to have been extremely badly burned by the exposure of their derivatives teams to exchange rate movements.

So, successful option teams need to have very clear management structures around the business. They also have to provide sufficient capital to hedge the "underlying" moves that follow the writing of any options.

The banks are confident that they can manage this business. But governments and central bankers are increasingly concerned about the possibilities of a credit default in the derivatives sector that would destabilise markets.

Earlier this year the Bank for International Settlements said that it might extend the amount of cash cover that commercial banks had to set against the risks that were being taken in their derivatives operations.

There are also concerns that the growth of the derivative market could intensify the flows in spot foreign exchange markets in a way that would also be destabilising.

At the moment, the option business accounts for around 10 per cent of total turnover in foreign exchange. But some currency managers believe that this is enough to impede some 10 per cent of the total flows in the spot market.

Some dealers believe that options were to account for 10 per cent share of all turnover, these instruments would be generating around half of all the flows in the market. There is a danger that this would create extreme volatility at certain times, providing another headache for central bankers who are trying to regulate the operations of foreign exchange dealers.

James Blitz

DERIVATIVES 3

COMMODITY PRODUCTS

Cutting raw material risks

IN SPITE of low commodity prices in recent years, a range of innovative hedging arrangements offered by banks and brokers has appeared on the market. Some bankers see the slight upturn in commodity prices in recent months as an indication that a recovery has set in which could give a new boost to commodity swaps and over-the-counter derivatives.

"If base metals prices bottom out and we see a turnaround, the growth in that market could be huge as most consumers are currently not hedged," said Mr Per Sekse, vice-president for commodity derivatives at Chemical Bank in London.

Crédit Lyonnais, the French investment bank, is so confident of finding new business in the commodity derivatives sector that it set up a new arm in September. Crédit Lyonnais Rouse Derivatives, to extend its involvement into structured finance deals.

However, commodity prices have been depressed for several years and, overall, have declined again this year. Goldman Sachs's commodity index, which tracks the prices of a range of commodities from metals to energy and agricultural products, showed a 4.4 per cent decline in the year to the beginning of October.

Goldman is forecasting a modest upturn in prices over the next six months, fuelled by supply-demand imbalances as

low prices have not encouraged investment in new capacity.

In a low price environment, commodity derivatives can allow a company to lock in a price - either for its raw material or for its sales - and at least meet its budget objectives when cashflow is stretched.

By using OTC products, companies can also hedge to position themselves strategically in the market for a number of years ahead.

These derivatives are often also traded on futures exchanges, but banks can cut individual deals in the OTC markets that extend years beyond the timescale offered by the traditional exchanges.

The most sophisticated area of hedging in the OTC market is in the energy sector where the exchanges do not always provide products that cover parts of the refined oil barrel. For instance; although there is a thriving futures market for crude oil in London and New York and gas oil in New York, there is no exchange-traded futures contract for jet fuel.

Mr Sekse describes how a leading oil company recently bought an option on the spread between jet fuel and gas oil. "This covers the company's risk of hedging its jet fuel sales to airlines by using gas oil futures. The prices of jet fuel and gas oil are different, so the company runs a certain amount of risk of those prices diverging; that risk can be limited by buying a tailor-made option on the spread between the prices of the two fuels."

Mr Chris Mason, managing director at Crédit Lyonnais Rouse Derivatives, says airlines have increasingly been using swaptions in jet fuel as a way of reducing their fuel costs. Some 18 to 20 per cent of an airline's running costs are accounted for by the fuel bill and using fixed and floating rate price swaps, CLRD can reduce that bill by 1 per cent.

Energy companies and airlines are more sophisticated users of these types of hedging deals - more so than similar companies in other sectors. Many banks and brokers are trying to move into a position where they can offer these products to carmakers, for example, food companies and aluminium smelters.

"You are battling with an inherently bullish attitude among management," Mr Sekse says. "They say the reason they are in the commodity business is so that their share prices carry commodity price risk and they always believe the price is going to go up again." His challenge is to convince some conservative company managers that "not hedging is as risky as hedging".

Mr Mason adds that for some mine operators, hedging could be the deciding factor on whether or not they get bank

financing for their start-up costs. CLRD offers a rolling hedge for, say a copper mine, to lock in the price of its output for five years making the project more viable.

CLRD will also finance the cost of holding metal stocks for an aluminium company. The company can sell its entire stock to the broker and then buy it back when it needs it - buying at a spot price which is cheaper than the forward price. It helps the company to get the cost of carrying stock off its balance sheet and the broker locks in a profit by selling the metal forward which it shares with the metal producer.

Hedging is less familiar in the agricultural and soft commodities sector, not least because the prices of many products are government-controlled. Some consumers are using the OTC markets to hedge purchases of frozen orange juice, but Mr Mason believes the food sector could offer enormous potential for these hedging arrangements because it is largely untapped.

There is no regular deal flow for banks and brokers from

this sector of the market, but much marketing effort is being directed at this type of business.

"It can take a lot of patience to convince producers of the need to hedge soft commodities - often as long as six to nine months before they start looking at a deal," said Mr Sekse. The timing is also crucial since the market could, in the meantime, have moved in the wrong direction and the producer could be put off again.

In the agricultural sector, a number of banks and brokers are working on a hedge for the green pound - the theoretical currency linked to the Ecu in which EC farmers are paid subsidies. This is almost impossible to achieve, but is in demand from food manufactur-

ers.

The food companies are less interested in hedging since they tend to have higher margins than companies in the energy sector and can more easily absorb changes in prices of raw materials. But a number are beginning to look at the possibility of locking in some prices.

The commodities sector offers wide potential for innovative deal-making and growth in future is expected to come - at least initially - from the energy business. Other sectors present a hard sell to the banks involved in the business and a challenge to convince conservative companies to dip a toe in the complex waters of derivatives.

Deborah Hargreaves

Tracy Corrigan examines the growth of futures exchanges

Quirky offshoots gain respect

TWENTY years ago, futures exchanges were viewed as quirky offshoots of larger markets. Although still treated with suspicion in some quarters, futures exchanges have now positioned themselves at the heart of the world's financial markets.

According to a recent report by the Group of Thirty, the Washington-based think-tank, the notional amount of futures traded annually is now estimated at \$140,000bn.

The growth of futures markets has been fuelled by the increased sophistication and internationalisation of financial markets, including the proliferation of complex over-the-counter products which are then hedged using exchange-traded products. In fact, the rapid development of financial markets in the past 20 years could arguably not have been realised without the growth of futures and options exchanges.

As barriers between markets have fallen, and international investors have turned their attention to new markets, the establishment of futures contracts has been an important factor in ensuring liquidity and hedging opportunities. The new techniques developed in the derivatives markets have had an impact on investment management, trading, technology, and risk management in spite of this success record, the exchanges themselves appear less than confident.

In the US, the futures business is showing all the signs of a mature market - margins are shrinking, competition is intense, and market share is being lost to younger European exchanges. But in Europe, too, in spite of annual volume growth of 40 per cent for many exchanges, exchanges are aware of new pressures. Mr Jörg Franke, chairman of the Deutsche Terminbörse in Frankfurt, believes that with more than 20 futures and commodities exchanges, Europe has more exchanges than it needs.

Although new products are still being launched, the flow is ebbing, as the pool of potential new products dries up. Without new contracts such as Italian bond futures, it will be more difficult for European

exchanges to build volume. For all exchanges, the development in the past few years of an increasingly active over-the-counter market in products such as swaps and options, which can be used for some purposes instead of exchange-traded products, is a cause for concern.

Mr Lynton Jones, chief executive of OM London, believes the OTC market will continue to grow "but some of their new products will be adopted for exchanges". The most successful such attempt so far is the Chicago Board Options Exchange's FLEX options, which have exceeded \$10bn in underlying notional value in the first seven months of trading. FLEX Options allow investors to use customised derivatives based on stock indices to select various terms such as strike price and maturity.

Exchanges have also been trying to prepare themselves for a potentially more difficult environment by creating cross-trading agreements, linkages and even partnerships. One example is a grouping of smaller European exchanges, known as First European Exchanges (Fex). The only linkage currently in place is between OM London, the Swedish-owned electronic exchange, and the European Options Exchange in Amsterdam. Under that agreement, EOE members have OM screens on their desks in Amsterdam. However, OM members are linked to the EOE only by telephone. Not surprisingly, the flow of business from EOE members to OM has been the more significant.

Fex's other plans have already faltered. In July, Switzerland's Sofex was forced to pull back from its linkage plans under pressure from Swiss banks which want to get their own electronic stock trading system in place first.

Still in the early stages is a linkage of France's Matif and Germany's Deutsche Terminbörse, using DTB screens. As these exchanges command some of the most actively traded contracts in Europe, this alliance could become a powerful force.

The development of these linkages has fuelled discussion

Volume on international futures and options exchanges

	Number of contracts traded	
	Jan-Dec 1991	Jan-Dec 1992
Chicago Board of Trade	139,437,140	160,030,460
Chicago Mercantile Exchange	106,128,604	134,238,555
Liffe, UK	38,583,877	71,977,025
Matif, France	36,676,966	55,474,238
New York Mercantile Exchange	40,786,714	47,212,417
BMAF, Brazil	16,786,564	35,072,146
DTB, Germany	15,369,730	34,842,778
London Metal Exchange	16,837,609	24,736,920
Osaka Securities Exchange	33,478,949	21,184,310
Sydney Futures Exchange	12,496,016	17,557,865
Stockholm Options Exchange	13,442,850	17,147,090
Tokyo Int'l Financial Futures Exchange	16,148,104	15,540,487
Tokyo Stock Exchange	16,601,899	14,538,717
Tokyo Comex Exchange Industry	14,949,199	13,585,379
Commodity Exchange, Inc	15,123,655	12,873,179
Tokyo Grain Exchange	9,699,863	12,416,621
Simex, Singapore	6,065,044	12,180,174
Int'l Petroleum Exchange, UK	6,412,869	10,674,803
Coffee, Sugar & Cocoa Exchange	9,494,734	9,275,708
Sofex, Switzerland	9,971,740	9,258,859
Osaka Grain Exchange	4,123,743	5,441,392
European Options Exch, Amsterdam	3,469,945	3,856,247

Source: Futures Industry Association (provided by exchanges); excludes individual equity options

of technological developments. Such linkages only really function efficiently for products traded on a screen. Most large exchanges still trade using the traditional open-outcry method, which involves grouping traders in a large pit. Proponents of open-outcry trading claim that screen systems cannot cope with heavy volume.

The success of the DTB has shown that screen trading does not necessarily mean illiquid trading. Nevertheless, most traders familiar with both methods prefer trading using the open-outcry method. Some, though, say that it is only a matter of time before the technology of screen-trading is sufficiently advanced to be able to simulate pit-trading.

Despite its shaky start, the most important development in exchange trading so far this decade was the launch last year of Globex, the international after-hours screen trading system jointly developed by Reuters and the Chicago Mercantile Exchange and the Chicago Board of Trade. Volume on the system jumped when France's Matif, the only exchange to join the system so far, added its products earlier this year, but much of the volume was a direct shift of business from the Matif's over-the-

counter after-hours market, which closed at the same time as Matif products moved on to Globex. Globex has also been dogged by squabbles between the two exchanges, and failure to reach agreement with other potential members of the system, particularly Liffe.

Nevertheless, the description of the system at its launch by Mr Leo Melamed, then head of Globex, as "the dawn of a new era", could still prove true. The Chicago exchanges point out that the system cannot be judged to have failed until it has screens all over the world, as envisaged in their original vision of a global trading village. "How do you sell hot dogs in Japan when you don't even have a hot dog stand there?" asks Mr Jack Sandner, head of the CME. Globex has only recently received regulatory approval to install screens in Asia, which is potentially the key time-zone for the after-hours market, and is starting a marketing thrust in the region.

Nevertheless, the success of the system will also depend on attracting other exchanges to list their products. The recent reopening of talks between Liffe and Globex is clearly a hopeful sign, but the battle for a critical mass of volume on the system has yet to be won.

CLEARING

Swaps trade dodges issue

Now that the debate for a multilateral swaps clearing house has died down, even the most self-interested proponents recognise that the swaps trade, a highly customised retail market, will not fit into a wholesale clearing mould. Laurie Morse examines the options



John Davidson: the need for a clearing house has diminished

THE IDEA of a futures-style clearing house for over-the-counter derivatives gained prominence early this year, in part because the US government had just exempted swaps from US commodity regulations, increasing the uneasiness politicians and bank regulators have about the \$7,000bn market.

Advocates argued that a multilateral swaps clearing house would broaden access to the burgeoning market, reduce credit risks, and produce reams of data for regulatory scrutiny. The world's biggest futures exchanges, at least one law firm, and several dealers rushed to research prototypes.

However, the handful of AAA-rated banks and dealers who conduct 80 per cent of the world's swaps trade carefully sidestepped the clearing house debate, knowing that without their participation, a swaps clearing house would not succeed.

They value the competitive edge their credit ratings deliver, and are satisfied with their own credit controls.

Now that the excitement has died down, even the most self-interested proponents recognise that the swaps trade, a highly customised retail market, will not fit into a wholesale clearing mould. Consensus is building that what is needed instead is a series of third-party agents providing services usually performed by a clearing house.

Dealers would continue bilateral netting, using standard master agreements like those provided by ISDA, the International Swaps and Derivatives Association, but trade matching confirmations, collateral handling, and depository duties would be outsourced to others.

"There are credible substitutes provided by reputable institutions for almost every individual function of a swaps clearing house," Mr John Davidson, senior vice-president of the Chicago Mercantile Exchange's clearing operations, told a banking group recently. "As their functionality improves, the incremental need for a clearing house diminishes."

The swaps industry perhaps has learned from the long, controversial, and expensive attempts to develop clearing houses for over-the-counter foreign exchange transactions. Several ventures, such as New York-based FxNet, has bilaterally

netted spot trades for years. However, multilateral clearing remains elusive, and most efforts have avoided derivatives altogether.

Two competing groups, one on each side of the Atlantic, plan to offer multilateral foreign exchange contract netting and global settlement services next year, and intend to include forward contracts as well as spot deals.

Multinet, backed primarily by First Chicago and Chase Manhattan, will use the services of the Options Clearing Corp.

Multinet lost the backing of several top-rated banks when they realised the venture, by enhancing credit quality, could strengthen their weaker rivals. "We knew from the start this was a project subject to fractious relationships," says Mr Garrett Glass, a senior vice-president at First National Bank of Chicago, and the chief architect of the six-year-long project.

Echo, or the Exchange Clearing house, has much the same object as Multinet. Based in London it has a dozen bank shareholders, and is being directed primarily by Barclays. Its prolonged development has been due to difficulties in guiding its charter through jealous waters, and to the fact that starting any kind of clearing operation from scratch is extremely expensive.

In the swaps market, the credit worries extend far beyond initial settlement risk, with credit exposures extend-

ing over the term of the contract. Banks, even more than regulators, are concerned about this exposure.

In addition to imposing strict credit quality standards and credit limits on customers and counterparties, the swaps industry has begun to collect collateral on all but the most standard transactions, and to mark positions to market to assess risk more accurately.

Both practices are the basis of the high credit quality awarded to exchange-affiliated clearing houses.

Although the CME has considered developing a swaps clearing house, Mr Davidson says that fundamentally, the existing system of counterparty credit limits works. "Banks and other financial intermediaries are good at applying them, supervisors are good at reviewing them, and senior management understands them. Rapidly untying the swaps market from its current, largely self-imposed limitations, may not have entirely desirable systemic risk implications," he says.

If the primary swaps dealers do begin to move toward an organised clearing house, they will be driven by regulatory capital requirements. It is widely assumed that a fully collateralised swaps clearing house would be exempted from requirements to beef up capital to back up trades.

However, if this spring's Basle Committee proposal to recognise bilateral close-out netting is approved, capital

reserve requirements for swap-reserve banks could be trimmed by more than half, according to Mr Otho Heiding, a vice-president at Chase Manhattan Bank. That, in turn, would widen the use of standard netting agreements, and hasten the evolution of agents to service settlement and collateral processing needs.

One such service is Bankers Trust's C-Trac, which offers third-party processing for all types of collateralised OTC transactions.

Capitalising on the bank's own derivatives processing capabilities, the product tracks exposures, makes margin calls, and handles the pricing and custody of the assets pledged as collateral.

Ms Eileen Bedell, managing director for Bankers, says the product is aimed at derivative dealers that may not have fully developed back office procedures, and find using the system less expensive than developing in-house capabilities. She thinks that as the derivatives business becomes more competitive, consolidating back-office functions will become more popular.

"People will begin to realise that a swaps trading model is proprietary, but margin tracking is not," she says.

However, since most leading dealers have already invested in their own processing functions, she says the new services can only compete by reducing costs and increasing profitability.

DERIVATIVES 7

FUTURES FUNDS

Europe waits for floodgates to open

A STRONG performance by futures funds so far this year could help get it off the ground. According to industry estimates, around \$20bn is under management in futures funds in the US, but the size of the market is much smaller in Europe - probably between \$2-3bn. The European market also remains fragmented.

Most funds are registered in offshore financial centres, and pitched at high net-worth individuals or small institutions and specific regions. Variations and inconsistencies in the regulatory framework mean more conservative fund managers, although most European futures fund managers are based in London.

In the US, the strong regulatory environment and strict performance reporting standards have helped futures funds to gain a respectability which they have yet to acquire in Europe. For example, a number of US state pension funds now publicly invest a portion of their portfolios in futures funds.

Mr Nicola Meaden, managing director of TASS Management, which tracks futures funds, says that there has been an increase in the number of funds launched in Europe this year, but mainstream institutional interest has been slow to

develop. "We are not seeing the floodgates open. In the short term, institutions are finding it easier to tackle the hedge fund managers," Ms Meaden said. However, this year's strong performance may provide the European futures fund business with some fresh impetus.

In the first eight months of this year the average total return achieved by futures fund managers was 17.46 per cent, according to the TASS Index of CTAs (commodity trading adviser - the industry term for the manager who decides the investment strategy of a particular fund). The reason for this strong performance is that "we have had trending markets", according to Mr Peter Swete, chairman of Sabre Fund Management, a futures fund sponsor which is now partly owned by Henderson.

Unlike most other investments, the performance of futures funds depends less on whether markets are up or down, and more on the pattern of those movements. Although the strategies of

futures fund managers vary considerably, what they have in common, apart from their use of derivatives, is that they are based on data analysis and computer power.

Mr Swete, whose funds have risen 30 per cent over the past 12 months, says that their strong performance has attracted new money, doubling the size of funds under management for the same period. "I think it has been a better year generally in Europe, mainly because there has been better performance after two or three grim years," said Mr Pierson Derivatives at Jefferies.

The increase in investor interest comes mainly from continental Europe, not the UK, according to many industry specialists. One reason is that "continental European banks are moving into the futures fund business," Mr Fox Andrews says.

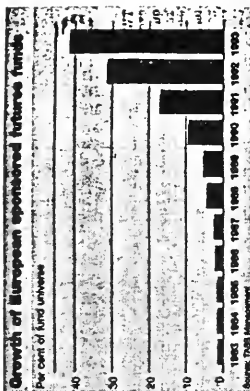
A number of French banks, such as Indosuez, have been active in the market for some time, but are now being joined by more Swiss, German and American banks.

In the US, banks are also becoming more active, though they tend to take a slightly different approach. A number of them had lost traders from their proprietary trading desks, who had decided to apply their skills by setting up

their own funds. Seeing an opportunity, several banks decided to take advantage of this home-grown talent by setting up futures fund departments staffed by former proprietary traders.

"Every major bank is now looking at this area," according to one futures fund manager, but many still have had memories of being told that they broke the 1970s. This has also haunted the retail side of the industry in the UK, which has not taken off in spite of the authorisation of futures funds in the form of unit trusts.

Only a handful of futures and options funds (Fofs) and guaranteed futures and options funds (GFOFs) have been launched, partly because futures fund managers are not able to pay themselves the high fees to which they are accustomed. Derivative fund managers, however, do not have to. "I've recently want the top people you must pay them the top fees," said one fund manager. Standard performance fees on offshore futures funds are 15-20 per cent. However, management fees have fallen in recent years from around 4



is hard to predict the shape that the futures fund industry will take over the next few years.

It is still highly entrepreneurial, one of very few areas possible to start from scratch, establish a track record, and grow very rapidly.

Recent interest from banks suggests that the industry may become more institutional in character. In addition, the growing use of derivatives and of highly analytical computing in the industry suggests that the types of investment in particular, it is increasingly hard to draw a line between futures funds and hedge funds.

Tracy Corrigan

DERIVATIVES 8

REGULATION

Temperature has cooled markedly

EIGHTEEN months ago, the approach of regulators and legislators to the over-the-counter derivatives market was, if not hostile, certainly combative.

The blunt warning about derivatives sounded in January 1992 by the then president of the Federal Reserve, Mr Gerald Corrigan, still rang loudly in bankers' ears, and a small army of regulators from the US and overseas (including the New York Federal Reserve and the Bank of England) were studying the lightly regulated OTC business.

At the same time, lawmakers in the US were getting in on the act. Badly burned by the multibillion dollar collapse of the US savings and loan industry and by the meltdown in the junk bond market in the late 1980s, and by the near-collapse of some of the country's biggest banks at the start of the 1990s, Congress did not want to be caught asleep on its financial watch again.

Eager to be fully informed of the growth of the over-the-counter derivatives business and its potential impact upon public policy, various key finance and banking committees originated their own inquiries, and several leading members of Congress hinted at the possibility of legislation to control, if not curb, the growth of derivatives.

At that time, the creators and users of derivatives were being put on the defensive. Essentially, regulators and US legislators were asking them to prove that the myriad of risks that banks and corporations take on when using derivatives did not threaten the health of an increasingly inter-connected global financial system.

Over the past 18 months, the banks and securities houses which create and sell derivatives, with the help of the corporations and institutions which use them, have helped answer some of the many questions surrounding the business. The result: the temperature of the regulatory climate surrounding the derivatives business, so hot 18 months ago, has cooled.

Mr Joe Bauman, head of business development for global derivatives at Citibank in New York, and spokesman

for the industry in his capacity as chairman of the International Swaps and Derivatives Association (Isda), says regulators and legislators are definitely taking a more "constructive and understanding" approach to the business today. "They have shown a willingness to take a harder look, to get behind the generalities.

Mr Bauman and other bankers point out that regulators were taking such an interest in derivatives primarily because they did not understand the complexities and intricacies of business. Having failed to track the early development of derivatives, regulators were behind from the start, and struggled to keep up with the hectic pace of innovation.

This is a point that the regulators have openly conceded. Last year the then US Treasury secretary Mr Nicholas Brady referred to the "wide knowledge gap between regulator and regulated", echoing earlier comments from a senior Bank of England figure who said the gap was "too great for normal communication".

Since then, the knowledge gap has narrowed. Not only have the regulators started, and in many cases completed, their investigations of derivatives, but banks have gone out of their way to educate regulators about the business. When it comes to the question of whether new risks to banks and the financial system are posed by the growth of derivatives, Isda's message has always been that "the risks are there already, and what needs to be understood is the ways those risks are managed," says Mr Bauman. With the help of a series of derivatives seminars hosted by banks for government officials, that message is now getting across.

In their mission to educate regulators, bankers have been helped by some of the recent studies on derivatives published around the world. None has been more helpful than this July's report from the Group of Thirty (G30). Although many of its authors were prominent members of the international banking community, and therefore deemed unlikely to criticise a business

that was generating billions of dollars of profits for the industry, the G30's pronouncements were still eagerly awaited.

In the event, the study generally concurred with earlier reports by the Bank of England and the BIS and gave the derivatives business a clean bill of health, recommending only a series of management and operational reforms banks should undertake to reduce risks. Bankers said they hoped the study and its recommendations would become a blueprint for regulators.

The G30, however, steered clear of tackling the one issue that worries regulators most - the possibility that something may go wrong in the over-the-counter derivatives market that prompts a worldwide banking and financial crisis.

That this threat still troubles regulators was evident in June when Mr Alexandre Lamfalussy, general manager of the BIS, called for the drawing up of common international standards on banks' disclosure of the risks on their derivatives books. And it was also evident last month, when the International Monetary Fund published its own study about derivatives and warned that growth in derivatives trading may have created unknown risks for banks.

Both Mr Lamfalussy and the IMF made the same point. The BIS chief said that banks' participation in the derivatives markets had "reduced the transparency of their balance sheets", making it harder for regulators to predict "disturbances" that might pose "systemic problems" in global finance. The IMF said: "Participation in derivatives markets can cause firms to become connected through complicated transactions in ways that are not easily understood." This, the report concluded, made it "extremely difficult" for regulators to assess the risk of default in the system.

Regulatory scrutiny of the derivatives business is by no means over. Three Washington-based bodies, the Securities and Exchange Commission, the

Commodity Futures Trading Commission, and the General Accounting Office, are all conducting studies into derivatives. And in September, the Comptroller of the Currency, a key US bank regulator, announced it was establishing a task force to monitor the market's evolution.

The GAO study, which was expected to be released this summer but which probably will not be out until late this year or early 1993, is particularly important because the GAO is the investigative body of Congress, and Congress is where some of the tougher questions about derivatives are being asked.

For now, Congressional interest in derivatives remains at an educational level, with banks and end-users helping the legislators learn more about the business. As Joe Bauman of the Isda says: "We are finding that there is still a fair amount of education to be done, because as a group they have not been singularly looking at financial markets, and certainly not the derivatives market."

Bankers feel this educational process is paying off. Mr Doug Kidd, who is responsible for government relations at Bankers Trust, says: "Members of Congress originally viewed derivatives as nothing more than new positioning tools for financial institutions to make directional bets on markets. Now that education generally is better, and end-users have participated in seminars and talked about how they use derivatives, there's a new appreciation among members of what derivatives are used for."

Although they may now be better informed, legislators are still keen to learn more about derivatives, and a series of committee hearings on the business will be held this winter, including several by Mr Henry Gonzalez, chairman of the senior Congressional banking committee and a regular thorn in the side of US banks. With him, other legislators and many regulators still on the derivatives trail, banks cannot relax.

Patrick Harverson

DERIVATIVES 9

JAPAN

JGB futures stir bad memories

THE CLOSED nature of Tokyo's financial markets was highlighted by the controversial launch of Japanese government bond futures on the Singapore International Monetary Exchange this month.

The launch of the JGB futures by Simex, which also runs the Nikkel futures market, has brought back bad memories to Tokyo stock exchange officials, who blamed the plunge in the stock market on excessive futures and options transactions. Many in the financial markets point out that such misconceptions stem from the heavy regulation over derivative products in Japan, which has also kept the use of futures and options under-developed.

Simex launched the JGB contract after suggestions from the Managed Futures Association in the US. Mr Ang Swee Han, president of Simex, said: "Earlier in the year we indicated that we were study-

ing the possibilities, and there was no indication of concern then," he says.

However, TSE officials have been angered by the launch of the cheaper contract by Simex. "We only got a fax in August from Simex notifying us of the launch," says the TSE JGB futures are already traded in London and Chicago, but this will be the first launch outside of Tokyo in the same time zone.

Simex says the commission levels are around half of those in Tokyo. TSE officials have tried to convince Simex to cancel the plan, without success. "The launch will erode liquidity in Tokyo, hence distorting prices and the efficiency of the market," says a TSE spokesman. Officials at Life, visiting Tokyo recently, have also denounced Simex as a "free rider" copying successful products on other exchanges.

Mr Ang contends that the move by Simex will not frag-

ment the market, since Tokyo's JGB futures market is already huge with widespread participation. Volume on the Tokyo JGB futures is about six times that of Singapore.

Tokyo financial authorities have warned Japanese brokers and traders against marketing, or using the Simex futures. However, this will not stop overseas investors, including overseas affiliates of Japanese brokers, from trading. Some traders point out that the move by Simex reflects growing demand from non-TSE members who want to trade JGB futures without paying exorbitant TSE membership fees.

However, a trader at a UK brokerage based in Tokyo says he will not use the Simex market until its liquidity and pricing efficiency has improved. "The real test is going to come when the Tokyo futures market is locked due to a large sized order," he adds.

The small turnover is expected to keep large-lot players away, and concerns over the open outcry system exists. Unlike the JGB futures traded in London, the contracts are not compatible, with the size of each contract in Singapore half the ¥100m of the Tokyo contract, and positions are not transferable.

One trader at a leading Japanese house, however, points out that trading on Simex holds great potential. "From the users point of view, competition between exchanges isn't a bad thing. The TSE shouldn't involve market users in its row," he says.

It is not the first time TSE officials have failed to persuade Simex to change its stance on products linked to the Japanese market. The TSE tried to convince Simex to implement trading restrictions on its Nikkel 225 futures contracts, following the crash in the Tokyo stock market.

Tokyo financial authorities blamed futures and options contracts for volatility on the underlying stock market, and implemented a spate of trading restrictions over the past

two years. They also requested that Simex introduce stricter rules to curb trading, but Simex failed to comply.

The result of tighter restrictions and higher trading costs on the Osaka stock exchange, where the Nikkel futures are listed, resulted in a shift of trading to Singapore. Japanese officials were angered by the plunge in derivatives trading on the Osaka exchange last year, while activity jumped on Simex.

In July, the TSE drafted a new set of restrictions for the stock index futures market, including the introduction of a circuit breaker mechanism to suspend transactions when prices swing wildly.

Average daily trading volume of Nikkel futures

Year	Number of contracts
Simex	
1988	2,348
1989	3,492
1990	3,715
1991	3,045
1992	13,867
1993 (Jan-Sep)	16,898
TSE	
1988	21,752
1989	21,858
1990	55,239
1991	87,980
1992	48,289
1993 (Jan-Aug)	36,251

Source: Simex, Osaka Securities Exchange

A separate group of Osaka and Tokyo stock exchange members has been working on a new stock index for futures, and a new index was announced by the Nihon Keizai Shimbun, which calculates the Nikkel 225 index, on Octo-

ber 8. The Nikkel 300 is a capitalisation weighted average of 300 stocks, and a new futures contract based on the index is expected to replace Osaka's Nikkel 225 futures, which is a simple price average of 225 stocks, and has been criticised as being easily manipulated.

Meanwhile, although Japan's new coalition government is calling for less regulation and freer markets, the ministry of finance is far from easing its grip on new financial products, including new derivative instruments.

Earlier this year, the Committee to Make Tokyo Markets More Transparent and International (CTTI), an industry body made up of Japanese and foreign financial institutions, criticised the ministry's decision-making in evaluating new financial products saying it was unclear and inconsistent.

Emiko Terazono

DERIVATIVES 10

MEXICO

Propelled into a new financial age

MEXICO'S growing financial integration with the US is propelling it into the age of derivatives.

On the Chicago Board of Trade, trading volume on listed options on Telefonos de Mexico, Mexico's largest stock, rises to more than \$30bn a year, making it one of the most popular options on the exchange. Some 200 to 300 trades in Mexican warrants are executed every day in the over-the-counter market in Luxembourg. The market in tailor-made derivatives on blue-chip Mexican equities, debt instruments or the peso is thriving, and is even larger than the listed warrant market in Luxembourg.

Such instruments have become highly popular with investors wishing to hedge against falls in the stock market, rise in interest rates, or simply leverage their exposure to Mexican assets. They have also proven profitable for the investment banks that offer them, led by Merrill Lynch, Bear Stearns, Banker's Trust, and Goldman Sachs.

The derivative business conducted in Mexico, though, has been limited, mainly because of government regulation. Until recently the only types of derivatives that could be offered in Mexico were *coberturas*, *tesebonos*, and *ajustabonos*.

The *cobertura* is an over-the-counter exchange rate contract, in which the investor pays a premium determined in the market for the right to receive at some specified time in the future the observed peso/dollar devaluation over the period of the *cobertura*. *Tesebono* is a treasury bill that offers dollar rate of return, protecting the investor against the devaluation. The *ajustabono* offers a nominal rate of return

plus the inflation rate over life of the bill.

The *coberturas* have been popular with Mexicans keen to hedge or speculate against exchange rate fluctuations, with daily volume over \$1bn. (Foreigners have had to pay withholding tax of 15 per cent, so they have shied away from the market. However the withholding tax has just been reduced to 4.9 per cent, and foreigners might now move into the market.)

But the *cobertura*, like the *tesebono*, is not a full currency hedge, since investors are only paid in pesos. Were the peso to be made inconvertible, investors would not be able to buy dollars at the official exchange rate. However, with the offshore derivative business growing by leaps and bounds, last year the Mexican government decided to stem the tide, and expand the home-based derivative market. The Mexican Securities and Exchange Commission allowed the stock market to offer listed warrants on blue-chip Mexican stocks. The warrants started trading in October, and average volume has been modest, at about \$1m a day.

So far the warrant market has suffered from over-regulation, lack of liquidity, and foreigners have preferred to keep on buying OTC offshore. It can take several months to obtain permission to issue a warrant, a privilege only granted to Mexican brokerages, which limits the overall liquidity of the market. Mutual funds are still awaiting permission to buy the warrants.

Mexican brokerages are also unwilling to trade or comment on warrants issued by their rivals. This has further prevented the market from reaching a critical mass.

While the government's conservative attitude has been criticised by banks keen to compete with the US in derivatives, it has won support outside broker circles. "There is a virtue in being cautious. It is much worse to go when you

are not ready, than to wait too long," says Catherine Mansell, an academic and author of the best-selling *The new finance in Mexico*.

Next year the Mexican authorities plan to open listed options market in Mexico for equities. Some time after that, the stock market may offer listed options on the peso, and interest rates, and future contracts on baskets of stocks. No decision has yet been made about when to offer such products.

The success of such markets depends on liquidity, how the clearing system is arranged, and restrictions on market makers, says Juan Jose Suarez, co-head of derivative products at Banamex, Mexico's largest bank. But if regulation is flexible enough, Mr Suarez expects considerable interest. "It's difficult to imagine the sort of volume traded on the Telmex option, but there should be significant interest" he says.

Participants stress the synergy between different derivative markets, suggesting that derivative instruments will take off when all are available,

and trading is liquid. "It would be very helpful [for Mexican derivatives] to develop a liquid and efficient futures market" says Trey Rhine, a vice-president at Merrill Lynch, the market leader in Mexican derivatives. A futures market would stimulate liquidity in the underlying market and other derivatives, and help investors arbitrage price differences between assets that offer the same return, ensuring a more efficient market.

Many foreigners will still prefer to trade outside Mexico if only because there are more comfortable dealing in dollar-denominated options, and in their own time zone, says Jeremy Campbell-Lamerton, managing director of the London branch of Inverist. Since the price of an option includes the implicit interest rates during the option's life span, investors will find it cheaper to buy a dollar option than a peso option, if, as is now the case, expected peso devaluation does not offset the peso/dollar interest rate differential.

So far the signs from the authorities regarding regulation have been conflicting. On the one hand, Mexico's finance ministry is itself one of the world's largest users of options and futures, hedging against rises in US interest rates and falls in oil prices. It presumably would want to encourage the development of a domestic derivatives market to allow Mexican companies and investors to follow a similarly prudent financial strategy.

In a possible sign of greater flexibility, the Securities and Exchange Commission finally gave Banamex permission to sell in Mexico an equity-linked note, which gives investors 70 per cent of the upside of the stock market, and protects the principal. Previously such equity-derivative offerings, done by Banames or US houses such as Merrill Lynch, have had to be offered offshore in Luxembourg.

However, the Central Bank remains worried about financial institutions' ability to manage the risks involved with derivatives. This was highlighted by last year's fiasco over *ajustabonos* (bonds that offer a real interest rate, that are, in effect, a play on future inflation rates) in which Mexican brokerages and banks lost at the very minimum hundreds of millions of dollars.

But just as Mexico found in the early 1980s that it was impossible to prevent capital outflows even with capital controls, Mexico is finding that one way or another the derivative business has arrived. The question is whether it will continue to flourish outside Mexico, or whether it will be brought onshore.

Damian Fraser

DERIVATIVES 11

Profile: SWISS BANK CORPORATION

A short cut to domination

SWISS BANK CORPORATION was not one of the first banks to enter the derivatives market. But in only a few years it has become one of the dominant forces in the market, with a derivatives capacity which covers the three main product lines of interest rates, foreign exchange and equities, and encompasses over-the-counter and exchange-traded business.

In a poll taken by Risk magazine in September, SBC was named as one of three market leaders in the derivatives industry (the other two are Bankers Trust and J.P. Morgan).

SBC took a short cut by buying a ready-made derivatives business, rather than trying to grow its own from a relatively small, in-house capability, or poaching teams from other firms. O'Connor Securities, a specialist options trading firm based in Chicago, possessed not only expertise but also the advanced technology required for such an operation.

The move was based on a strong strategic view taken at the start. In 1989, SBC set down a long-term strategy, dubbed "Vision 2000", which took the view that "the capital markets of the 90s would be driven by derivatives and risk management products," according to Mr Marcel Ospel, a member of the SBC executive board. "This led SBC to explore with O'Connor, already a leading player in US derivative markets, the form a joint venture might take to exploit the coming boom in derivatives business worldwide."

A joint venture formed by SBC and O'Connor in 1990 was followed by a full merger of the two businesses in 1992, when SBC bought O'Connor.

At the time of the joint venture, O'Connor was looking at three or four potential partners and SBC had been considering buying a US investment bank to get into the US market, particularly on the corporate finance side.

But these two rather unlikely bedfellows - a US proprietary trading firm and a Swiss bank - decided to brave the potential culture clash.

O'Connor was a "blue jeans and T-shirts firm with a flat level structure", said Ms Lesley Grant, a former O'Connor head who now runs SBC's foreign exchange risk management advisory service worldwide.

It had a very special niche - statistical arbitrage - which

involves investing heavily in systems to have better models and data which can identify anomalies in the market. In particular, the ability to forecast volatility accurately - a key element of pricing in the options market - was a strength of O'Connor.

O'Connor had been very successful first in trading options on the Chicago exchanges and then in the OTC market, but as the market became larger and more competitive its lack of a strong capital base became a restraint. A joint venture with First Chicago in foreign exchange options was dissolved due to lack of commitment to both sides.

At the same time, SBC had started a critical examination of its whole capital markets business in the wake of the 1987 crash - and had found a number of weak points.

One of these was options. "There was a clear gap that had to be filled," said Mr

Simon Bunce, head of interest rate derivative sales.

While there were tales of ructions during the joint venture period, the seams between SBC and O'Connor are no longer obvious.

Staff say the success of the merger is due to the fact that it was driven by need on both sides, and there was little overlap. Although O'Connor staff were afraid of losing their special culture, the handling of the merger by senior staff on both sides helped. "Of the 21 partners at O'Connor, all became managing directors of SBC: no-one took early retirement and went to partner heaven," said Ms Grant.

SBC took the approach of integrating its newfound derivatives capacity with other areas of business - probably more brought with difficulty in the short term, but more effective in the long term. To bring this about, there has been a huge investment in education.

"We pride ourselves on the quality of our derivatives education package which is run from Chicago and networked throughout the world," said Mr

Bunce. Unlike many other banks, SBC staff are sent on two- to three-week courses, their mobile phones confiscated to sever contact.

The integration of cash and derivatives markets is most advanced in SBC's foreign exchange business, probably its strongest platform.

SBC has trained its 170-strong foreign exchange sales team to price and structure their own options so that they are now an integrated cash and derivatives sales team.

Other elements of the O'Connor legacy can be found in use of specialist analytic skills in areas such as risk management. Each book (foreign exchange, interest rate and equities) has a global risk manager, who measures the bank's exposure, and in each case that function is provided by a former O'Connor partner.

There are still some areas of weakness.

Although O'Connor brought

equity derivatives expertise to the table, SBC's cash market business in equities has still not recovered from its disastrous "big bang" takeover of UK stockbroker Savory, Millin.

However, the bank now has a three-quarters formed traditional research and sales function with an industry thrust, in line with present trends.

"The O'Connor franchise in equity derivatives was already very strong," said Mr Steve Smith, head of equity derivative sales, and has allowed SBC to develop innovative retail products, such as guaranteed return instruments, high-yield unit trusts and warrant issues. One example is SBC's innovative bond issues with "knock-out" warrants for Benetton and Roche.

SBC also produced an options package to protect Hongkong Land against a rise in the share price of Trafalgar House, when it took a 20 per cent stake in the UK property company last year.

SBC's other main weakness is geographical. Unlike the US firms which are its principal competitors, it cannot claim to have a truly global reach. Its efforts to develop a strong base in the US are still at an early

stage, and are hampered by inability to merge operations because of the US Glass Steagall law, which separates banking and securities business.

One of the stated aims of Vision 2000 was to be among the world's 10 most profitable banks. Profitable, for bank increasingly means return on equity. SBC's return on equity is around 10 per cent, rather than the 20 per cent return shown by many US investor banks, which do not have the overheads of a clearing bank business. However, the capital markets and treasury division of SBC already makes a return on equity of more than 20 per cent.

Its newfound derivative strength has given the bank greater leverage across all its business areas. The last few years seem to have shown that the SBC planners got it right: derivatives have become the key strategic market in the 1990s and SBC is well positioned to take advantage of the growth of the market.

"You can develop so much when you have a machine that works," said Mr Bunce.

Tracy Corrigan

DERIVATIVES 12

Meaningful expressions

GIVEN the rapid growth in the derivatives industry and the increasingly exotic nature of the products which are being launched, it is hardly surprising that newcomers to the industry are confused or misled by the terminology. In addition, the vast difference between the perceived meaning and the actual meaning of many of the terms poses serious problems for the industry's regulators, lawyers and insurers.

In a recent paper, Mr Graham Cox, group economist at the Sun Life Assurance Society, points out that very often the perceived meaning of a "hedge fund" is a fund with all risk eliminated by the use of hedging positions, whereas the actual meaning is a portfolio of leveraged positions, normally including derivatives. Mr Cox notes that there have been attempts in the past to sort out more

effective and less misleading names for the various functions and products in the derivatives industry, but with little success so far.

However, there are numerous dictionaries which give lucid explanations of the jargon and many banks and securities houses which trade in derivatives have published useful information packs detailing how the more complicated products work.

Asset allocation: dividing investment funds among markets to achieve diversification or maximum return.

As-you-like option (or chooser option or the call-or-put option): enables the holder to convert from one style of option to a different style of option over a preset period of time.

Average rate option (or Asian option): an option in which the settlement is based on the difference between the given strike and the average price of the underlying stock or index on selected dates.

Barrier options: a family of path-dependent options whose pay-off pattern and survival to the expiration date depend not only on the final price of the underlying security but also on whether or not the underlying security falls at or goes through a pre-determined barrier at any time during the life of the option.

Various Barrier options include:

Down-and-out call/put: an option which expires worthless if the market price of the underlying security drops below a pre-determined price.

Down-and-in call/put: an option which becomes effective if the market price of the underlying security drops below a pre-determined price.

Up-and-out call/put: an option that expires worthless if the market price of the underlying security rises above a pre-determined price.

Up-and-in call/put: an option that becomes effective if the market price of the underlying security rises above a predetermined price.

Best-of-two option (or either-or option or alternative option): provides the option holder with a payoff based on the independent performances of two separate and distinct securities or indices.

Box options: a tax efficient method of using cash to generate capital gains, while maintaining a conservative investment approach to funds management. Instead of placing cash in a money market instrument and

generating interest income, equity options are purchased the payoffs of which create capital gains that can be offset against current capital losses.

Call option: the right to buy a given stock, commodity, index, or future contract at a fixed price on or before a specified date.

Cap: contract between a borrower and a lender where the borrower is assured that he will not have to pay more than some maximum interest rate on borrowed funds.

Clearing house: an affiliate of a futures or options exchange which matches and guarantees trades and holds performance bonds posted by dealers. Acts as a counterparty to every trade, reducing credit risk.

Collar: a floating rate debt

contract that establishes both a maximum and minimum interest rate to be paid by the borrower.

Commodity Swap: a swap in which counterparties exchange cash flows based on a commodity price on at least one side of the transaction.

Compound option: an option on an option. The holder has the right to purchase another option on a pre-set date, at a pre-set premium.

Contango: a condition in a futures market where the more distant delivery months trade at a premium to the near term delivery months.

Covered call: one of the most popular option strategies, using an existing equity position. Calls are sold on the underlying security with strikes which are higher than the market price. The strike price chosen limits the profit a security holder can realise from the position and this strategy is best used when the holder is fairly certain that there will be little movement in the security's share price.

Currency swap: an exchange of equal initial principal amounts of two currencies at the spot exchange rate. Over the term of the agreement, the counterparties exchange fixed or floating rate interest payments in their swapped currencies. At maturity, the principal amount is reswapped at a predetermined exchange rate so the parties end up with their original currencies.

Deferred strike or deferred start option (or forward start option): allows the holder to defer the setting of the strike price until some future time, up to an agreed deadline.

Derivative: a contract the value of which changes in concert with the price movements in a related or underlying commodity or financial instrument. The term covers standardised, exchange-traded futures and options, as well as

over-the-counter swaps, options, and other customised instruments.

Equity swap: a contract between two counterparties to exchange two different cashflows over time. Over the life of the swap one party agrees to pay the rate of return on an equity or the equity



Index while the other party agrees to pay a floating or fixed rate of interest.

Exploding option (or one-touch option): a European-style call spread with an early exercise price trigger.

Floor: an aspect of a floating rate debt contract that specifies a minimum interest rate for a borrower.

Forward: an over-the-counter agreement for a buyer and seller to exchange a particular good for a particular price at a specified future date.

Futures contract: an agreement between a buyer and seller to exchange a particular good for a particular price at a future date as specified in a contract common to all participants in a market on an organised futures exchange. Collateral must be posted for performance bonds, and positions are marked to market at least once a day.

Hedge: a transaction that reduces risk of an underlying security or commodity position by making the appropriate offsetting derivative transaction. Usually limits potential reward of the underlying position.

Hybrid security: a complex security consisting of virtually any combination of two or more risk management building blocks - bond or note, forward, future, or option.

Interest-rate swap: the exchange between counterparties of fixed-rate and floating-rate debt in a single currency.

Ladder option (or step-Lock option): provides the holder with a mechanism of locking in gains on an underlying security during the life of the option, before its expiry.

Lookback option: an option the payout of which is calculated using the highest intrinsic value of the underlying security or index over the life of the option. In the case of a Lookback call, the highest market price is used whereas for a Lookback put, the lowest market price is used.

Outperformance option: a call option which allows an investor to capitalise on diverging performances of two

underlying securities, which can be individual stocks, customised baskets of stocks or a specific index.

Put option: the right to sell a particular stock, bond, commodity or index at a specified future date at a specified price.

Quanto option (or guaranteed exchange rate option or currency protected option): an option in which foreign exchange risks in an underlying security have been eliminated.

Risk reversal: this strategy combines the purchase of a put option with the sale of a call option. The put option preserves the capital value of



the shareholding while the sale of a call option reduces or eliminates the cost of this insurance, at the expense of giving up some of the upside potential of the stock.

Swap: a contract to exchange a stream of periodic payments with a counterparty. Swaps are available in and between all active financial markets.

Swaption: an option to enter into a swap contract.

Texas hedge: a transaction that increases risk; two or more related positions whose risk is additive, rather than offsetting.

Warrant: an option to purchase or sell an underlying instrument at a given price and time or series of prices and times. A warrant differs from a put or call option in that it is ordinarily issued for longer than a year.

Sources: *Dictionary of financial risk management*, by Gary Gastineau; *Option volatility and pricing strategies*, by Sheldon Netenber; *Equity derivatives glossary* published by Swiss Bank Corporation.

New box of risk-management tricks

IT IS ONE of the great paradoxes of the derivatives industry. Some leading US commercial banks battered in the 1980s by excessive concentrations of lending to third world countries, the property sector and leveraged buy-outs, have set themselves up in the 1990s as experts in risk management.

Is an industry which proved so lax in controlling its own risks - and which has been bailed out only by the lowest US interest rates in memory - really in a position to advise others on theirs?

The banks say they have emerged stronger and wiser from the experience of the 1980s. Banks have learned as an industry that concentration is a good thing, says Mr Peter Hancock, head of derivatives at J.P. Morgan, a bank which came through the excesses of the 1980s better than most.

Bankers Trust remains the most extreme example of the phenomenon which has turned banks from pools of risk themselves into providers of risk management instruments. Stuck with third world debt and bridge loans which it was unable to sell on through the securities markets, the US's seventh biggest banking group (in terms of assets) slumped to a near-\$1bn loss in 1989. Yet the experience coincided with the move from derivative markets which left Bankers Trust as the most profitable commercial bank in the US last year, with a return on equity of 23 per cent.

Not surprisingly, derivatives and risk management are now virtually a religion inside Bankers Trust. "It's not a product - it's more a way of life," says Mr Brian Walsh, head of derivatives. The most obvious embodiment of this: the bank's much-vaunted method of allocating capital based on an analysis of both credit and market risk through a unified model. Known as "risk" (for risk-adjusted return on capital), this capital allocation model was adjusted a year ago to take more account of the liquidity risk implicit in different types of asset, Mr Walsh says.

(the lower the liquidity the higher the capital charge applied internally.) In commercial banks has been most pronounced in the swaps markets. They may have retreated from commercial lending in the 1990s (in part because the strongest companies can raise money at better rates direct from the capital markets), but this has not stopped the banks taking on new credit risks. As counterparties to swap transactions, most banks have been sending off-balance sheet credit exposure to agencies attracting on-balance sheet risks.

It is also the rebirth of bank intermediation. It has provided a route for banks to reinvent the wheel. Institutions - and this time they claim the risks are being spread more evenly through the system.

Bankers Trust, which invested earlier than most in the people and technology needed to run a derivatives business, and J.P. Morgan, with its strong balance sheet and good relationships with many big companies, have been the most profitable "money centre" banks in the US this year. Much of this is due to derivatives, though neither bank reports profits from derivatives separately.

To hear these banks talk their new box of risk management tricks offers almost unlimited possibilities. Bankers Trust has its own derivatives customers - such as whether to build a new factory, or buy another company - involve the taking of many different businesses and market risks. Through the derivatives markets (whether currency, interest rate or commodity) those risks can be split apart and managed separately. Mr Walsh points to one example: the ability to lock into a fixed oil price

for up to 10 years. "That must have a profound effect on the way oil companies are run," he says.

If companies respond to these blandishments, then the most successful intermediaries in the derivatives markets will be those best able to act as the lightning conductors through which risk is transferred from one group to another. The ability to price and hedge exposures - many of which, unlike equities or fixed income securities, have no underlying cash market - will also be an important determinant of future profits.

Risk management skills learned in the 1980s, applied to swaps or fixed income derivatives, have already taken commercial banks into new areas. Insurance could prove the next great opportunity. The risk transfer mechanism in the insurance industry is dominated by a limited number of large institutions, whether insurers or reinsurers. Much like the banking industry, these institutions carry large exposures and are vulnerable to unforeseen events: one big US hurricane, say, could wipe out a whole year's property/casualty insurance profits in one go.

Through the same risk transfer mechanism pioneered in other derivative markets, both Bankers Trust and J.P. Morgan say they are already linking the exposures of their reinsurers to their own wider capital markets. According to Mr Hancock, "Just as derivatives have brought regional capital markets together, it will help to connect that [insurance] market with others. It leaves you with a bigger pool of risk takers to absorb the shocks."

The effect on the giants of the insurance industry could be profound. "It's the last area in financial services to go through significant change," says Mr Walsh, though he hesitates to suggest that the capital markets will eventually prove a superior platform for transferring insurance risks than the traditional market. It is not surprising, therefore, to see some big insurers moving into the derivatives markets themselves.

EMERGING MARKETS

Limited scope for development

THE USE of derivatives for risk management purposes may seem pretty old hat to the blue chip companies of the world's more developed countries, but for companies in some of the emerging economies it is a skill still largely in its infancy.

"That is not for want of sufficiently volatile conditions. Companies in developing countries are just as exposed as their western rivals - if not more so - to the vicissitudes of modern life. As companies turn away from their domestic markets and grow increasingly international, they often face the problems of fluctuations in exchange rates, interest rates and commodity prices.

"A company in the developing world which borrows cheaply in dollars to finance the construction of a new factory, for example, might suddenly find itself paying more than it had bargained for if the domestic currency suffers a sharp devaluation. Given the increasing integration of world markets, fluctuations in the developed world are rapidly transmitted to the developing economies.

Added to these external factors, some developing countries (for example Brazil) suffer from very high inflation. Under such circumstances, companies are often forced to consider a much shorter time-frame, focusing on daily or monthly financial management rather than looking much further ahead.

"High inflation typically reduces the maturity range of available financial instruments, which limits the ability of firms to deal with currency (or interest rate) exposures beyond a short horizon," says Mr Jack Glen, an economist at the International Finance Corporation (IFC) in his recent report on risk management in developing countries.

For example, in Brazil (where the domestic capital markets are very sophisticated, offering a broad range of different instruments for managing a variety of risks) the very high inflation rate and economic uncertainty "prevents the development of medium and long-term risk management instruments", according to Mr Glen.

For the normal range of interest rate and foreign exchange risks encountered by companies in developing countries, however, it is possible to use some of the risk management techniques and instruments which have already been developed and put to use in the world's more sophisticated financial centres.

So far, the extent to which these risk management methods have been employed in the emerging markets is quite limited. As Ms Elizabeth Morrissey, managing partner of Kleiman International Consultants, the US-based consultancy which monitors emerging markets, points out: "Some of these countries barely have domestic bond markets, let alone their own derivatives markets."

Instead, companies in developing economies would tend to

turn to US banks or the International Finance Corporation (IFC), the private sector arm of the World Bank, for assistance in managing their foreign exchange or interest rate exposure. "We are seeing the increasing use of risk management instruments but it still tends to be done on a 'deal by deal' basis," says Ms Morrissey.

"Derivatives grew in the developed world so it's only natural they should percolate to less sophisticated financial centres," says Mr Mark Coombs, an emerging market specialist at ANZ Grindlays Bank.

He points out that the use of derivatives in the emerging markets is becoming more prevalent, with an increasing emphasis on structured deals which are tailored to the needs of the individual company. "The use of derivatives is growing across the board in the emerging markets: what you tend to see is either investor-driven deals, where the investor wants to enhance his return through leveraging, or borrower-driven deals where the borrower is trying to hedge a risk," says Mr Coombs.

The IFC has assisted companies from a wide variety of developing countries - ranging

from Bolivia to Ghana - to set up currency and interest rate swaps to manage their exposure.

To take one example, an Egyptian manufacturing concern which had secured low-cost yen financing to purchase Japanese equipment, suddenly found itself a victim of the appreciating yen. The company had mainly dollar revenues, so the yen's appreciation in the latter half of the 1980s meant that its financing costs soared. Each one yen decrease in the yen/dollar exchange rate cost the company an additional \$300,000 annually in interest expenses.

The IFC points out that for nearly three years the company was forced to accept the mismatch (of yen interest expenses and dollar revenues) because the international swap markets were effectively closed

to them. Eventually, with the help of the IFC, the company entered into a currency swap that exchanged a portion of its yen financing for dollar financing.

While the IFC was able to help in this instance, in many cases, companies in developing countries are denied the sort of access to risk management tools that western companies enjoy and employ.

Mr Glen highlights several reasons why the use of risk management instruments may be restricted or limited, including credit considerations, regulation and the size of the transactions.

"The derivatives products markets are credit sensitive and as most long-term derivative securities involve credit risk, direct access generally is limited to companies having at least investment grade credit ratings," he says in his report.

Creditworthiness is a significant factor in pricing and access for swaps, making it difficult for developing country firms to have access to the international swap market.

Without a track record or a

credit rating, companies may not have access to risk management instruments. In cases where they do have access, it may only be to short-term instruments, or the conditions may stipulate the company post collateral which could make the deal more expensive.

In some developing countries, domestic financial regulations which prevent the use of risk management instruments - sometimes because the authorities are concerned that the fine line between use for speculation and use for hedging purposes might be blurred. In some cases it may simply prove too costly to conduct the transaction, either because of the tax treatment or because of the rather small size of the deal itself.

Given these limitations, it could be some time before the use of derivatives is as widespread in the developing countries as in the western world.

Sara Webb

* See *Firms in Developing Countries Manage Risk*, a discussion paper by Mr Jack Glen, published by the International Finance Corporation.

EQUITY PRODUCTS

Hedge against stock swings

IF YOU peek into the portfolio of an equity fund manager nowadays, the chances are that you might not find any shares. Instead, there could be a whole load of bonds in the portfolio.

Before you sue the fund manager for misrepresentation, there is a good reason for what appears to be a contradictory state of affairs.

The fund manager will be using the income from the bonds to buy equity derivative products which should enable his fund to achieve higher returns than other similar funds in the market place.

Equity derivatives have become an integral part of a fund manager's life as the fund management industry becomes increasingly competitive. "Fund managers are doing everything possible to get the best performance," says the head of equity derivatives at a leading Japanese bank in London.

In addition, the use of equity derivatives is now spreading to all areas of finance as a higher priority is given to managing risk as effectively as possible.

Users of equity derivatives can be divided into three main categories: insurance companies and investment fund companies which want to launch new products to sell to their retail clients; pension funds which want to have an exposure to a certain equity market without having to go out and buy shares in that market; corporate treasurers who want tools to manage or hedge different exposures on their balance sheets.

Most equity derivative products, which are traded over the counter (OTC) or on futures and options exchanges, can be tailored to each client's specific needs.

"Essentially, we use equity derivative products to solve any problems which our client might have," says one derivatives trader.

Some traders say that the drawback of these individual structured deals is that they are not liquid and are difficult

to get out of once you are in. However, others say that these deals are essentially made up of a series of building blocks which can be unwound at any time.

As a result of the customised nature of the market, most of the innovations in equity derivatives products are born in the over-the-counter market which can cater for individual needs. However, the exchanges are quick to catch on to any new products.

Although products traded on the exchanges tend to be more standardised than those in the OTC market, they are attractive to investors who are not allowed to buy products which are not listed.

One important advantage of buying a listed product is that the exchange acts as a central clearing house which helps to reduce a market participant's credit exposure.

By contrast, participants in the OTC market may well trade directly with a counterparty which has an inferior credit rating.

However, an increasing number of entities with triple-A ratings are starting to provide derivative products in the OTC markets which should help to reduce this credit risk concern.

There has been an enormous growth in volume in equity derivatives products and investors can now have an exposure to all the leading stock markets in the world without having to actually buy shares in those markets.

The next target will be emerging stock markets in Latin America and Asia as soon as they are deemed to have sufficient liquidity to support a derivatives market. Mexico, Hong Kong and Singapore are likely to be the first to take this step.

The types of products on offer are also becoming increasingly exotic and investors can now hedge themselves against virtually every movement in a stock market.

"There are few limits left to what we can offer investors as long as they pay to take the risk and the reward," says a derivatives trader at a UK securities house.

Retail investors are also creeping into what is still a largely institutional domain since equity derivatives are

being used to structure OTC products which guarantee a specific return.

These "guaranteed return" products are heavily marketed to retail investors who have seen their income from cash deposits dwindle over the past year as a result of the substantial drop in interest rates.

These kinds of products, which rely heavily on derivatives for their ability to outperform the underlying equity market, are widespread in the United States but are relatively new in Europe.

In the UK, the wider use of derivatives has been held up by legislative and fiscal difficulties. However, now that these issues have been clarified there has been a tremendous increase in OTC products which are sold to retail investors.

Liffe, London's financial futures and options exchange, is relying on retail investors as part of its ambitious plan to stimulate new interest in equity options.

In the US and in the Netherlands, it is the retail investor, and not the institutional client, who is responsible for about 70 per cent of trading volume in these instruments.

In the UK, the situation is the reverse, with private investors estimated to contribute less than 20 per cent of total equity and index option volume.

Liffe has therefore taken steps to make equity options more accessible to the public. Prices of individual equity options are now available on the BEC's telex facility, Cefax.

Retail investors were also given priority when Liffe conducted a review of individual equity options. The exchange dropped four existing options

and introduced eight new ones leaving 70 equity options which better reflect the composition of retail and institutional portfolio holdings.

Liffe does not expect investors, large and small, to change their habits overnight, but aims to double trading volume of equity options within two years. Currently, just over 1m contracts are traded each quarter.

Trading in equity options reached a high of 3.1m contracts in the second quarter of 1987, just before the global stock market crash which occurred that October.

While a volume-based target is probably the most widely perceived measure of success, Liffe believes that other goals are equally important.

These range from a substantial increase in the use of equity options by institutional and private clients, to increased liquidity in individual equity options.

Antonia Sharpe

LEGAL ISSUES

Quest for definitive answers

AS DERIVATIVES transactions metamorphosed at a dizzying rate in the 1980s, turning bonds and options into swaps and swaptions, strips and tigers, with collars and floors, they mutated beyond traditional securities regulation, and put themselves into a land of legal limbo.

Financial engineers driving quirky software on powerful Sun workstations have not only left stodgy bond traders with their broker screens in the dust, they have befuddled regulators unaccustomed to dealing with hybrid financial instruments.

The fact that derivative deals represent thousands of billions of dollars in capital and regularly cross political borders makes the legal wrangles, and their accompanying risk, all the more onerous.

Recognising that banking and trading laws were written long before there were over-the-counter derivatives, banks are working to seal the gaps left where derivative transactions do not fit into old-fashioned legal categories. The problems of defining what derivatives are, who is allowed to trade them, and how to enforce standard agreements designed to reduce transaction risks are all hot issues in banking.

The ubiquitous interest rate swaps, for example, risk being judged illegal under the gambling laws of countries as diverse as France, Brazil, Canada and Japan, and until recently, under the commodities regulations of the United States. In some countries swap risk has been classified as uncertain, and is illegal.

Mr. Don Cunningham, part-

ner at the US law firm Cravath, Swaine and Moore and counsel to the International Swap and Derivatives Association, says tremendous progress has been made in these areas, and that clarifying legislation is being sought in countries where the line of the law is cloudy.

Changes in the legal environment have come in important areas. US commodity regulators this year declared that swaps were exempt from futures regulations, wiping away a huge legal uncertainty in the US. Australia is considering similar legal adjustments.

In France, national financial authorities last September issued a circular that defined who is allowed to use swaps, and under what conditions they can trade. Local governments in France, for example, cannot speculate in derivatives, but can use them to hedge.

However, those changes have occurred under conditions still in flux. Uncertainty about the risks derivatives pose to the world banking system prompted the US Congress to reserve final word on derivatives regulation, and some legislators view the swaps exemption from commodity law as simply an interim act on the way to more structured swaps regulation.

In another category of legal risk, derivatives dealers have

become increasingly more circumspect about who they take as a swap counterparty, not just from a credit standpoint, but from the view of legal eligibility.

Governments, particularly municipalities, can be attracted to derivatives deals, but their qualification for a swaps marriage is not always clear.

The costs of consorting with an intelligible counterparty were driven home in the UK in 1991, when the House of Lords ruled that the London Borough of Hammersmith and Fulham, an active sterling interest rate swap trader, did not have the power to enter into derivative contracts.

The decision voided five years worth of contracts, and forced the local authority and the involved financial institution to take losses. The decision also voided similar deals between more than 130 UK councils and 75 of the world's largest banks, stirring up legal appeals that are still in the courts.

Now, rather than assume a counterparty is eligible under existing statutes, banks and other dealers are demanding a definitive body of law. In the US, lobbyists have persuaded about 25 states to enact laws defining who can use derivatives. Lawyers say the process has been slower in other countries, particularly in Germany.

Banking Supervision of the Bank for International Settlements in April released a proposal to recognise bilateral close-out netting as a means of reducing credit risk for the purpose of measuring bank capital adequacy. It is now seeking international comments on the plan.

A controversial offshoot of the netting discussion is the idea of multibranch netting. A financial institution with operations and assets worldwide will choose a location, for tax or other purposes, in which to register a swaps transaction.

If an institution finds itself in collapse, as happened in the case of the Bank of Credit and Commerce International, world bank regulators may wrangle over the proper way to deal with the remains, putting the integrity of the netting agreements in jeopardy.

Mr. Cunningham, in the areas of enforceability of multibranch netting, have gained attention since the ECCI case. A report issued in July by the Washington think-tank, the Group of Thirty, suggests a solution. "Resolution will come only if and when it is clear that insolvency of a bank with several branches in different countries will be handled as a single proceeding and not as separate proceedings for each branch," he says.

This recommendation, and others like it, leans towards a standard global financial regulation, an evolution that legal demands of derivatives trading may accelerate.

The Bank Committee on

Leurte Morse

Profile: LONDON CLEARING HOUSE

Unsung hero is unique

TUCKED away in the back streets of the City of London is the unsung hero of the capital's rapidly-growing derivatives industry, the London Clearing House (LCH).

LCH, which was founded in 1888 to clear coffee and sugar trades, plays a pivotal role in ensuring the financial integrity and the efficiency of four of London's exchanges.

These are the International Petroleum Exchange (IPE), the London Commodity Exchange (LCE), the London International Financial Futures Exchange (Liffe) and the London Metal Exchange (LME).

LCH meets its two main priorities through its primary role as the central counterparty for trades executed on the four exchanges. Its ability to take on counterparty risk provides a solid trading framework for its 171 members because their counterparty risk is considerably reduced and market liquidity is enhanced.

In addition, LCH's unique position as the only futures clearing house in the world to clear several markets and different products through a centralised and automated system has allowed members to make considerable savings in their settlement costs.

"Members with positions on all four markets can cover all their liabilities with one single payment," says Mr David Hardy, LCH's managing director.

LCH controls the risk of being exposed to a potential default by a member in two ways, through counterparty assessment and margining.

Applicants for LCH membership are vetted thoroughly before they become members and LCH continuously reviews existing members to ensure they satisfy the following criteria:

- Relevant exchange membership;
- Relevant authorisation under the Financial Services Act of 1986;
- Banking arrangements for the immediate transfer of

funds to LCH on demand; ...

- Adequate resources to comply with day-to-day requirements of LCH membership; ...
- Minimum financial resources requirements. ...

LCH monitors each member's risk exposure on all four exchanges and analyses it in relation to their ability to cover their liabilities.

If the LCH believes that a member's business is out of line with its resources - for example, it might have an unusually large position or a concentration of its margin in a single contract - it will ask the member to put up additional resources or ask it to restrict its business volume. ...

So far, LCH has managed to assess its counterparties with a high degree of accuracy and in its 106-year history it has only had to expel one member, a subsidiary of BCCI, in 1987. ...

The other way in which LCH dampens down its risk profile is by setting margins which are calculated daily and which members have to cover daily with a deposit of funds or with collateral.

Margin, which is a measure of the risk of a member's positions, has two main components: initial margin to provide cover for potential adverse movements and variation margin to cover previous price movements.

"Mr Hardy says that margins are essential so that markets can be seen in the able to trade in times of extreme price volatility but at the same time provide protection for members by not allowing their liabilities and resources to get out of balance.

"For example, during the Gulf war, margin rates were increased substantially to reflect the big swings in the price of gas oil futures. LCH asked members to improve their resources by way of bank guarantees. When prices stabilised

the bank guarantees were returned to the members.

"Margining can be seen as the barometer of the volatility in the market and it serves to neutralise the risk," says Mr Hardy.

He adds that LCH and its members are given additional protection by the diverse nature of the markets and the products cleared by LCH.

"The risks will be different at any one time," he says, noting that during the stock market crashes of 1987 and 1989 there was hardly any reaction on the other exchanges.

LCH regularly holds more than \$1bn in cash in margin money which it invests in overnight money markets. It pays members interest on their margins - usually the bid rate on the London interbank rate (Libor) minus ¼% - and very often members leave more money than they have to with LCH because of the favourable interest rate.

Surplus interest income on the margins forms part of LCH's income. As well as keeping transaction costs down, the interest income helps LCH achieve its third priority, that is, making a sensible profit for its owners.

LCH is owned by six leading UK clearing banks: Barclays Bank, Lloyds Bank, Midland Bank, National Westminster

Bank, the Royal Bank of Scotland and Standard Chartered Bank. These six banks provide the backing for LCH's counterparty risk, which amounts to \$150m.

Mr Hardy is confident that LCH's structure will enable it to continue to clear the ever-increasing trading volumes generated by London's growing derivatives industry.

By October 7, LCH had cleared 112.5m contracts, exceeding the total number of trades cleared during the whole of last year. Total volume for this year is expected to reach 155m contracts.

LCH has also taken steps to ensure that it can continue to provide an uninterrupted clearing service for the exchanges if its systems fail or if its building is out of action.

All its computers are now located in south London and there is a back-up system in west London where it also has office space.

"LCH has a triangulated provision of service," says Mr Hardy.

Antonia Sharpe

Profile: MCDONALD'S

Cutting costs of hamburgers

The world of derivatives, McDonald's Corporation is a typical user. It is a large company, which, because a lot of its earnings and borrowings emanate from overseas, faces a high and volatile interest rate risk that makes McDonald's particularly interesting, however, in that there can be few companies where the benefits of derivatives are so clearly apparent - not just to the chief financial officer and corporate treasurer, but to the thousands of people across the world who run restaurants under the famous yellow arch. They, as well as anyone, have been able to enjoy the rewards of derivatives.

Mr. Carlsson D Pearl, McDonald's treasurer, explains how franchisees are able to use derivative instruments to cut the cost of their borrowings. "There are programs run by our banks that include cap franchises of the loan. What is interesting about that is, if you're a small, or medium-sized business owner, and you're trying to put a cap on a prime rate loan in the US, you would have to figure out how many options you would have to buy and they possibly deal with that. What the banker



can do, is make a loan at 150 basis points over commercial paper, or a loan at 175 over commercial paper, and promise you that you'll never have to pay more than 10 per cent."

In other words, says Mr Pearl, derivatives can deliver value to small, medium-sized businesses by enabling them to manage risks that they're not equipped to manage. Most people think derivatives are for large companies with big staffs. Our banks have found a way to deliver these instruments so that the small business owner can use them."

Mr Pearl claims that, in spreading the derivatives gospel, he was one of the co-authors of the Group of Thirty's report into derivatives published this summer, a report that essentially gave the business a clean bill of health. One point on which the G30 was particularly emphatic, placed the derivatives accounting was the need for the financial

officers at companies who use derivatives to keep their senior managers and boards of directors fully informed, both of their activities and the extent of their company's exposures. It is a message that Mr Pearl says McDonald's has always heard. "We have a board of directors about these instruments. It's been an ongoing dialogue. In the early days we did. To this day, every time they meet we give them a report on our derivatives portfolio marked to market. And for our own senior management, we prepare a report which looks at not only the exposure on the books to derivatives, but which also provides an analysis of our potential exposures."

He has been McDonald's treasurer since 1989, but the company first began using the products in the early 1980s. It was a natural progression, he says, as management techniques McDonald's was already using. "Mr Pearl said that the company had been using parallel loans in the early 80s, and the next step from parallel loans to swaps was relatively straightforward. If you have been doing three-month foreign exchange contracts, the move

out to five-year forward contracts is one that carries some of what of a different risk, but you're moving along a spectrum, and thus not doing something totally new."

Mr Pearl says the company embraced derivatives early on because they offered a better, not so much cheaper, way to control risk. "In the early days it has not stayed that far from the plain vanilla derivatives products that hedge interest rate and currency risk. A look at its derivatives portfolio would show that the company is involved in almost 100 transactions, with 23 different counterparties in 12 currencies. "It's just been saving money. We've been around this about what we do, but we've got a job to do. We can't do it as much as possible, so we can deliver the best value hamburger to our customers. Therefore, if we can reduce the cost of financing and land we can loan and construction, we can loan and construction. That is our objective. We're not here to run another business trading derivatives."

The cost savings can come in a variety of ways, says Mr Pearl. "For example, if our cash flows and cash needs change, and our view of market changes, to go out and call a bond issue, or buy it in the market and resell shorter-term debt, or longer-term floating rate debt, or very expensive proposition. However, if you go through derivatives, it is very much easier and much less expensive."

Derivatives also provide the company with more flexibility in its financing. "We did a Danish krona financing - fixed rate krona with US dollar counterparty. The counterparty got Danish krona fixed-rate loans at 100 basis points below local financing sources. This, at a time when the local bond market did not do fixed rate financing." Mr Pearl also cites an example of how the company used equity options to reduce the cost of a \$700m stock buy-back programme.

Occasionally, McDonald's employs more complex, hybrid forms of derivatives, such as a forward interest rate swap. "We have agreements with them on bonds with coupons that if interest rates went down, the rate went up. "We swapped those into commercial paper borrowings. It was pretty esoteric, but the essence of the deal was that we created financing below the cost of our commercial paper financing."

McDonald's does not use derivatives in a speculative fashion, to earn a profit from the products. "I've often been asked about derivatives we make track of it that way. We think of each financing and ask: does it make economic sense relative to the alternatives?"

The number of staff working with derivatives at McDonald's is small. Mr Pearl has five with him - one director, two managers and two analysts - out of a total of 30.

There was a difference in the early 1980s, when only a few core staff were using them. Mr Pearl can get nostalgic about the early days. "The economies used to be much better. We were able to do some swaps that got us 100 basis points below libor. Sadly, those days are gone forever."

Patrick Harverson

TECHNOLOGY

Integration top of the agenda

IF ANYONE needed reminding that players in the derivatives markets need to do more work on integrating their front and back office technologies, this summer's Group of Thirty report should have done the trick.

The G30 study looked into derivatives technology and systems, and singled out integration as the most important issue facing the commercial and investment banks which run big derivatives books and the large corporations that use the products to manage the risks of their day-to-day businesses.

As the group's systems, operations and controls subcommittee said: "Systems that integrate the various tasks to be performed for derivatives are complex. Because of the rapid development of the business, even the most sophisticated dealers and users often rely on a variety of systems which may be difficult to integrate in a satisfactory manner. While this situation is inevitable in many organisations, it is not ideal and requires careful monitoring..."

Integration matters most to derivatives dealers because without integrated systems, they may not be able to properly measure, monitor and control the various risks they carry on their books. The G30 is right to be concerned, because by no means do all dealing firms in the business boast fully integrated derivatives technology.

"Most banks have a patch-work quilt of systems," says Mr Rod Beckstrom, founder of California-based technology group C*ATS Software, who says that only a handful of the biggest and most experienced derivatives players meet the sort of standards outlined in the G30 report.

Mr Patrick Brazel, senior vice-president at UK-based derivatives technology vendor SunGuard Capital Markets (previously Devon Systems), agrees: "I don't think the banks in general have cracked the problem of front to back office integration."

That the dealing community continues to struggle with integration is primarily due to the frantic pace of product development in most front offices. As one software supplier explains: "New products are introduced to the market when there's a need for a specific structured product, yet the systems to support those products are developed entirely on an ad-hoc basis."

Consequently, back offices find themselves constantly playing a game of technological catch-up with the front offices which keep coming up with a supply of new products (or old products with new twists) tailor-made to satisfy their clients' needs.

Building integrated systems, however, is not a simple task. Derivatives technology, like derivatives themselves, has evolved in a random fashion. Dealers have relied upon a variety of software and hardware, not all of it compatible, to create, price and track derivatives instruments. Some are developed in-house, and some are bought from software vendors which specialise in selling derivatives management systems. Many employ a combination of the two.

When it comes to buying in the technology from outside (an option that more and more dealers are taking as the number of derivative systems suppliers rapidly grows), many firms purchase what are known as "turnkey" systems, which offer a complete off-the-shelf software package that aims to provide a dealer with everything needed in the way of pricing, portfolio analysis and risk management functions.

This is what the established derivatives technology suppliers - companies such as SunGuard, C*ATS and Quotient - generally offer. Mr Beckstrom says his firm sells software that "allows treasurers to define and capture complex

derivatives, pull them in electronically and provide the tools to do risk management analysis and reporting".

Other products, known as "toolkits", are more adaptable to technology which provide the buyer with the flexibility to take their systems wherever they wish in an open environment. They may not be ready to use as fast as the turnkey systems, but they give the buyer more room to tailor the technology to their own needs.

Mr Roger Lang, of US systems supplier Infinity International Financial Technology, says that banks and other derivatives dealers need "lever-ageable tools and building blocks" to construct their own functions and support their own models. When it comes to integration, "we have to be able to allow banks to determine their own fate," he says.

A similar theme is sounded by Canadian consulting and software firm Glasco Park, which sells software that can work inside other applications - in this case, Microsoft Windows. Mr Robert Park, of Glasco Park, says that in the past many derivatives dealers' systems "were built around a database file format appropriate only for accounting, which over the years has been modified and remodified to try to accommodate new financial structures".

In contrast, Glasco Park's approach is to build maths libraries to explain the parts found in derivatives securities, and allow companies to construct their systems around those libraries. The firm claims that is an affordable and quick way to build integrated risk management systems, saving the time and money involved in developing them from scratch.

While the buy-side has been investing heavily in deriva-

tives technology, a small but growing band of the corporations and investment institutions on the sell-side have also been upgrading their systems.

This summer, Atlantic Portfolio Analytics and Management, a \$3.7bn fixed-income fund manager, bought a Cray supercomputer system to compute complex arbitrage, swap options and hedges in a variety of cash and derivatives markets. Although several securities firms, such as Prudential Securities and Merrill Lynch, use supercomputers, APAM became the first buy-side company to turn to supercomputing.

Also this summer, BP Finance, the banking and treasury subsidiary of the UK oil group, began installing a real-time, deal-capture, position-keeping risk management system from Wall Street Systems for its 200 foreign exchange and derivatives traders in the US, UK and Australia.

Patrick Harverson

BOSTON PUBLIC LIBRARY



3 9999 05981 829 2

ISBN 0-16-043588-9



90000



9 780160 435881

