

A STUDY OF VARIOUS MEASUREMENT
BASES AND THEIR EFFECT ON PERIODIC
INCOME DETERMINATION

By
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CHAPTER I

INTRODUCTION

Accounting statements are the tangible product of the accounting process. The product is of no importance within itself; the importance of accounting statements is in the service they render to statement users. The following paragraphs comprise a discussion of accounting statements largely in terms of those who read them and the purposes for which they read them.

The most familiar accounting statements are the balance sheet and the income statement. The number of types of statements for internal users is almost endless. With certain practical limits, management may prepare or have prepared any statement that may be useful to them. The external users have a more limited supply of statements, being limited largely to what is known as the published financial statements. The published financial statements are the representations of management to outsiders. The published financial statements usually consist of the balance sheet, the income statement, and the analysis of owners' equity (retained earnings, in the case of a corporation), but

they may include other statements and details such as the source and application of funds statement.

The users of accounting statements can be divided, at least roughly, into two classes: internal users and external users. The internal users of accounting statements are all those who participate in the management of the enterprise at any echelon. External users include investors (both present and prospective), creditors (both present and prospective), social control agencies (such as governmental units), labor unions, employees, consumers, and the general public.

Internal Use of Accounting Statements

The internal users of accounting statements are the various levels of management. Any given member of management is concerned primarily with accounting statements dealing with his area of responsibility and over which he has authority.

The chief function of management is decision making. Managerial decisions may be divided into three areas: planning, controlling, and evaluating. Accounting statements are utilized in aiding management in recognizing the need for decisions and in guiding management in making the decisions in all three areas.

Planning the Future

The three areas of concern to management may be thought of as a cycle. A discussion of the three areas may begin with any one. The planning area has

been chosen because this would be the first area of interest to the management of a newly organized or prospective entity. After the enterprise is underway, planning is of continuous concern to management.

Some writers express the view that accounting deals only with past events. This concept of accounting would exclude from the realm of accounting statements those dealing with the future, such as various types of budgets. Accounting as used in this study is intended to include estimates of and prospects for the future as well as records of the past.

After an entity is underway it is at once in the planning area, the controlling area, and the evaluating area. The three areas may be thought of separately in the sense that a member of management may direct his attention toward only one area at a time. For example, management may focus its attention on the planning area as a new fiscal year approaches.

Plans for the future are made after a careful evaluation of the past. Experience in the past may serve as a guide to the future. Trends may be indicated, for example. The accounting statements for prior accounting periods are a major source of information in making financial plans for subsequent periods. After an entity begins business, planning requires an evaluation of the past as well as a consideration of the future.

Controlling the Present

Controlling the present implies the carrying out of plans made in the past. Controlling, as used here, includes the concepts of coordinating and motivating.

Management follows the activities of an entity closely to see that there is compliance with the plans. Timely cost accounting reports which can be compared with the budgets are almost essential in this area. Management may decide to alter plans even after an accounting period has begun in order to control the enterprise activities. Such changes may require special studies and revised budgets. Interim accounting statements such as the balance sheet, income statement, and source and application of funds are useful. Such interim statements provide management with information concerning current status before it is too late to make changes and corrections. It is probable that these interim statements would do nothing more than help point out a problem. Further analysis would be necessary to learn details.

Evaluating the Past

Evaluation is the process of determining what has been accomplished and the implications of these past accomplishments. An effective way to determine what has been accomplished is to compare results with

the plan. The balance sheet, the income statement, and other accounting statements are used by management in evaluating the past.

Management is ordinarily interested in much more detail than the external statement users. External users look at the entity as a whole, while management is interested in the constituent elements. For this reason, management may require detailed reports which explain various sections of the general-purpose statements or answer specific questions which arise.

Evaluation of the past is a prerequisite for and blends into the planning area. Except for the beginning and end of entity operations, no area need be considered the first area or the last area. Planning the future, controlling the present, and evaluating the past are segments of an endless cycle of managerial responsibility.

Stewardship

In a sense management uses the general-purpose statements for external reporting in performing its stewardship accounting responsibility to investors and creditors and in performing its public-duty responsibility to the general public. These evaluations of the past are assumed to fulfill management's responsibility to outsiders. "External reporting has been traditionally oriented toward historical stewardship

aspects, while internal reporting has been much more concerned with current and future events" (1, p. 521).

External Use of Accounting Statements

The external users compose a more heterogeneous group than the internal users. Most external users have one thing in common with each other; their primary sources of information concerning the financial affairs of an entity are the published financial statements. The term financial statements is less broad than the term accounting statements. Financial statements are defined by Sprouse and Moonitz as follows: "Financial statements are those which purport to show financial position and results of operations, including supporting schedules, elaborations of special aspects of business activity, rearrangements of underlying data, and supplementary statements" (2, p. 8).

Some external users have sources of information in addition to the published financial statements. Creditors and potential creditors may require of management more detailed information such as plans concerning the future. Social agencies such as governmental units can and do require large quantities and various types of data. Labor unions may sometimes acquire additional data. The investors and potential investors, as a group, have few other sources of information. They must rely, directly or indirectly, on published financial statements. As individuals, they may have an

inside track, but this is not considered a significant exception.

An important purpose of accounting data is to aid external users in making decisions. As the type of decisions to be made varies with the user, each type of user will be discussed separately.

Investors and Prospective Investors

The general-purpose statements distributed to investors and available to prospective investors are prepared largely from the stewardship point of view. Management has an obligation to investors and prospective investors to provide information which will serve as a basis for decisions as well as to fulfill its stewardship responsibility. The Study Group on Business Income says: "The annual financial statements of corporations are primarily reports of stewardship, and the methods of presentation should be determined with constant regard to that primary purpose; but when corporations seek the advantage of marketability for their securities they incur an obligation of disclosure to investors generally" (3, p. 108).

The investor must make certain decisions concerning his investment. Should he retain or terminate his investment in a given enterprise? If he terminates his investment, should he invest in other entities?

If he retains his investment, should he increase or decrease it? These are some of the most important decisions to be made.

The type of information used and needed by investors is difficult to determine because investors' motives are not easy to analyze. The investor may be interested in dividends, appreciation, risk, and diversity. Any given investor might assign different weights to these various motives. Some investors may be unable to analyze their motives. It is likely that many investors have never tried to do so. Institutional investors are likely to have more definite motives than individual investors. Investors must have rather clearly defined motives in order to use financial statements effectively in the decision-making process.

Once the investor has established his motives for the investment he must determine how his investment measures up to the motives. This is best done by comparing an investment with alternative investments. Also, a comparison of the financial statements from year to year may indicate trends.

The potential investor faces essentially the same decisions as a current investor. The main difference is that comparison must be made between the present use of money and the prospective investment as well as between alternative investments and uses.

Creditors and Prospective Creditors

Creditors are interested in the debtor's financial ability and willingness to repay debts. The willingness factor is important but rather difficult to evaluate. A debtor's reputation and his financial status are guides to his willingness to repay debts. The better off financially a debtor is, the more likely he is willing to repay debts. It is generally assumed that a debtor is willing to repay debts if he has a good reputation and is financially able to do so.

Creditors are seldom faced with the need to make decisions concerning current debts. There is usually nothing to do except wait for the maturity of the principle, or perhaps to collect interest payments and installments on the principle. Even when they are not faced with decisions, creditors are interested in the debtor's ability to repay debts. This will involve short-run ability or long-run ability depending on the length of the loan period.

The general-purpose financial statements are used to help determine a firm's financial ability to repay debts. The relationship of current assets to current liabilities is a guide to short-run ability to repay debts. The debtor's earning power and the size of other long-term debts are guides to long-run ability to repay debts. The general-purpose financial

statements are intended to present this type of information.

There are times and situations which require decisions by creditors concerning outstanding debts. The contract between the debtor and creditor may require the debtor to perform specific acts. For example, he may be required to place funds into a special sinking fund for the retirement of the debt. The creditor wants to know if the debtor is meeting such requirements.

There is the possibility that credit obligations such as notes and bonds may be sold to others before their maturity. The creditor does not necessarily have to hold an obligation until maturity. A decision may be made at any time to terminate a given credit position.

There is the possibility that legal proceedings may be necessary to collect a debt from a debtor. Sometimes a creditor will find it necessary to initiate legal proceedings; even bankruptcy proceedings may be necessary. The creditor needs to be in a position to foresee the necessity of such proceedings.

For the prospective creditor or the creditor who is considering making additional loans to a debtor, decisions must be made concerning whether or not to make a loan, what amount to loan, and what contractual requirements are to be imposed upon the debtor. The published financial statements of the debtor may be helpful in making these decisions. More detail than

is usually included in the published financial statements is desired by the prospective creditor. Additional information may be obtained through more detailed statements or through personal interviews with the debtor (or prospective debtor) or his representatives. Information is also available from those who are already familiar with the credit standing of the prospective debtor.

Social Control Agencies

Social control agencies usually prescribe their own form of accounting statements. These statements, usually prepared by the entities themselves or their agents, provide the basis for various types of taxes and controls. The social control agencies also use accounting statements in making decisions concerning types of control, types and amounts of taxes, and means of enforcing regulations.

Labor Unions

Labor unions are interested in ascertaining the financial condition of the entities in which its members are employed. The unions' main objectives are to determine what benefits to ask for and to determine a bargaining procedure.

Employees, consumers, and the general public as a group have less specific needs than other groups of users. In general they are interested in products

and services being sold at fair prices and factors of production being paid fair prices.

Comparison of Internal and External Users

In the preceding paragraphs, many of the various uses made of accounting statements by internal and external users have been briefly summarized. For internal users, the type of information and the quantity of detail depends upon the level of responsibility and authority. The lower levels require more detail than higher levels. The published financial statements, or "general purpose" financial statements, are not designed to cover specific areas of responsibility and give the amount of detail needed by lower levels of management.

Higher levels of management are more likely to find the published financial statements useful. However, this is likely to be just a starting point for analyzing the operations of an entity. It is likely that top management does not desire details of every item in the financial statements; only certain items require more detail.

Moonitz emphasizes the different needs of internal and external users in taking the position that:

published financial statements (usually in the form of annual reports to stockholders) should be designed to inform all important nonmanagerial groups by presenting a report on management, not for management. . . . We can no longer, however, operate on the assumption of a harmony of interests,

that what is good reporting for investors is also good reporting for management, and vice-versa. . . . The investor is interested in results, not in methods of decision-making by management (4, p. 179).

Investors, creditors, and other external users need information about the plans and accomplishments of management in order to make the best decisions. The needs of management, in general, differ from the external users. Of course, various levels of management need information on the effectiveness of lower levels over which they have responsibility. Management needs information for planning, control, and evaluating. This requires much more information than that contained in the published financial statements.

Purpose

The significance of accounting is reflected by the use made of accounting statements and other accounting information by those internal and external to the entity. These users and their general needs have been presented.

The ways in which accounting statements are used and the reasons for their use are not definite. This has been the subject of some recent research, and it is likely that even more research will be conducted in this area in the near future. Although some of this research utilizes the deductive approach, the empirical approach is more common. It is assumed in this study that accounting statements are read and that the

readers utilize the information for the decision-making process. "It is evident that accounting measurements do represent information for decision-makers and since decision-makers do read accounting reports, the implication is strong that accounting measurements must have specific behavioral implications, not mere general tendencies in the long run" (5, p. 212).

Assuming the basic needs of those who use accounting information, this writer feels that the basic problem in accounting is the method of measurement to be used. For example, investors may wish to know the amount of income earned over a given period of time. Various amounts of income would be determined, depending upon the method used to measure income as several methods are available.

The purpose of this paper is to analyze and compare the most prominent of the measurement methods, or bases. The measurement bases chosen for inclusion are historical cost, current cost, net realizable value, and discounted cash flow.

The writer hopes that this study will provide the reader with:

1. An understanding of the major measurement (valuation) bases by explaining each, explaining and comparing the different interpretations for each.

2. A demonstration of the likely effect of each of the bases on the measurement of financial position and periodic income.

Scope

This study is prepared largely from the point of view of business enterprises, i. e., enterprises organized for profit. This is not to say that it has no application to entities such as hospitals, charitable organizations, and municipalities, but that the emphasis is on business enterprises.

One of the most important concepts underlying accounting as practiced today is original cost, or historical cost. This concept is generally accepted in the determination of periodic income. The use of this concept may have certain weaknesses. It may result in asset values on the balance sheet which do not reflect the worth of the assets. If asset value increases or decreases are sometimes not recognized, gains or losses occur which may not appear on the income statement. Revenue may be thought of as being earned throughout the production and selling process or throughout the selling and rendering of services. When the historical cost concept is used, revenue is not usually recognized in the accounting records until a specific event such as a sale takes place. These weaknesses may be used as the basis for the suggestion

that there may be alternatives to the historical cost concept which would be more useful. The major portion of this study is a discussion of those alternatives.

The principles of measurement and their importance and application to accounting are discussed in Chapter II. It is emphasized that accounting is a system of measurement.

Chapter III is a discussion of the presently generally accepted measurement concept--historical cost. The writer's intentions are to show the impact of the historical cost concept along with a related concept, the realization concept, on the accounting statements and especially on the income statements. Weaknesses already referred to are discussed in detail in order to suggest the need for alternative measurement concepts.

Chapter IV is a discussion of current cost. Current cost is a name chosen by this writer to encompass several concepts which include market value, opportunity cost, and replacement cost. All the concepts in this area are divided into two categories which are discussed separately. One category includes all current costs which would include production income before a sale takes place, while the other category excludes such current costs.

Just as there are several variations of what this writer refers to as current cost there are also

several variations of net realizable value. Chapter V is a discussion of these concepts.

The discounted cash flow concept is discussed in Chapter VI. This may be referred to as the economic concept of income.

Chapters IV, V, and VI include a comparison of the measurement base presented in that chapter with the measurement base (or bases) presented in the prior chapter (or chapters). Thus, each of the four measurement concepts presented is compared with all of the other three measurement concepts.

The summary and conclusions constitute Chapter VII.

Method

This study is based on library research and logical analysis. No empirical study has been utilized. Extensive empirical research would be necessary to determine how accounting statements are actually used, the reliance placed upon them, the changes desired by statement users, and the measurement methods which would be most useful to users. For lack of such research, the writer relies upon his own assumptions and the assumptions which have been made by other writers.

CHAPTER II

MEASUREMENT IN ACCOUNTING

Introduction

Measurement was at one time closely bound to mathematics. It is perhaps difficult to say whether measurement had its beginning in mathematics or mathematics had its beginning in measurement. Whole-number arithmetic and scales of numerosity (called numbering in common usage) grew up together. "The numerosity of collections of objects . . . constitutes the oldest and one of the most basic scales of measurement" (6, pp. 19-20).

The idea that measurement theory applies to accounting is not new. Accounting has always been concerned with measurement just as it has been concerned with arithmetic. There has been an increased emphasis recently in the application of measurement theory to the social sciences which include accounting.

The first part of this chapter is a discussion of measurement theory. Types of scales and kinds of measurement are included. The application of

measurement theory to accounting is discussed in the second half of this chapter.

The Nature of Measurement

In common usage the terms "measurement" and "measure" have a multitude of meanings. As used in this paper the terms have much more narrow meanings than in common usage. Several definitions of measurement as used here are given in the following paragraph.

S. S. Stevens, one of the leaders in the field of modern measurement theory, defines measurement as "the assignment of numerals to objects or events according to rule--any rule" (6, p. 19). B. Russell, another authority on the subject, gives this definition: "Measurement of magnitudes is, in its most general sense, any method by which a unique and reciprocal correspondence is established between all or some of the magnitudes of a kind and all or some of the numbers, integral, rational, or real as the case may be" (7, p. 176, quoted in 8, p. 13). N. R. Campbell gives a definition very similar to that given by Russell. Measurement is "the assignment of numerals to represent properties of material systems other than number, in virtue of the laws governing these properties" (9, quoted in 8, p. 13).

Warren S. Torgerson points out that, though there are slight differences in these definitions, all three deal with the same general problem concerning

"the process and rationale involved in the construction of a scale or measuring device and the properties that can be ascribed to it" (8, p. 13). In common usage measurement usually refers to the application of a scale; in this paper measurement refers to the construction of a scale. "Measurement as used here refers to the process by which the yardstick is developed, and not to its use once it has been established . . ." (8, p. 14).

According to Torgerson, an object is not measured; properties of an object are measured. ("Properties are essentially the observable aspects or characteristics of the empirical world" [8, p. 9].) The definitions of Russell and Campbell given above indicate that properties are measured rather than objects. Stevens' definition indicates that objects themselves can be measured.

Stevens considers his definition to be less restrictive. "Restrictive definitions of measurement have toppled as the practice of measurement, outrunning legislation, has forced us to broaden and generalize our conceptions" (6, p. 18). Stevens considers his definition "liberal and open-handed" and realizes it is unacceptable to some (6, p. 18). His definition includes mere classification as a form of measurement.

Types of Scales

Measurement of properties requires the assignment of numerals to represent the properties. A one-to-one relationship must exist between the quantities of the properties and the number system. The number system used must have the following features:

1. Ordered numbers,
2. Ordered differences between numbers,
3. A unique origin, "zero."

These three features may be called order, distance, and origin (8, pp. 14-15).

When numbers are assigned to objects "so that the relations between the numbers reflect the relations between the objects themselves with respect to the property" (8), a scale of measurement has been established.

Of the three characteristics listed above (order, distance, and origin), only order is necessarily involved in the usual meaning of measurement. The other two characteristics may or may not be involved in a given measurement. If a scale necessarily involves order but may or may not involve distance and origin, there are four possible combinations of these three characteristics as presented in Table 1 (8, p. 16).

Order is implied in the ordinal scale "so that the order of the numbers corresponds to the order of magnitude of the instances" (8, p. 16). The interval

scale has the feature of the ordinal scale with an added feature of a meaningful size of the distance between pairs of numbers. An interval scale with a natural origin is called a ratio scale (8, p. 16).

TABLE 1
FOUR TYPES OF SCALES

	No Natural Origin	Natural Origin
No Distance	Ordinal Scale	Ordinal Scale With Natural Origin
Distance	Interval Scale	Ratio Scale

Stevens adds to these conventional scales a lower scale which he calls the nominal scale (see Stevens' table on the following page--Table 2) (6, p. 25). "An array of categories or classes made distinct through the label of numerals is considered to be the natural basis of measurement and is called the nominal scale." (10, p. 58). The ordinal scale is next in hierarchy. It "consists of classes--characterized by numerals--which are subject to order rank in conformity with the numerals assigned" (10, p. 59). The next scale, the interval scale, enforces regularity of class-interval. The last scale, the ratio scale, requires a zero-point that is not arbitrarily chosen but given somehow beyond mere convention" (10, p. 59).

TABLE 2

A CLASSIFICATION OF SCALES OF MEASUREMENT*

Scale	Basic Empirical Operations	Mathematical Group Structure	Typical Examples
Nominal	Determination of equality	Permutation group $x' = f(x)$ where $f(x)$ means any one-to-one substitution	"Numbering" of football players Assignment of type or model numbers to classes
Ordinal	Determination of greater or less	Isotonic group $x' = f(x)$ where $f(x)$ means any increasing monotonic function	Hardness of minerals Street numbers Grades of leather, lumber, wool, etc. Intelligence test raw scores
Interval	Determination of the equality of intervals or of differences	Linear or affine group $x' = ax + b$ $a > 0$	Temperature (Fahrenheit or Celsius) Position Time (calendar) Energy (potential) Intelligence test "standard scores" (?)
Ratio	Determination of the equality of ratios	Similarity group $x' = cx$ $c > 0$	Numerosity Length, density, work, time interval, etc. Temperature (Rankine or Kelvin) Loudness (sones) Brightness (brils)

* Measurement is the assignment of numerals to events or objects according to rule. The rules for four kinds of scales are tabulated above. The basic operations needed to create a given scale are all those listed in the second column, down to and including the operation listed opposite the scale. The third column gives the mathematical transformations that leave the scale form invariant. Any numeral x on a scale can be replaced by another numeral x' , where x' is the function of x listed in column 3.

The nominal scale involves the assignment of numerals to the object itself rather than to the properties of the object. This would not be considered measurement at all by some definitions such as the conventional definitions given by Russell and Campbell. Thus, Stevens considers mere classification as measurement while some authorities would not (8, p. 9).

Stevens also includes some examples in the other scales which may not, by definition, be considered measurement by Russell and Campbell. He includes street numbers as an example of the ordinal scale, position as an example of the interval scale, and numerosity as an example of the ratio scale.

Stevens does not recognize an ordinal scale with a natural origin. Authorities other than Stevens and Torgerson present still more variations in scales.

Each of Stevens' scales after the first "grows out of the preceding one by introducing an additional property or condition, thus restricting its application to a smaller but more specific area than that of the preceding scale" (10, p. 58). The classification of scales is based on how much information is represented by the numerals (8, p. 21). The amount of freedom in assigning numbers decreases as one goes down the scale--either Stevens' or the conventional scales.

Kinds of Measurement

Kinds of information represented by numerals "amounts to a consideration of the sorts of meaning attributed in a particular scale to those characteristics of order, distance, and origin that are represented" (8, p. 21). Torgerson gives three ways in which these characteristics might obtain meaning:

1. Through laws relating the property to other properties--derived measurements.
2. By arbitrary definition--fiat measurement.
3. Through natural laws relating various quantities of the construct to each other--fundamental measurement (8, pp. 21-22).

There is no necessary relationship between types of scales and kinds of measurement. A particular scale of measurement is not limited to any particular kind of measurement (8, p. 22).

"The view has been held that the assignment of numerals to objects other than by the procedures involved in fundamental or derived measurement is not measurement at all" (6, p. 22). Some experts disagree with this and feel that a more general definition is needed to include fiat measurements.

Impact of Measurement on Accounting

Definitions of Accounting

Accounting, by definition, is concerned with measurement. It is generally accepted that financial data is the subject of the measurement process.

"Accounting is a discipline concerned with the quantitative description and projection of the income circulation and of wealth aggregates by means of a method based on the following set of basic assumptions: monetary values, time intervals, structure, duality, aggregation, economic objects, inequity of monetary claims, economic agents, entities, economic transactions, valuation, realization, classification, data input, duration, extension, materiality, and allocation" (10, p. 19). Quantitative description, as used in this definition, implies measurement.

Accounting is the art of measuring and communicating financial information. This statement is not shocking or even surprising, yet the acknowledgement that accounting is concerned with measurement is the first necessary step towards a long awaited revolution in accounting. This revolution is not restricted to accounting; it has already taken place in other disciplines where measurement is crucial. For example, the classical concepts of measurement in physics and psychology have already undergone drastic changes. It is time for restrictive definitions of measurement in accounting to topple (11, p. 501).

Accounting might even be considered a theory of measurement: "Since the main functions of accounting are classification and evaluation, the thought of

interpreting accountancy as a theory of measurement is not farfetched and sounds plausible" (10, p. 54).

These are representative definitions of accounting which emphasize the measurement aspect.

Importance of Measurement in Accounting

Galileo demonstrated "that quantification is the best and most accurate way to acquire empirical knowledge." He indicated the maxim in this proverb: "Measure all that is measurable and attempt to make measurable that which is not yet so" (10, pp. 54-55).

"The basis of accounting is measurement" (12, p. ix). The purpose of accounting is to measure. Or perhaps the purpose of accounting could be better expressed as: to measure financial data. Financial data may be arranged in the form of financial statements. Thus, the two primary financial statements measure financial position and the results of operations. Other financial statements measure changes in retained earnings, the flow of working capital, and the flow of cash. Accounting may also be used to measure financial data such as the cost of products, variations between the actual and standard costs of products, and the differences in costs and revenues between alternatives.

Measurement is concerned with the quantitative aspects of objects. By tradition, at least, accounting is concerned with the quantitative aspects of objects.

Perhaps accounting should be concerned with other aspects; perhaps accounting should report facts and contingencies which do not have a direct impact upon quantitative aspects of objects. A heart attack suffered by the president of a business corporation may be of more interest to the stockholders than much of the data that is reported--the amount of goodwill carried on the books, for example. Traditionally, goodwill carried on the corporation's books is reported on the balance sheet; a heart attack suffered by the president is not mentioned in the financial statements. It may be argued that the president's heart attack will be reflected in the financial statements in the future by means of reduced profitability, but there is a time lag. There are those who argue, or at least suggest, the possibility of extending accounting to nonquantitative aspects of objects.

The requirement that measurement be "in terms of money" has persisted, dominating the notions of "significant manner" and "events." When an event occurs whose impact may be highly significant for the financial (or other) welfare of an entity, the decision to record it or not in the accounting records will be made on the basis of whether it can be expressed in terms of money; consequently events of a trivial nature are recorded while momentous occurrences which are quantifiable but to which a dollar value cannot be attached--e.g., doubling share of market, number of lost sales--or non-quantifiable events, such as the choice of a next president, are effectively ignored (13, p. 28).

By tradition, accounting has confined its quantitative measurement largely to monetary terms. Measurement of other quantitative aspects of objects,

such as the physical units of production during a given month, is within the range of accounting, but such measurement has not gained the status of measurement in monetary terms.

Basic Structure of the Business
Measurement Process

The following structure of the business measurement process has been suggested by Paul Kircher:

1. Determination of the objectives of the business entity--the purpose which is to be served in a particular situation.
2. Determination of the types of factors which might serve to attain the objective.
3. Selection of the key aspects of the factors--the aspects which are to be measured.
4. Choice of:
 - (a) a measuring method;
 - (b) a measuring unit.
5. Application of the measuring unit to the object to be measured--the central action of measurement.
6. Analysis of the measurement--relating it to other measurements (other in time or in kind).
7. Evaluating the effectiveness of the measurement by determining the extent to which it assisted in the attainment of the objective (14, p. 68).

"A central problem we face is to define the properties of a business (or 'attributes,' as some have called them) that accounting should seek to measure" (15, p. 257). The first three components of the structure are important but not included within the main purpose of this paper. The profit motive is usually

assumed to be the primary purpose of business enterprise. Entities other than business entities have other objectives.

The main purpose of business firms is to increase the economic resources under their control through their activities. Even though business firms have many other objectives, their success or failure is primarily evaluated on the basis of the increase or decrease in the economic resources over which they have control (16, p. 151).

The subgoals of business enterprise have been given more attention in recent years than before. Subgoals may include importance in industry, growth, cash flows, customer goodwill, and public service. It is difficult to measure subgoals. "In most cases our ability to isolate specific benefits from a general system is inadequate and we are simply not able to generate enough information for meaningful measurements" (17, p. 24). Therefore, the assumption is made in this paper that accounting is primarily concerned with the measurement of profit.

The selling of products and the rendering of services are usually considered to be the means of obtaining the objectives. The financial aspects of rendering services and selling products are the key aspects to be measured. "Accounting measurement is primarily concerned with the measurement of assets and income" (18, p. 151). As has already been suggested, there are accountants who suggest the extension of measurement to aspects other than financial aspects.

Extended discussion of this point is not within the scope of this study.

Accountants cannot always measure what they want to measure. If the primary goal of a business enterprise is to make a profit, accounting should measure the amount of profit. There is no perfect way to measure profit. "The accountant's approach to this problem is to substitute something that can be measured for the things we would like to measure if we were more competent" (19, p. 90). This is referred to as using surrogates, or substitutes. "Accounting data as well as other types of business information are surrogates which the decision-maker uses to carry out the decision process" (20, p. 192).

The basic measurement task of accounting is the selection of a measuring method and a measuring unit. The measuring unit is the language in which the results may be expressed. The choice of a language is one of the decisions a measurer must make. "The measurer must develop a language which adequately communicates to another person what the user must do to utilize the information contained in the measurement" (21, p. 85).

A dilemma arises in the selection of a language. C. West Churchman has expressed the dilemma this way:

The clearer a language the more confusing it is to most people. Precise languages narrow the class of users but increase the degree of refinement that any user can attain. The proper balance between

breadth and depth is the linguistic decision problem of measurement (21, p. 87).

Accounting expresses financial data in monetary terms. Thus, in the United States, the language of accounting is usually the dollar. The selection of the dollar as the measuring unit does not solve the measuring unit problem. A significant difficulty to be solved concerns how to deal with the changing purchasing power of a dollar. Are measurements to be made in terms of dollars with no recognition made of the changed purchasing power between two points in time? "Measurements of financial position and income based on numbers of dollars without regard for any differences in the economic significance of those dollars are cruder economic measurements than we are capable of providing" (22, p. 110).

The choice of a measuring method is the central theme of this paper. "Income and wealth are dependent upon the choice of measurement rules" (16, p. 221). Several possibilities are suggested, discussed, and compared. "Accounting is a measurement system which is plagued by the existence of alternative measurement methods" (23, p. 474).

The fifth part of the structure is the act of applying a measurement method. This is measurement according to the common use of the word and is not relevant to this study.

The sixth component of the structure is the use, or application, of the results of the measurement. This use actually has implications for the selection of a measuring method and a measuring unit. "The measurement procedures underlying any set of accounting information are inevitably linked to the purpose for which that information is provided" (22, p. 101).

In advocating measurement procedures in accounting, it is mandatory at the outset to specify the purpose for which the measurements are intended. The attribute to be measured and the unit of measurement to be utilized then must be demonstrably consistent with that purpose (22, p. 102).

If the primary goal of a business enterprise is to make a profit, then accounting should make a contribution toward this goal. Accounting should make a contribution to whatever the goals of a business might be. Therefore, evaluating the effectiveness of the measurement in attaining an entity's objectives is an integral part of the measurement process.

The final results of the measurement process is really the deciding factor in determining which measurement method and unit is best. According to Ijiri, "if people are likely to behave in a more 'desirable' manner in response to the values of assets and income prepared under one set of weights than under another set of weights, then and only then we can say that one set of weights is better than another" (18, p. 161).

Carl Devine has set forth the following similar list as typical conditions (and preconditions) for accounting measurement:

1. Specifying and ordering worthy objectives;
2. Determining decisions and information needed to accomplish objectives;
3. Identifying and ordering individuals with legitimate claims to information;
4. Deciding which events are relevant to achieving these objectives;
5. Deciding what aspects of the events should be abstracted;
6. Adopting a set of feasible measurement scales and rules that will yield an advance in objectives (17, p. 17).

Number three is the only condition listed by Devine which is essentially different from those listed by Kircher. Devine points out that an ethical aspect is involved in ordering individuals and that accounting should be concerned with this ethical aspect.

Measurement and Value

Measurement is a term which has gained prestige in the field of accounting in recent years. As measurement implies (or represents) accuracy, it possibly is used as a status symbol. Perhaps the use of measurement in the physical sciences is imitated by the social sciences.

Sprouse says accountants are really talking about the measurement of value. "The relevant attribute with which we are essentially concerned is that

of value; the measurement process in which we are fundamentally engaged may be properly described as valuation" (22, p. 107). The term measurement is used because of the emotional effect of the use of the term value. "The terms value and valuation have an unfortunate tendency to arouse emotional reactions among some . . ." (22, p. 107). By using the word measurement, accountants may avoid using the word valuation. "Measurement, on the other hand, is an innocuous term as well as a prestigious one; it is not branded with the emotional stigma attached to valuation" (22, pp. 107-8).

Sprouse believes that accountants should recognize valuation as the relevant attribute in reporting to the stockholders of a business enterprise. The financial accounting process "could be improved enormously by a clear-cut recognition of value as the relevant attribute" (22, p. 108).

R. J. Chambers has a different view of the relationship between measurement and valuation. "It seems . . . that greater clarity of argument is possible if the distinction is made between acts of valuation which always have reference to the future, and acts of measurement which have reference to the past and present" (24, p. 32). Chambers believes accountants are interested in measurement--not valuation. Most accountants, as Sprouse, do not make such a distinction.

Accuracy

In common usage, measurement implies accuracy. Results of measurement (numerals) are often taken as fact. A given person weighs one hundred sixty pounds. A room is fifteen feet wide and twenty-four feet long. These measurements may not be accurate. The given person may weigh one hundred sixty pounds and three ounces. The measurement could be even more nearly exact, using even smaller units than ounces. There are degrees of accuracy; it is not essential to be completely accurate. In fact complete accuracy may be impossible. Complete accuracy might not be recognized if obtained.

The degree of accuracy to be obtained by any measurement (accounting or other) depends upon the purpose for which the measurement is made. If a room is being measured for wall-to-wall carpet, the measurement should be within perhaps one-fourth inch of the actual dimensions. If the dimensions are obtained to determine the number of square feet per student for testing purposes, measurements might well be rounded off to the nearest foot.

Accuracy in Sciences

The physical sciences are sometimes thought of as being exact. Chambers says "the presumption that the exact sciences provide measurements which are paragons of accuracy is false" (24, p. 45). Even in

the exact sciences, "the degree of accuracy sought is the degree necessary for practical purposes" (24, p. 45).

Chambers applies this idea to accounting. The current cash equivalent (his proposed measurement) can be found for all assets with some degree of accuracy (24, p. 46).

Probability and Degree of Error

Complete accuracy in accounting is never possible. Furthermore, it may be impractical to obtain complete accuracy or highly accurate data even if it were possible. Therefore, the user of financial data should be aware of the degree of accuracy reflected in the financial data being utilized. Perhaps financial statements should indicate the probability and degree of error inherent in measurement methods used and in the results of the measurement. "The information of measurement is considerably enhanced if the degree of accuracy or error of the pertinent measurement is known" (10, p. 80).

Probability has been given very little consideration in accounting although it is interesting to notice that "the usual ordering of assets on the balance sheet, by chance or otherwise, tends to follow the level of confidence in the measurements" (17, p. 22).

The accountant's attempts to disclose precision are crude indeed, but, worse, it is possible that he omits important information simply

because his methods of conveying precision are so crude. A little-explored alternative estimates probability numbers for both the amount to be paid and the possibility of having to pay at all and derives an expected value for the unfavorable prospect (17, p. 22).

Scales in Accounting

Stevens' nominal scale would include the chart of accounts within the range of measurement.

With the rejection of Stevens' approach, the designation of measurement would be unduly denied to those systems. "Unduly," because these systems still extract significant information for comparison in research and practical decision making, information that often can efficiently be transmitted by numerals only (10, p. 63).

The nominal scale although basic to the accounting process is neither the only nor the most important scale pertaining to our discipline. The evaluation process--the core of theoretical accountancy--utilizes the ratio scale; statement analysts primarily work with ordinal scales; and certain aspects of cost accounting can be considered as applying the interval scale (10, p. 68).

Standard costing is an example of the use of the interval scale. The dollar scale is a ratio scale.

"There are, however, instances of multiple measurement, the dimensions of which are measured on scales that differ from each other; the accounting transaction is one of these cases . . ." (10, p. 74). The chart of accounts (nominal scale) is used in classifying the debits and the credits of a transaction. The time dimension is measured by an interval scale. The dollar amount is measured on a ratio scale.

Kinds of Measurement in Accounting

"Most of the economic and accounting measures belong in the category of measurement by fiat, which is reflected in a certain definitional arbitrariness of our discipline" (10, p. 79). Mattessich emphasizes that neither fundamental nor derived measurement is used to much extent in accounting:

There neither exists at present the possibility to infer accounting values through "natural laws" (i.e., by fundamental measurement) nor through a combination of two or more fundamental measures that result in derived measurement. Most of the economic and accounting measures belong in the category of measurement by fiat, which is reflected in a certain definitional arbitrariness of our discipline (10, p. 79).

Carl T. Devine feels that attempts by Torgerson, Mattessich, and others to find fundamental measurements tend to be fruitless endeavors.

Measurement is a process that requires extremely high levels of abstraction. In this sense all measurement is fiat measurement, for some identifiable property must be isolated and related to objectives (17, p. 14).

Sprouse suggests, on the other hand, that direct measurements are often used in accounting. Examples include the measurement of assets such as receivables and payables (22, p. 111). He recognizes the fact that fiat measurement is more often used.

The value of an asset can be measured directly only if information is available concerning amounts of future cash flows, timing of such cash flows, and the appropriate rate of discount. In addition, if the future cash flows are measured in dollars, either it must be assumed that the purchasing power of the dollar is constant or information concerning future price-level changes is required.

In the absence of sufficiently reliable information about these factors, direct measurement of the value of an asset is not feasible; indirect measurement procedures, such as the use of acquisition cost and the use of replacement cost, must be adopted (22, p. 111).

Criteria for Comparing Measurement Methods

The American Accounting Association's A Statement of Basic Accounting Theory published in 1966 suggested the following four accounting standards:

1. Relevance (Usefulness)
2. Verifiability
3. Freedom from bias
4. Quantifiability (25, p. 7).

These four accounting standards might well serve as criteria for the selection of the most appropriate measurement method.

The Harvard Business School Accounting Round Table held in 1964 presented a slightly different set of criteria for measurement:

1. Objectivity

Two related requirements:

(a) Certain standards should be used in presenting financial accounting information, and

(b) It should be feasible to verify financial accounting information.

2. Usefulness
3. Feasibility (26, pp. 18-19).

A combination of these criteria will be used in discussing and comparing the various measurement methods. The combined list follows:

1. Relevance (Usefulness)
2. Objectivity
 - (a) Verifiability
 - (b) Freedom from bias
3. Feasibility
4. Quantifiability

Summary

Measurement is the assignment of numerals to objects or properties of objects to represent such objects or properties. Accounting, as it relates to quantification, is a system of measurement.

Measurement is an integral part of the physical sciences and the social sciences. The nature of measurement has been discussed in rather broad terms in this chapter because measurement theory applies to such a broad area.

Measurement theory has been related to accounting in the latter part of the chapter in more specific terms. It was concluded that the selection of a measurement method is one of the most significant problems of accounting.

CHAPTER III

HISTORICAL COST

Introduction

This chapter is the first in a series of four chapters which discuss major measurement methods, or bases. The present chapter is a study of a measurement base which may be called historical cost (or original cost). Historical cost is generally accepted for use in accounting statements. This chapter is largely a discussion and criticism of accounting statements as they are currently prepared.

The chapter begins with a definition of historical cost. This is followed by a discussion of some related concepts which underly the preparation of accounting statements. As the realization concept and the historical cost concept are closely related the realization concept is of particular concern in this chapter. The historical development of the realization concept is followed by a discussion of the present status of the concept.

The last part of the chapter concerns the effects of historical cost and related concepts,

especially the realization concept, on accounting statements. The use of this measurement basis is criticized.

Definition of Historical Cost

Accounting statements are prepared in terms of historical, or original, cost. When assets are acquired they are recorded at cost, a measure of the current exchange value at that time. Historical cost is the cost arrived at in the transaction concerned; historical cost is transaction price. A record is made when a transaction occurs between an enterprise and another party. The dollar amount of the transaction is considered to be an objective basis for the valuation of that which is exchanged. This dollar amount, transaction price, is the historical cost of that which is recorded. Assets remain on the books at cost (or cost adjusted for such factors as depreciation) as long as they are owned by the enterprise.

There are a few exceptions in practice to the historical cost concept, but in general when an enterprise expects to operate indefinitely, the original cost concept, or historical cost concept, is adhered to in the preparation of accounting statements. The following quote probably represents the attitude of accountants as exemplified in practice.

Accounting is . . . not essentially a process of valuation, but the allocation of historical

costs and revenues to the current and succeeding fiscal periods. . . . If values other than unamortized costs are to be quoted they should be expressed . . . only as collateral notations for information purposes. . . . There seems to be no sound reason for repeated adjustments of asset values for the ordinary changes in price levels commonly experienced from one generation to another. . . . A history of cost and cost amortization is a consistent record of actual occurrences . . . and constitutes an essential starting point in financial interpretations (27, pp. 61-62).

This quote from the 1936 American Accounting Association Statement (A Tentative Statement of Accounting Principles Underlying Corporate Financial Statements) represented the attitude of the Executive Committee at that time toward historical cost.

The historical cost concept is criticized with varying degrees of severeness. As an illustration a quote is given here from Harry N. Kamph:

Conventional balance sheets and operating statements have become so distorted that they are of little or no guidance for decision-making purposes.

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Without taking into consideration current values, we find it impossible to reach valid conclusions or develop fully revealing information on such important matters as:

1. Return on total capital employed.
2. Return on capital equity or stockholders' investment.
3. Optimum mortgage loan financing terms.
4. Necessary coverage under fire and comprehensive insurance policies and proof of loss.
5. Evaluation of specific segments of an operation or an entire business for purposes of purchase, sale or merger.

6. Costs and profits measured in terms of current values rather than often misleading book or original values (28, p. 17).

Related Concepts Underlying Accounting Statements

The following concepts are closely related to the historical cost concept and also, like the historical cost concept, underlie the accounting statements. Presently accepted methods of accounting include all of these concepts.

Going Concern

There was a time when the venture was the predominant form of business enterprise. As ventures lasted for only a relatively short period of time, an accounting was usually made only at the end of the venture. The venture form of business enterprise is almost completely gone. It has been replaced by business enterprises which remain in existence for long periods of time. Although thousands of enterprises go out of existence each year, a majority of business enterprises, especially medium and large-size ones, have lives of indefinite length.

Since business enterprises usually operate for long periods of time and are not expected to discontinue in the immediate future, they may be assumed to have a continuous life. This "continuity concept," or "going concern concept," assumes that business

enterprises remain in existence indefinitely unless there is evidence to the contrary.

Accounting statements are generally prepared on this assumption. The primary impact of this concept is on the valuation of assets. This assumption has implications for income measurement due to the inter-relationship of the balance sheet and the income statement.

Accountants have generally felt that since liquidation values may be of little importance to a going concern, this continuity of life concept is used as justification for another concept, the cost concept. The following quotation from Henry Rand Hatfield's Modern Accounting points out the insignificance of liquidation values.

The proper value is that which they have to the holding concern, and not that which they might have to other persons, whether these persons are ordinary customers, or those who might bid on the assets at a liquidation sale. The value is that which they have to the company as then existing and not to a company in the hands of a receiver, or one closing up its accounts and going out of business (29, p. 81).

This quote does not mention how to arrive at the value to the holding concern. This does not necessarily imply a historical cost basis. Reed K. Storey quotes Hatfield as saying the going concern is not usually taken to its logical conclusion which would be to value merchandise at net realizable value. A logical application of the going concern concept would

be the measurement of fixed assets at cost because changes in value from one period to another which are not expected to be realized by the sale of the fixed asset are not as relevant as changes in value of current assets, especially those which will be converted into cash in the near future. Storey says, "The failure to carry the going concern assumption to its logical conclusion left a gap in accounting theory which was filled by the realization concept" (30, p. 237).

It is the realization convention which requires valuation of all unrealized (i. e., unsold) assets at cost, whether they be fixed assets or unsold inventories.

The area of complementarity between the realization and going concern conventions lies in the area of fixed assets, whereas the area of basic conflict lies in the area of current assets. . . . In this area the realization convention is clearly dominant in modern accounting (30, pp. 237-38).

Time Periods

Under the venture form of business enterprise, an accounting was made upon the completion of the venture. The amount of business income earned can best be determined at that time. When there is continuity of life, it is not feasible to wait until the end of the enterprise life to measure income.

The time-period convention has developed to break the life of an enterprise into arbitrary time periods. This arbitrary time period is usually a year. The calendar year is used by many enterprises. This may be a carryover from an agricultural society in

which the calendar year was the natural business year. Many business enterprises are now using what is considered a natural business year for their particular type of business.

Accounting for a business entity by time periods gives interested parties useful information about the enterprise before its life is over. Some accuracy is sacrificed for timeliness.

Realization

Since accounting attempts to measure income by time periods there must be a criterion to determine when income arises. The realization concept has developed to meet this need. The dominant interpretation is that a change in value has taken place with sufficient objectivity to warrant recognition in the accounts. A sale is usually thought of as having sufficient objectivity and is generally the accepted criterion for realization. The realization concept is related to the original cost concept in that assets are recorded at original cost until realization is deemed to have taken place.

The development of the realization concept helped bring about the development of the historical cost concept. "The assertion by the Court of the realization postulate lent support to the proposition that, until realized, assets should be carried at cost,

and thus contributed to the building up in accounting literature of a so-called 'traditional cost principle' (3, p. 27).

Like the historical cost concept, the realization concept is also based on transaction price. No increase in the value of an asset is recorded until another transaction occurs. The realization concept delays the recognition of revenue until a sale or some other sufficiently objective event occurs. This means that the usefulness of accounting may be impaired by the time delay.

No doubt, everyone would like timely reports that are also conclusive, but for the most part the two conditions (timeliness and conclusiveness) are in conflict. In most cases accountants have chosen to be more conclusive rather than more timely in their recognition of changes that have occurred, thereby exposing themselves to the charge that their reports (issued at frequent intervals) are less useful than they could be (31, pp. 33-34).

In emphasizing the importance of the evaluation of past decisions, Edwards and Bell point out that "if the demand for data is predicated largely upon the existence of change and uncertainty in the economy, accounting data, to be most useful, should be designed to report changes as they occur" (32, pp. 5-6).

Like the historical cost concept, the realization concept results in some limitations in the determination of periodic income. The realization concept will be discussed in more detail in a subsequent section of this chapter. Enough has been said to

indicate that the realization concept may limit the usefulness of accounting statements.

Matching

While the realization concept determines the period in which revenue is to be recognized, the matching concept determines what costs become expenses to be matched against revenue. The matching concept means that those costs which were necessary to attain the revenue of the period should be matched with the revenue.

The expenses which apply to a given period are those which can be matched with the revenue which is recognized during that period. The following statement is made in the 1957 revision of Accounting and Reporting Standards for Corporate Financial Statements: "The committee advocates that costs (defined as product and service factors given up) should be related to revenues realized within a specific period on the basis of some discernible positive correlation of such costs with the recognized revenues" (33, p. 369).

In all significant cases where there is uncertainty, revenue is the controlling classification. It becomes the guide to action, the focal point which makes matching effectual in areas of uncertainty (34, p. 738).

The matching process developed when the "increased net worth" concept gave way to the "realization" test of income. "It became common to speak of income determination as being essentially a process of matching

costs and revenues" (3, p. 28). The timing of revenue recognition determines to a large extent the timing of expense recognition and therefore the timing of net income recognition. Matching is necessary to determine the net increase in assets which is similar to "increased net worth" because net assets equal net worth.

Objectivity

Objectivity is difficult to define. A key word in the definition of objectivity is "unbiased."

Naurice Moonitz defines objectivity as "unbiased, subject to verification by another competent investigator" (31, p. 42). This implies that many individuals would reach approximately the same conclusions.

Harold E. Arnett gives the following explanation of objectivity:

Financial information is objective when:

1. It is free from personal opinion and bias, which further requires
 - a. that there actually be an exchange of something for something, both having "value," and
 - (1) this exchange be the result of an arm's length transaction between independent parties,
 - (2) this exchange be capable of being accurately measurable in dollars,
 - (3) that one of the negotiating parties in the exchange be the unit for which the accounting is being done.
2. It is substantiated or capable of being substantiated by an independent investigator (35, p. 65).

There are degrees of objectivity. Accuracy is significant in determining whether or not data is objective. "If an item can be measured with reasonable accuracy, it assumes a large degree of objectivity" (36, p. 251).

Objectivity is considered to be an outstanding characteristic of historical cost and the realization concept.

Conservatism

Conservatism is sometimes expressed as: Provide for all losses; anticipate no profits. Paul Grady, in his Inventory of Generally Accepted Accounting Principles for Business Enterprises, explains the concept of conservatism as follows:

From the viewpoint of generally accepted accounting principles, the concept of conservatism comprehends the twin ideas that:

Sales, revenue and income are not to be anticipated. Recognition ordinarily requires consummation of sale and delivery, and

All known liabilities or losses should be recorded regardless of whether the definite amounts are determinable (37, p. 36).

Grady notes the close relationship between the conservatism concept and the realization concept by saying that the above ideas "often have been dealt with as a separate concept of 'realization'" (37, p. 36).

Conservatism is actually a technique for delaying the recognition of revenue. Realization and conservatism are related because the realization concept

is a fairly conservative concept in that profits are not anticipated very far in advance of the actual receipt of cash. Cash receipts would usually be the most conservative method of recognizing revenue. There are exceptions to this statement such as the advance of cash before a product is delivered or services are rendered.

Historical cost is also a conservative concept. The lower-of-cost-or-market valuation method of inventory valuation is even more conservative.

Summary

The concepts discussed above are considered among the most basic accounting concepts. It is generally recognized that the use of these concepts along with other generally accepted accounting principles and procedures results in accounting statements which have limitations.

This discussion of these basic concepts is intended to show that accounting statements are knowingly prepared under assumptions which will not result in perfection. It is the purpose of a latter section of this chapter to point out weaknesses in accounting statements due to the use of these concepts. It is the purpose of subsequent chapters to discuss alternative measurement bases which might result in better accounting statements.

Historical cost may be thought of as the measurement base which is largely controlling in the preparation of accounting statements. It is closely related to the other concepts discussed here, but it is especially related to the realization concept. The realization concept may be thought of as the application of the historical cost concept. Because of the importance of the realization concept in current-day accounting, the following section of this chapter is devoted to this topic.

The Realization Concept

The realization concept is the currently accepted basis for revenue recognition. According to the most commonly accepted meaning of realization, revenue should be recognized when a sale takes place. There are other meanings for realization and criteria for recognition as are indicated later in this section. This section considers the historical development of the concept and its present status.

Historical Development of the Realization Concept

The Study Group on Business Income points out that the postulate of realization is of quite modern origin:

A review of accounting, legal, and economic literature suggests that the realization postulate was not accepted prior to the First World War. In 1913 leading authorities in all these fields in

Great Britain and America seemed to agree on the "increase in net worth" concept of income (except in the case of "permanent" enterprises), though the way in which it could best be implemented was not settled, and unrealized appreciation was not perhaps deemed to be a part of "income from operations" (3, pp. 23-24).

As an example, the Study Group quoted the following statement by A. L. Dickinson in his Accounting Practice and Procedure (1913):

In the widest possible view, profits may be stated as the realized increment in value of the whole amount invested in an undertaking; and, conversely, loss is the realized decrement in such value. Inasmuch, however, as the ultimate realization of the original investment is from the nature of things deferred for a long period of years, during which partial realizations are continually taking place, it becomes necessary to fall back on estimates of value at certain definite periods, and to consider as profit or loss the estimated increase or decrease between any two such periods (3, p. 24).

W. A. Paton also accepted an increase in value theory. He makes the following statement in his Accounting Theory, published in 1922:

The liberal view that, ideally, all bona fide value changes in either direction, from whatever cause, should be reflected in the accounts has been adopted without argument. . . . This logical position is the proper one for the professional accountant, at least as a starting point (38, p. vii).

In these early years of the current century, the realization concept did not have its current status. The events of the times probably brought about the almost complete acceptance of the realization concept.

The sixteenth amendment in 1913 may have had a great effect on the creation and acceptance of the

realization concept (3, p. 26). The landmark case of Eisner v. Macomber in 1920 also made a contribution to the realization concept. In this decision, Charles Evans Hughes said:

It is of the essence of income that it should be realized. . . . Income necessarily implies separation and realization. . . . The increase in the value of lands due to growth prosperity of the community is not income until it is realized (Eisner v. Macomber, 25 U. S. 188, 195 [1920]).

The economic experience of the 1930's fairly well finalized the elimination of the increase-in-value concept.

The realization concept had gained acceptance by 1934 as evidenced by the first of six rules or principles adopted by the American Institute of Accountants that year: "Profit is deemed to be realized when a sale in the ordinary course of business is effected, unless the circumstances are such that the collection of the sale price is not reasonably assured" (39, p. 423).

The Present Status

Realization is currently the generally accepted criterion for revenue recognition. Recognition refers to the timing of recording revenue on the books of an enterprise. The realization concept, used as a guide to revenue recognition, is primarily a timing device. "The test of realization is used to determine when to recognize a particular item" (36, p. 251). "The entire

income from sale arises at the moment when realization is deemed to take place" (3, pp. 19-20). Because costs and revenues are matched to determine income, income is assumed to arise when the recognition of revenue takes place.

There are some differences of opinion on the exact meaning of the realization concept. The 1957 Statement by the American Accounting Association Committee on Concepts and Standards Underlying Corporate Financial Statements defines the realization concept as follows:

The essential meaning of realization is that a change in an asset or liability has become sufficiently definite and objective to warrant recognition in the accounts. This recognition may rest on an exchange transaction between independent parties, or on established trade practices, or on terms of a contract performance of which is considered to be virtually certain. It may depend on the stability of a banking system, the enforceability of commercial agreements, or the ability of a highly organized market to facilitate the conversion of an asset into another form (27, p. 3).

The key words in this definition are "change" and "sufficiently definite and objective." According to Floyd W. Windal, this definition implies that "the change may have taken place prior to the time it became sufficiently definite and objective for recognition" (36, p. 251).

Floyd W. Windal defines realization by using the three key ideas from the definition just quoted:

The realization of income takes place--that is, income comes into existence--when certain criteria have been fulfilled in connection with

a net asset increase. Excluded are increases caused by gifts or additional owner investment. Among other criteria are these:

1. The gain or increase must be confirmed by some event or transaction such as the receipt of cash or property, relief from liability, or a change in the nature of legal rights.
2. The gain or increase must be subject to objective measurement.
3. The gain or increase must be definite and irrevocable (40, p. 36).

Inherent in these definitions is the criterion that revenue must have been economically earned before or at the point it is recognized (41, p. 43). "Economically earned" means that a value increment has taken place due to the operations of an enterprise. "Revenues are effectively earned when substantially all of these activities necessary for and associated with the production of these revenues have been completed" (41, p. 44).

Other criteria have been used in determining when realization takes place. Robert T. Sprouse and Maurice Moonitz list tests which have been used to determine if an item is realized or not:

1. It had to be earned.
2. It had to be the result of a conversion brought about in a transaction between the enterprise and someone external to it.
3. It had to be the result of a legal sale or similar process (related to 2, above).
4. It had to be severed from capital.

5. It had to be in distributable form (related to 4, above).
6. It had to be evidenced by liquid assets (related to 5, above).
7. Its effects on the enterprise had to be the subject of accurate measurement or of estimates with a high degree of reliability (2, pp. 14-15).

The American Accounting Association 1964 Concepts and Standards Research Study Committee on The Realization Concept also presents its view of the realization concept:

When should realization be considered to have been achieved in a revenue transaction? Three factors have generally been considered sufficient in answering this question:

1. The nature of the asset received;
2. The presence of a market transaction;
3. The extent to which services have been performed (42, p. 314).

It is difficult to be precise about what is the current prevailing practice, but it appears that presently accepted tests for realization require receipt of a current (or liquid) asset capable of objective measurement in a market transaction for services rendered (42, p. 314).

The 1957 Statement has been amended by the work of this 1964 Concepts and Standards Research Study Committee. The conclusions of the committee cannot be classified as generally accepted. In this sense, the conclusions and recommendations cannot be considered as part of the present status of the realization concept. They are included here because they have been made, and in this sense they affect the present status of realization.

The following two problems were discussed by the committee:

1. Transactions associated with the exchange of goods and services between the accounting entity and some independent, external group. These are referred to . . . as revenue transactions.
2. Changes in the value of resources during the time they are held by the firm. These are referred to . . . as holding gains and losses (42, p. 313).

The committee arrived at these conclusions:

"The committee unanimously recommends that the effects of changes in value of all assets, other than goodwill, that can be supported by adequate evidence be recorded in the accounts" (42, p. 312). "A majority of the committee recommends that 'unrealized' changes in the value of assets should not be included in the computation of reported net income, but should be shown on the income statement below the net income line" (42, p. 312).

In considering when realization should be regarded to have been achieved in a revenue transaction, the committee made the following decisions:

1. Nature of Asset Received--The committee recommends continued adherence to a policy of requiring objective evidence of the valuation of the asset received before recognizing realized revenue. . . . The committee would stress measurability, and not liquidity, as the essential attribute required for recognition of realized revenue.
2. Presence of a Market Transaction--There is general acceptance of the view that a market transaction is necessary for revenue to be realized. The committee concurs in this requirement.

3. Extent of Service Performed--Traditionally, in establishing a realization test, accountants have considered the degree to which the seller has furnished the services being purchased. The committee is suggesting that another factor is more relevant, namely, whether the seller has performed an action which is the crucial event in the process of earning revenue. This crucial event may be something distinct from the rendering of services to the customer (42, pp. 315-16).

There is often some confusion between the terms "recognition" and "realization." Robert T. Sprouse has made some observations concerning this confusion. "Prior to 1957, the term 'realization' was widely used and I think generally understood" (43, p. 522). The general meaning of realization was expressed by the Paton and Littleton monograph:

Revenue is realized, according to the dominant view, when it is evidenced by cash receipts or receivables, or other new liquid assets. Implicit here are two tests: (1) conversion through legal sale or similar process; (2) validation through the acquisition of liquid assets (44, p. 49).

The definition given in the 1957 Revision suggested that revenue is realized when it can be recognized in the accounts. Sprouse refers to this as a "drastically different concept of realization. . . . This concept renders realization devoid of any special meaning; realization is made merely a synonym for recognition" (43, p. 522).

The two terms, realization and recognition, are often used interchangeably. As the realization concept is presently accepted as a guide in the timing of revenue recognition, then realization and recognition

take place at the same time. The occurrence of one implies the occurrence of the other. In common usage, the two terms often imply the same thing.

Recognition of revenue on the basis of the realization concept does not necessarily imply that it is the only "correct" method of recognizing revenue.

Sprouse and Moonitz express this idea as follows:

Reliance on "realization" for the recognition of profit does not imply that profit arises only at the moment of sale. Instead it implies something that may or may not be true in a given set of circumstances, namely, that satisfactory results emerge if profit is consistently recognized only at time of sale (2, p. 11).

Currently accepted exceptions
To the general rule for realization

Although in current practice realization is usually deemed to take place at the point of sale, there are exceptions to this general rule. For example, in unusual circumstances realization is deemed to take place when physical production occurs rather than when a sale takes place. In order for realization to take place due to physical production, "production must be accomplished either by a binding contract for sale of the product or by a market of a certain character" (45, p. 94). Certain metals (such as gold, silver, and copper), farm products (such as cotton, wheat, corn, oats, rye, soy beans, barley, raw sugar, and coffee beans), crude oil, and securities meet these requirements. The market price or contract price is

used as basis for determining revenue. Market price may be used although it may vary somewhat from period to period.

A change in value between the date of completed production and the date of sale does not imply that early recognition was incorrect. Russell Bowers makes the following statement concerning wheat:

The quoted price used in the inventory might differ from the price of sale, but this gain or loss need not be looked upon as an error in making the previous estimate of value. It is properly assigned to the period between the date of completed physical production and date of sale and should be attributed to speculation rather than to wheat growing. Any gain or loss could of course be analyzed into interest, storage service, and market fluctuation (45, p. 95).

Even incomplete physical production may be appropriate for realization to take place. Bowers suggests three ways in which income may be objectively measured which are particularly applicable to incom-
pleted contracts:

1. A completed transaction between parties of independent interest.
2. Apportionment between fiscal periods on an objectively determinable basis, the total for the various periods being determined by a completed contract.
3. Reference to price in a market of a certain recognized character (45, p. 105).

Shipbuilding is one example of incomplete physical production in which it is customary to recognize revenue before physical production is complete and legal title is conveyed to the purchaser.

Other presently accepted exceptions to the realization rule include replacement costs in cost-or-market calculations, index numbers of specific commodities or groups of similar commodities in dollar-value Lifo, and estimates of net realizable value of by-products and obsolete goods and equipment.

These several exceptions to the realization concept indicate that current practice covers a fairly wide range. Carman C. Blough has emphasized the wide range of practice in considering income to be realized:

At what time, or in what stage of a transaction should income be considered as having been realized? While it is generally understood that income should be recognized when services are rendered or goods delivered, in practice the time of taking it up ranges all the way from the time of production, as in the case of some mining enterprises, to the time the cash is received, as is sometimes done in the case of installment sales (46, p. 39).

Summary

The realization concept is a fairly recent development in accounting, having developed early in the present century. At present it is a generally accepted concept.

The usual interpretation of the realization concept is that revenue may be recognized when a sale takes place. Realization is the usual guide, or criterion, to revenue recognition. There are some exceptions to the general interpretation of the realization concept. Exceptions involve the valuation of

assets such as certain metals, agricultural products, securities, and other assets such as ships which require an unusually long period of time for construction.

Effects on Accounting Statements
And Criticisms

Accounting statements are currently prepared under the historical cost concept of measurement. As has been pointed out, the realization concept is an important concept related to this measurement base. The purpose of this section is to point out some of the shortcomings which result when the historical cost measurement base is used.

Accountants themselves recognize shortcomings in accounting statements. Howard I. Ross made the following statement in a presidential address at an annual meeting of the Canadian Institute of Chartered Accountants: "The basic problem which I would like to concentrate on today is posed by the paradoxical fact that accountants appear to divide their time, perhaps almost equally, between preaching, on the one hand, the great importance of publishing regular financial statements and insisting, on the other hand, that one who relies on financial statements, in almost any of the circumstances in which one would normally turn to them, is likely to be misled" (47, p. 68).

An obvious problem inherent in the use of the historical cost concept is that accounting data do not reflect values (except by chance). (It should be remembered that historical cost is not intended to measure value.) The following quote by Edwards and Bell emphasizes this in discussing the effect of the application of the realization concept:

Instead of assuming the identity of cost and value, accountants have adopted the convention of recognizing profit only upon sale; no pretense is made of measuring profit as it accrues either in production or as a result of simply holding assets as their prices rise. Reporting assets at historic cost represents a consistent application of this convention; a record at market value would involve a recognition of gain prior to sale. Those who use accounting data are fairly warned by this convention that the interpretation of a firm's position or operation on the basis of market value is not the responsibility of the accountant as record-keeper. The accountant shares the interpretative responsibility with other members of management, however (32, p. 10).

Even though a statement user may realize that the statements were prepared under the realization concept, it is likely that he may not realize the full implications of the use of this concept. Edwards and Bell point out the following two limitations which result from the use of the realization convention:

1. Within the framework of present accounting practices, no capital gains or losses are recorded as they arise, i.e., as individual prices change; this limitation in turn has three main implications:
 - a. The capital gains (losses) for any one period are incomplete; i.e., they are not recognized until the assets are sold or used in the production of goods which are sold, and profit is therefore understated (overstated);

- b. Some capital gains (losses) of former periods are recognized as capital gains (losses) of this period when assets which have risen in price over an extended period of time are sold in this period, thus over-stating (understating) profit;
 - c. Balance sheet values are badly distorted.
2. Capital gains and losses which are realized through use of an asset whose price has changed and the subsequent sale of the product for which the asset was used are included as part of normal operating profit although the profit results from holding activities rather than using activities per se; thus difficulty stems from keeping records at original purchase cost with the result, for example, that one of the expense deductions from operating revenue is depreciation based on the historic cost value of the fixed asset (32, pp. 10-11).

These limitations result because the realization convention requires a sales transaction. The concept does not recognize holding gains and losses, i. e., changes in individual prices. Another major limitation implicit in the use of the realization convention is the failure to recognize changes in value as production takes place and as services are rendered.

The realization convention has the effect of assigning to just one step--the sale--in a whole series of steps the entire credit for having earned the resulting income. Since "income accrues to an individual or a business in something like a continuous stream," it may be illogical to assign all income to only one step (48, pp. 80-81).

In defense of the sale as a test of income realized, "it is the last vital step in the longer

business process which indicates that the task is now completed and the income fully earned" (43, p. 81).

The objectives of accounting statements were discussed generally in Chapter I in terms of those who use them. In that chapter no attempt was made to evaluate how well accounting statements meet their objectives. Some comments will now be made concerning how well accounting statements prepared under the historical cost basis of measurement meet the objectives. Just as the objectives were classified by types of users, these comments concerning how well objectives are met will be by type of user except that the problems of comparability and uniformity are discussed first as these two problems are faced by both external and internal statement users.

Comparability

Both internal and external users of accounting statements are interested in comparability, that is, comparing the accounting statements of a particular entity over a period of time. Comparison of these statements should indicate trends.

Accounting statements for different periods may not be comparable for two principal reasons: alternative methods and price-level changes.

Alternative methods

Generally accepted accounting principles include alternative methods of handling some problems. (However,

"generally accepted accounting principles" should be applied consistently from year to year.) If a method of handling a problem is changed, the effect of this change should be shown for the year in which the change took place. Comparability is lost if a change in method is not explained. Comparability is also lost between the years before the change and years subsequent to the change.

The possibility of using alternative methods in accounting not only presents the problem of comparability but also presents the question of how different managerial decisions would be if an alternative method had been used. This involves the problem of comparison of actual results with what would have occurred under alternative procedures. Although business games have been used to determine the effect of alternative procedures, conclusive evidence has not been found. William J. Bruns, Jr., after using business games, decided that "for most of the decisions and results, there were no major differences in results among the games using different inventory valuation methods" (49, p. 349). On the other hand, Thomas R. Dyckman reached the opposite conclusion in one study but the same conclusion in a second study (50, p. 175).

Price-level changes

Although historical cost is used in accounting statement preparation, it is an accepted fact that the

price level has risen substantially during the past few decades. These price-level changes may cause an entity to appear to be growing faster than it is. The assets currently purchased, especially the fixed assets, usually cost more than they did in the past. Thus, an entity may appear to own more assets than it did in the past. On the other hand, if most of an entity's assets were purchased at a low price level, it will not compare well in size with other entities.

Net income is also affected by the price-level changes. If costs arising in past periods are matched against revenue of the current period, the net income appears higher during periods of increasing price levels than it would during a period of stable or decreasing prices. For example, inventories used or sold during a period may have been acquired in prior periods at lower prices. For another example, depreciation is based on costs of fixed assets acquired in prior periods--perhaps forty or fifty years before the current period.

Arthur L. Thomas has made the following observation concerning the price-level problem: "It is difficult to see how a rate of return can mean much when it is calculated in terms of a mixed aggregate of unlike historical costs--some current, some stale, some originating so far back in time as virtually to be from another economy" (51, p. 576).

Price-level changes may be thought of as general price-level changes and specific price-level changes. As all prices do not move together, prices of specific items may be called specific price levels. The general price level is an average of specific prices. It is obvious that specific price changes are not necessarily consistent with general price-level changes; they may even be in the opposite direction.

This implies that an adjustment for general price levels may not result in comparability between accounting periods. An adjustment for a general price-level change would result in comparability only if each specific item in the accounting statements involved a specific price-level change equal to the general price-level change.

Uniformity

Comparability of accounting statements between enterprises is often referred to as the problem of uniformity. Just as there are two principal reasons for lack of comparability between accounting statements of various years for a particular enterprise, there are also a few principal reasons for lack of comparison between entities.

Alternative methods

The problem of alternative methods arises here also. A company may be able to choose from several

available methods of handling any particular problem of recording and reporting financial data. Even entities within a given industry do not necessarily choose the same methods. A lack of comparability results.

Some writers are severely critical of management's use of alternatives. (Accounting methods are often the choice of management. Important exceptions are public utilities and other regulated entities.) Steven S. Anreder is an example of such writers. In an article in Barron's, Anreder says:

There are many acknowledged alternatives by which earnings can legally be exaggerated or minimized. . . . Accounting varies from industry to industry. In fact, even among companies in the same field practices are so diverse as to make comparisons of earnings less than meaningful (52, p. 3).

Judgment

Another reason for the lack of uniformity between companies is the need for and dependence upon judgment. Judgment varies from entity to entity. Moonitz suggests that less reliance may be placed upon judgment in the future, but it is needed at the present:

As the basic analytical framework of accounting becomes more firmly established and more widely accepted, specific rules can be set according to some principle of optimization, that is, by a balancing of conflicting forces, such as the cost of data accumulation, the accuracy of the results, the benefits to be derived from the resultant data, and the like. Ultimately the optimal solution may even be determinable by analytical means. Meanwhile, judgment must be relied upon to perform the function of more formal analysis (31, p. 36).

Price-level changes

The price level is also involved in comparisons between entities. This includes both the problem of the general price level and the problem of specific price levels.

A comparison of accounting statements may involve the accounting statements for different entities for just one year. (A comparison between entities should include the statements for several years. As the problem of comparison within an enterprise has just been considered, it will not be reconsidered here.) Price-level changes are a problem largely because various entities acquired their assets at various points in time at various price levels. This results in loss of comparability in both the balance sheet and the income statement as the assets themselves appear in the balance sheet and expired assets appear as expenses in the income statement.

Management

Assuming a well-organized enterprise, it would seem that management (internal users of accounting statements) should receive or be in a position to acquire any type of information they desire as long as it is possible and economically feasible. They also should have the opportunity to discuss the statements with those who prepare them.

This may not always be the case. Managers may not understand accounting well enough to know what concepts underlie the preparation of accounting statements and the resulting inherent limitations of the statements. As a result, managers may think accounting statements provide more information than they actually do provide or that they are more accurate than is actually the case.

On the other hand, suppose managers do have a thorough knowledge of accounting. They recognize the limitations which exist. This means they must make certain adjustments and allowances on their own. This implies a lesser degree of reliance upon accounting statements than would be the case if accounting statements provided more accurate and complete information.

Managers are interested in comparison--both comparison of the entity which they manage with other entities and comparison of the current period with previous periods. Such comparisons are essential to the management areas of planning, controlling, and evaluating. The problems of alternative methods and price-level changes and the limitations caused by concepts such as realization are drawbacks to management.

Investors and Prospective Investors

Investors and prospective investors are faced with decisions concerning buying, holding, or selling

stocks. If published financial statements accurately presented financial position and results of operations, then these statements would be very useful to investors and prospective investors in making decisions.

Many investors and prospective investors do not make their decisions on the basis of published financial statements. This could be due to one or more of several factors:

1. Published financial statements may not give adequate information to form the basis for a decision.
2. Other sources of information may be more helpful.
3. Investors and prospective investors may not have sufficient knowledge of accounting to use the published financial statements.

Each of these three possibilities probably has some validity. Published financial statements do not give full and completely accurate information about the entity. This is partly due to the use of the accounting concepts which are used in statement preparation and which have already been discussed. The limitation on statement usefulness caused by lack of comparability between accounting periods and accounting entities has also been discussed. The published financial statements may be so condensed that they fail to give enough information.

The annual report may be the only contact most investors have with a company. Since the published financial statements are prepared largely for investors and prospective investors, the statements may be somewhat biased. This is possible even when they are certified by independent certified public accountants. This is possible due to the alternative accounting methods, the possibility of manipulating profits to some extent, variations in presentation in the published financial statements, and failure to emphasize unfavorable events and contingent events as much as the favorable ones.

The annual reports of large corporations usually include the financial statements, a message from the president or chairman of the board of directors, and other information concerning factors such as products, growth, and plans for the future. These annual reports tend to present a rosy outlook. It is highly possible that, instead of trying to present all relevant information as accurately and completely as is possible and practical, annual reports may attempt to conceal information.

Published financial statements may be of rather limited use even to those who are familiar with accounting because they may intentionally withhold information or present information in an ambiguous way. William H. Dinsmore emphasizes this in a recent article in

Harper's Magazine. He believes that corporate reports-- "one of the flossiest and least informative art forms of our time" (53, p. 133)--go unread by most of the present 17,000,000 stockholders. This is because the report provides such little information. "After revisions through countless drafts by accountants, auditors, treasurers, banker-directors, lawyers, union negotiators, engineers, scientists, and purchasing agents, the typical corporate message ends up freighted with vague generalizations, clichés, half-truths, total omissions, unsubstantiated claims, and downright distortions" (53, p. 134). Dinsmore believes the corporate report has lagged far behind the time. There are millions of small investors now who want a report they can read and use.

Joel Dean lists the following possible reasons that management may desire to limit the amount of profit reported:

1. To discourage potential competitors.
2. To woo the voting public and restrain the zeal of antitrusters.
3. To restrain wage demands of organized labor.
4. To maintain customer good will.
5. To keep control undiluted.
6. To maintain pleasant working conditions (54, p. 29).

Another criticism of published financial statements is that they provide investors with very little

information concerning the future. Perhaps it is best not to publish plans because this information would become available to competitors. However, the suggestion is sometimes made to include management's plans in the published financial statements. Norton Backer makes such a suggestion which he recognizes to be a significant departure from current practice. His suggestion is based on three propositions:

1. Decisions are made on future expectations;
2. Planning is a fundamental management responsibility;
3. Stockholders are entitled to a knowledge of management's profit plan and an explanation of the causes for subsequent variations (55, pp. 59-60).

Though there seems to be no general agreement as to the purposes financial statements serve for investors, Robert L. Dickens and John O. Blackburn suggest these two to sum up the goals of external reporting:

- a. To provide the best possible basis for the stockholder to project the earnings and financial condition of a corporation.
- b. To provide the best possible basis for evaluating the performance of management (56, p. 314).

Whether management attempts to limit or conceal information or not, it is obvious that published annual reports could provide better information to guide investors and prospective investors in making decisions.

The second possibility suggested above as to why investors and prospective investors do not use published financial statements in making decisions is that other sources of information may be more helpful. This could involve a secondary use of the published financial statements. Investors and prospective investors may acquire information from those who have carefully studied financial statements. The primary user of the statements then would be the investment experts such as investment brokers, financial periodicals and news reports, and investment managers for institutional investors. If investors rely on secondary sources of information, this could indicate that either they do not possess sufficient knowledge of accounting to use the statements or they do not have the time (or do not consider it worthwhile to use their time) to study statements themselves.

Another source of information which investors and prospective investors may consider more useful than published financial statements is the "hot tip" source. The hot tip is information concerning whether or not to buy, hold, or sell stock. It does not come directly or indirectly from the published statements and is supposedly not available to the general public. If the hot tip is reliable it usually comes from a source of information on the inside of an entity. Such information usually leaks out against

the wishes of management as a whole. Such information may or may not be reliable, and the use of such information is not a reflection upon the published financial statements.

Still another source of information used by investors and prospective investors as a basis for decisions is the record of dividends paid by entities. It has already been pointed out that investors are interested in one or more factors such as dividends, appreciation, safety, and diversity. If the investor is primarily interested in dividends, then the dividend record is especially significant. Entities are prevented by law from paying dividends out of capital unless so designated. The investor may be assured that the entity has earned at least as much income as the dividend payment indicates. Dividend records are not intended to tell the whole story. Dividends paid in one period may exceed the earnings for that period, as they may be paid from the earnings of prior periods. The dividend policy of an entity is affected by its reported earnings. Investors and prospective investors would be wise to consider the published financial statements along with the dividend records even though their primary interest may be in dividends.

Another source of information often used by investors and prospective investors is the daily report of activities and prices on the stock markets. This

information is certainly more current than annual reports can be. Observation of prices on the stock market over a period of time reveals trends which are useful in making decisions, especially to investors interested largely in appreciation.

Reaction to stock-market prices may be based on decisions already made. That is, a decision may have been made to hold stocks for a long period of time. Day-to-day activities may be of interest to such investors, but they will probably not be the basis for a decision.

Such investors, interested in the long run rather than day-to-day activities, may compose a fairly large group. A majority of stockholders are women. It is likely that many of these women have inherited stock from their deceased husbands and depend upon dividends from such stock as a portion of their income. Stockholders in this category are interested primarily in the long run.

On the other hand, an investor may have decided to maximize his income in the short run. Thus, he will buy, sell, or hold at least partly on the basis of daily stock-market activities. The use of stock-market activities in making decisions is not necessarily an indication that published financial statements fall short of their objectives. Instead, different objectives are fulfilled. Financial statements affect the market

prices of stocks, especially in the long run. Charles F. Horngren has said that the long-run stock prices are probably influenced by earnings per share more than by any other single factor (57, p. 564).

It is apparent, then, that there are sources of information which are more useful to investors and potential investors than are published financial statements. This is partly because other sources of information may provide a different type of information and meet different objectives. It is also because statement users do not have an adequate knowledge of accounting or because published financial statements do not present relevant data as well as they could.

The third possibility suggested above as to why investors and prospective investors do not use published financial statements in making decisions is that they may not possess sufficient knowledge of accounting. Such investors must rely on other sources of information. It is perhaps worse for one who is not informed in accounting to attempt to use financial statements than to rely entirely on other sources of information.

Accounting statements could be more useful to investors if they were prepared in such a way that they could be understood and used by those who are not experts in accounting. Arthur M. Cannon has said:

I want the expert accountant to make his own decisions as to the impact of various forces and

factors. . . . I do not want to have to hire another expert to interpret the accountants' statements for me. . . . It is the accountant's task to interpret business operations for the benefit of those who have a legitimate interest in them (that is practically everybody), in financial terms that practically everybody can understand (58, pp. 32-33).

Other External Users

External users of accounting statements other than investors and potential investors include creditors and prospective creditors, social control agencies, employees, labor unions, and the general public. These statement users may be handicapped by the shortcomings of accounting statements and the problems involved in their use which have already been discussed in connection with investors. Most of these statement users do have an advantage over investors in that most of them do not have to rely entirely on the published financial statements. Creditors, potential creditors, and social control agencies may usually ask for additional information as needed. Labor unions have many other factors to consider other than accounting statements.

These statement users would find improved accounting statements useful. Their need is not as great as the need of investors for improved accounting statements.

Summary

This chapter is the first in a series of four chapters which discuss various measurement bases used

in accounting. The measurement basis discussed in the present chapter is historical cost, the concept which is presently used in the preparation of accounting statements.

Several concepts related to the historical cost concept have been discussed. These concepts also underly accounting statements as they are currently prepared. The realization concept is particularly related to the historical cost basis for measurement. The historical development and the present status of this concept have been discussed.

Accounting statements are used by several groups: management, investors and prospective investors, creditors and prospective creditors, social control agencies, and labor unions. Shortcomings of accounting statements have been pointed out in terms of those who use the statements. A dual goal of accounting is suggested by the discussion:

1. Accounting statements should be more useful to those who understand accounting.
2. Accounting statements should be useful to those who have very little knowledge of accounting.

An alternative to the second goal is that accounting statements should be prepared in such a manner that statement readers who have little or no knowledge of accounting will realize they are not capable of utilizing the statements.

The following three chapters offer alternatives to the historical cost measurement basis. Each of the three alternatives offered is discussed and compared with historical cost and the other two alternatives.

CHAPTER IV

CURRENT COST

Introduction

Historical cost, the measurement basis commonly used in accounting today, has certain advantages and disadvantages which have been discussed in the preceding chapter. Alternatives to the historical cost concept are discussed in this and the following two chapters. These alternatives are current cost, net realizable value, and discounted cash flow.

The current cost concept is the topic of the present chapter. Current cost is the term chosen to include many variations of market value and replacement cost. Several of these variations are discussed and classified into two types:

1. Variations which separate income into
 - a. Holding gains and losses, and
 - b. Operating income, and
2. Variations which recognize income on a production basis.

The second type might also distinguish holding gains and losses from other income. These two types of

concepts will be compared on the basis of usefulness, objectivity, and feasibility.

The current cost concept will be compared with historical cost on the basis of the criteria suggested in Chapter II: relevance (usefulness), objectivity, and feasibility. Quantifiability will not be discussed as this is a characteristic of both measurement methods.

Income

A major difference between economic concepts of income and accounting concepts of income is a matter of timing. When should income be recognized? Or when should an increment in value be recognized? This is also the major difference between various accounting concepts.

Income is sometimes thought of as an increment in value due to above-average decision-making ability or as a payment for risk taking. This can logically be defined as wages instead of income; income is then defined as an unexpected increment in value. Income as used in this study means both unexpected increments in value (pure profit) and increments due to above-average decision-making ability and risk taking. Accounting income also includes interest on capital.

Income is not necessarily recognized when it arises, that is, when an increase in value takes place. Determination of when an increment in value takes place should be of at least some value in determining when

to recognize such an increment. For this purpose, the business process may be divided into its components: purchasing, production, holding, and selling. Increments in value may take place due to any one or all of these activities. In current practice, no attempt is usually made to determine when an increment takes place, and the entire income is recognized in connection with the selling process as was pointed out in Chapter III in the discussion of the historical cost measurement basis. Such income includes income due to above-average decision-making ability, risk taking, pure profit, and implicit interest.

The mere act of purchasing does not create a value increment according to current accounting procedure. The increment due to production is usually measured in terms of the historic cost of the ingredients added. If the use of manpower, the use of management, and the use of land and capital in the form of current types of capital and operating facilities are combined to form a product or service, the book value of that product is the combined total of the cost of the ingredients. The measurement of the cost of the ingredients may be difficult to determine and may require some use of estimates. Usually, no effort is made to determine whether or not an increase in value takes place due to holding an asset over a period of time.

It is possible for increments in value to take place in each of these activities: purchasing, production, holding, and selling. Alternatives to current practice even suggest the recognition of such increments at the time the activity takes place. It has been suggested in Chapter III that profit is due to the entire business process. Thus, the net realizable value concept would give recognition to any increment in value during an accounting period, regardless of which activity gave rise to such increments. A distinction might or might not necessarily be made between the increments arising from the various activities. This will be discussed in more detail in Chapter V.

Current cost concepts vary, but they are designed to measure separately income from production and selling or income from holding and selling. This chapter includes a discussion of this point.

Price-level Adjustment Assumption

In this chapter on current cost it is assumed that appropriate adjustments will be made for changes in the general price level as well as changes in individual prices. This is necessary in order for the capital accounts to reflect the same amount of purchasing power.

The concept of purchasing power attains its validity from the accounting objective to distinguish between invested capital and income. Income results only if a person or firm is better off at the end of a period than he or it was at

the beginning of that period. Capital must be maintained in terms of its purchasing power for a firm to be as well off at the end of the period as it was at the beginning (59, p. 484).

The investment purchasing power of the firm can be viewed from at least three different levels.

(1) It may be assumed that capital maintenance applies to the ability of the firm to reinvest in an equal quantity of investment goods in general.

(2) A second assumption is that the firm will usually invest in capital goods of the same industry and it is this purchasing power that should be maintained. (3) A third assumption is that the firm will usually purchase investment goods similar to what it has acquired in the past; each firm has a unique investment and reinvestment pattern that would serve as the basis for the computation of a firm purchasing power index (59, p. 486).

It is this first concept of purchasing power which is assumed in this chapter.

Variations of the Current Cost Concept

Current cost concepts are intended to measure changes in the specific prices as contrasted with general price-level changes. Reflection in financial statements of specific price changes is not a new idea. The following quote is taken from W. A. Paton's Accounting Theory which was published in 1922:

It is above all important that the accountant's statements present as accurately as possible a picture of current data in terms of the actual dollar as of the date of the statements. And this is not a matter of general price movements--which may be said to express the fluctuations in the significance of money--but of specific price and value changes (38, p. 429).

Edwards and Bell's Concept

One of the recent discussions of current cost is the book, The Theory and Measurement of Business Income, by Edgar O. Edwards and Philip W. Bell. Many of the ideas are drawn from other sources; some of the theory is original.

Edwards and Bell present the thesis that "It is in the evaluation of business decisions . . . that the demand for accounting data exists" (32, p. 3). Their goal is to arrive at methods of measurement which are useful in the evaluation of business decisions. Two measurement concepts are eventually suggested, and one of them is chosen as the better of the two.

Edwards and Bell are primarily concerned with the use of accounting data by management. In general terms, they enumerate the uses made by management of accounting. Accounting, through comparison of actual events with expected events, contributes:

1. to the control of current events in the production process,
2. to the formulation of better decisions in the future, and
3. to the modification of the decision-making process itself (32, p. 4).

Although the emphasis of the book is upon the use of accounting data by management, the same data is useful for external purposes. External users are also interested in evaluation--the evaluation of management.

The same measurement concepts suggested for management are also suggested for most external users.

Early in the development of their theory, the authors put forth the premise that "in order to describe completely and truthfully with present accounting techniques the current position of a firm and its profit as it accrues, recorded costs must be equal to market values" (32, p. 8). Knowledge of the current position of the firm is necessary in the evaluation of decisions. The problem is to find a workable measure of market value.

What is market value? Edwards and Bell suggest more than one possible market value. Value may vary as to the form of asset, date of price, and type of market. The form of asset may be initial, present, or ultimate. The date of price may be past, current, or future. The type of market may be either entry or exit. This gives a total of eighteen possible values. Table 3 is their presentation of these eighteen values of which the six underlined concepts are the ones the authors consider significant (32, p. 77). The authors are responsible for the names of the concepts.

Current practice uses largely historic costs as the basis of valuation. Profits are the difference between current values and historic costs, and, according to the realization concept, are not recorded until a sale is made. Thus, past entry values of initial inputs dominate the accounting records.

TABLE 3
AN ARRAY OF VALUE CONCEPTS

Value date, market	Form and place of assets	Initial inputs	Present form	Ultimate form
Past, entry	<u>historic costs</u>	discarded alternatives	discarded alternatives	irrelevant
Past, exit	discarded alternatives	discarded alternatives	discarded alternatives	irrelevant
Current, entry	<u>current costs</u>	<u>present costs</u>	<u>present costs</u>	irrelevant
Current, exit	irrelevant	<u>opportunity costs</u>	<u>current values</u>	<u>current values</u>
Future, entry	possible replacement costs	possible replacement costs	possible replacement costs	irrelevant
Future, exit	irrelevant	possible selling values	<u>expected values</u>	<u>expected values</u>

The two measurement concepts presented are realizable profit and business profit. Realizable profit is composed of realizable operating profit and realizable capital gains.

Realizable operating profit is the increase in Edwards and Bell's opportunity cost due to production. Opportunity costs are defined by Edwards and Bell as "values that could currently be realized if assets (whether finished goods, semifinished goods,

or raw materials) were sold (without further processing) outside the firm at the best prices immediately obtainable" (32, p. 79). Realizable operating profit is determined by subtracting the opportunity cost of assets prior to production from the opportunity cost after production. Realizable operating profit is the increment in value due to production only. No profit is attributable to a change in valuation method.

Realizable capital gains are the gains due to the increase in opportunity cost over time. Such gains are computed by subtracting the opportunity costs of assets at the beginning of a holding period from that at the end of the period. Edwards and Bell have divided time into holding periods and production periods for simplicity. In actual practice, this cannot be done. The same results can be obtained by determining the increase in specific prices over a period of time if no change took place in production.

Realizable profit is, then, the difference between opportunity costs at the beginning of a period and opportunity costs at the end of the period. Realizable profit is due to a change in value due to production and a change in value over time. "The opportunity cost basis for record-keeping has this unique characteristic: except for the initial acquisition of inputs, all gains and losses can be attributed either to changes in form or to changes in date

and none can be attributed to changes in the method of valuation itself" (32, p. 88).

The use of opportunity cost in the realizable profit concept involves an oddity when work-in-process is concerned. Work-in-process is usually considered to be worth at least the total of the inputs. But this is not necessarily true. Moonitz says that it is not usually true:

In the usual case, work in process and finished goods are assumed to be worth more than raw materials by the amount of labor and other productive costs added; this is a rational attitude if the inventories will be disposed of in the normal course of business of a going concern. As others have pointed out, however, the immediate market (liquidation) value of work in process is usually low compared with the market value of the materials before processing (31, p. 40).

Moonitz illustrates this with an example of printed pages of a book. The work-in-process (printed pages before they are bound together into a book) are worth less than the paper used. The printed pages are almost worthless to anyone other than the firm producing the book. It would seem that Moonitz would not agree with the use of Edwards and Bell's opportunity cost as a logical and useful basis for measurement of work-in-process.

Opportunity cost may be as great as net realizable value, especially in the case of finished goods. Opportunity cost seldom exceeds net realizable value. Such a situation would usually indicate that the firm

should sell the goods immediately instead of carrying such goods through anticipated channels.

Edwards and Bell classify realizable profit as a short-run concept of profit:

If this gain, which includes both operating profit and capital gains, exceeds interest on the opportunity cost of the firm's assets at the beginning of the period, the owners were wise to permit the business to operate during the period rather than discontinuing it at the beginning of the period. The existence of a gain informs the owners and others that the shortrun cost of operating the business has been covered (32, p. 98).

This short-run concept, operating profit, indicates whether the firm should use the particular asset or set of assets rather than liquidate. The authors believe it indicates very little about whether or not the production process is worth extending beyond the life of the particular asset or assets (32, pp. 100-1).

The second measurement concept suggested by Edwards and Bell is called business profit. Business profit is composed of current operating profit and realizable cost savings.

Current operating profit, one of the components of business profit, is computed by subtracting current cost before some production takes place from current value after the production takes place. Current value and current cost are two of the eighteen value concepts listed in Table 3. Current cost is an entry value; current value is an exit value. Current cost is defined as "the cost currently of acquiring the inputs which

the firm used to produce the assets being valued" (32, p. 79). Current values are defined as "values actually realized during the current period for goods or services sold" (32, p. 79).

Realizable cost savings are the increases in current costs over time. Realizable cost savings for a given period are computed by subtracting the current costs at the beginning of a period from the current costs at the end of the period.

Business profit includes, then, realized profits on a production basis and realizable profit on a time basis. Realized is used by the authors to refer to profits measured by an external transaction such as a sale.

Edwards and Bell break down the realization principle into two parts: production basis and time basis. Table 4 indicates the differences in the makeup of accounting profit and the authors' business profit and realizable profit. The table indicates that business profit is much nearer to accounting profit than realizable profit is. The difference between accounting profit and business profit is the way in which increases in value (specific prices) over time are handled. (This is not meant to imply that the difference is small or insignificant.)

The business profit concept abandons the realization principle on a time basis. "When the realization

principle is abandoned in both of its dimensions, we have a concept of profit based on opportunity cost, a concept we have termed realizable profit" (32, p. 274).

TABLE 4

A COMPARISON OF REALIZATION AND REALIZABLE CRITERIA

	Entry values (realization principle: production basis)	Exit values (realizable principle: production basis)
Historic values (realization principle: time basis)	accounting profit	historic values
Current values (realizable principle: time basis)	business profit	realizable profit

Edwards and Bell consider business profit their long-run concept of profit as opposed to realizable profit, their short-run concept. They feel that business profit is not only more useful to internal users but also more useful to external users than realizable profit. However, since each profit concept serves a different purpose, the ideal situation would be the incorporation of both concepts in the accounting records. The accounts could be made flexible enough to accomplish this. If the accounting records are to include only one of these two concepts, Edwards

and Bell would choose business profit as being the more useful of the two.

A separate adjustment for increases in the general price level is assumed in both the realizable profit and the business profit concepts.

Sprouse and Moonitz's Concept

In Accounting Research Study Number 3 entitled "A Tentative Set of Broad Accounting Principles for Business Enterprises," Robert T. Sprouse and Maurice Moonitz emphasize a current cost concept. They list three exchange prices which may be used for pricing (valuing) assets.

- a. A past exchange price, e.g., acquisition cost or other initial basis. When this basis is used, profit or loss, if any, on the asset being priced will not be recognized until sale or other transfer out of the business entity.
- b. A current exchange price, e.g., replacement cost. When this basis is used, profit or loss on the asset being priced will be recognized in two stages. The first stage will recognize part of the gain or loss in the period or periods from time of acquisition to time of usage or other disposition; the second stage will recognize the remainder of the gain or loss at the time of sale or other transfer out of the entity, measured by the difference between sale (transfer) price and replacement cost. This method is still a cost method; an asset priced on this basis is being treated as a cost factor awaiting disposition.
- c. A future exchange price, e.g., anticipated selling price. When this basis is used, profit or loss, if any, has already been recognized in the accounts. Any asset priced on this basis is, therefore, being treated as though it were a receivable, in that sale or other transfer out of the business (including conversion into

cash) will result in no gain or loss, except for any interest (discount) arising from the passage of time (2, pp. 23-24).

The second price, current exchange price or replacement cost, is the price which is of particular concern in this chapter. And it is the price which Sprouse and Moonitz feel is of most significance.

The third price, future exchange price, is the preferred method of measurement for most assets according to the authors. Because of the lack of objectivity of future exchange prices, the authors feel that a current exchange price may be better for the measurement of assets such as inventories, plant and equipment, and land. Sprouse and Moonitz believe "measurement of inventories at net realizable value is the preferred method whenever the measurement is objectively determinable" (2, p. 28). Replacement cost is the next best valuation for inventories, and it is the best one to use when net realizable value cannot be objectively determined.

Replacement cost is not a self-explanatory term. The term "replacement cost" has many meanings:

The term has been used to mean the anticipated cost of replacing an asset when it will be retired, the current cost of replacement of a precisely similar asset or building in the same location, the cost to obtain an asset that will provide the same services as the existing asset, the current value of the service provided by the existing asset or to be provided throughout the remaining life of the asset, and the original cost adjusted by specific cost indexes (59, p. 487).

Considering inventories first, raw materials and other inventory items which require no processing seem least troublesome. Replacement cost would seem to be the cost of buying these items in the usual quantities from the usual vendors at current prices rather than the prices which were actually paid sometime in the past. Referring to Table 3, this would be what Edwards and Bell call current costs.

The meaning of the term replacement cost is not quite as clear when work-in-process or finished goods are involved. Do Sprouse and Moonitz mean the current cost of the initial inputs or the cost of replacement of the inventory item by purchase of the item in its present form? The former possibility would be the same as Edwards and Bell's current costs while the latter possibility would be the same as their present costs. In general present costs would be larger than current costs. Present costs would ordinarily include not only the initial costs of the inputs but also the value of the utility added to the inputs by the production process.

If present costs are used in pricing work-in-process and finished goods, this would usually result in recognizing some profit due to production before an actual sale or delivery takes place. Sprouse and Moonitz do not seem to be recommending this. They indicate several times that the use of a current

replacement cost would recognize only holding gains and losses until actual sale. This indicates that their current replacement cost would be the same as Edwards and Bell's current cost concept and not their present cost concept.

Sprouse and Moonitz's discussion of the measurement of assets indicates that their current replacement cost does not recognize revenue due to production. The explanation of replacement cost already quoted does not make this clear. It merely states that part of the gain or loss on an asset is recognized in one stage and part in another. The explanation does not label or explain what gain or loss is recognized in each stage. In a later passage in which the authors are pointing out the advantages of the current replacement cost concept, they say: "The use of current (replacement) cost has the further advantage of introducing a clear-cut distinction in the accounts between profit from holding an item through a price rise or fall, and profit from 'operating margins,' that is, the difference between sales price and current (replacement) cost of the goods sold" (2, p. 29). This clearly indicates that the use of current replacement costs would result in the recognition of holding gains and losses in one stage and normal operating profit (increase in value due to production) in another stage.

In setting out what they intended to say about recognition, the authors said, "We propose to use a classification that distinguishes among (a) the amount attributable to changes in the dollar (price-level changes), (b) the amount attributable to the acquisition of goods and services prior to their utilization, and (c) the amount attributable to sales in a current market" (2, p. 17). This obviously postpones recognition of changes in utility due to the production process until final sale.

So far, it seems quite clear what Sprouse and Moonitz mean by current replacement cost. It seems to mean the same thing as Edwards and Bell's current costs concept; that is, the current entry cost of initial inputs. However, a later comment by Sprouse and Moonitz confuses the concept. In comparing their concept with current procedure, they say, "By the use of current replacement cost, a change in 'utility' is recognized in the period when the change takes place" (2, p. 31). The word "utility" is perhaps a poor term. Up to this point in their discussion, the authors had indicated that the use of a current replacement cost would give rise to a holding gain or loss; that is, the change in the specific price of the asset would be recognized. A change in the specific price of an asset may be thought of as a change in the utility of that asset. This concept would consider utility as

a relative term--relative to the utility of other assets. "Changes in utility" usually indicates a different concept--a change in the absolute usefulness of an asset, and that is the purpose of most business enterprises--to increase utility. A manufacturer creates utility by bringing together inputs in some fashion. Wholesalers and retailers create utility by bringing goods together in time and place.

If Sprouse and Moonitz are using utility in this latter, more common, meaning, they are contradicting what they have already said and are recommending the recognition of revenue on a production basis. This writer believes the authors intended the former meaning of utility and have merely used a poorly chosen term.

Sprouse and Moonitz make another claim for their current cost concept which is not quite what it appears to be. They say:

The use of current (replacement) cost as the basis for inventory measurement eliminates the need for any assumption as to the flow of actual cost incurred. The current cost of inventories is the same whether the related underlying records and tax returns are based on an assumption of a last-in, first-out flow of actual costs incurred, a first-in, first-out flow, a weighted average, or specific identification (2, p. 29).

The first sentence seems to imply there is no need for a cost-flow assumption. The second sentence shows that this is not true at all because such an assumption is needed for tax returns. The assumption

must be made and the records must be kept at least for tax returns.

Even if the tax problem is ignored, an assumption still seems necessary to show the realized and unrealized elements of profit. As Sprouse and Moonitz have very little to say concerning the distinction between realized and unrealized profits, they apparently do not feel the distinction is very significant except for certain uses of accounting. The following statement is one of their few comments concerning unrealized elements of gain in connection with inventories:

The amount of the "unrealized" element is of significance in connection with income taxes and may be with respect to the legal aspects of dividend policy. The disclosure of this amount is readily accomplished by reporting the extent and the effect of the adjustment made to beginning and ending inventories (2, p. 30).

If a distinction is to be made for any reason between realized and unrealized elements of profit, then an assumption as to the cost flow of inventories must be made and appropriate underlying records must be kept.

Sprouse and Moonitz also recommend the use of current cost for plant and equipment. Net realizable value does not seem applicable:

They do not represent potential revenues, as do the inventories, and therefore are not amenable to treatment as though they were receivables. As a consequence "net realizable value" has no relevance, except as a measure of scrap or second-hand value . . . (2, p. 33).

The elimination of net realizable value as a possible valuation concept leaves a choice between past cost and current cost. Sprouse and Moonitz choose current costs:

In the external reports, plant and equipment should be restated in terms of current replacement costs whenever some significant event occurs, such as a reorganization of the business entity or its merger with another entity or when it becomes a subsidiary of a parent company. Even in the absence of a significant event, the accounts could be restated at periodic intervals, perhaps every five years (2, p. 34).

Such use of current replacement costs would give rise to holding gains and losses.

Accounting Research Study Number 3 is not intended to be a detailed set of rules. This is especially noticeable in the discussion concerning plant and equipment. Their discussion is obviously a general one. Questions such as how to arrive at current replacement costs are not discussed. The authors merely mention the possibility of using index numbers and leave further discussion for others.

In another source Sprouse emphasizes the need for current values. He believes that "if financial reports are to provide relevant information concerning a corporation whose shares of stock and other securities are continuously changing hands and whose economic life is viewed as indefinite, attention must be focused upon the objective (that is, impartial) measurement of wealth and changes in wealth at the time such changes occur" (60, p. 688).

"The failure to report a measurable gain merely because it has not yet been transformed into cash is not impartial; it represents conscious bias in favor of prospective creditors and investors" (60, p. 692). Sprouse feels that accounting should provide information which is relevant for making decisions. Here again, Sprouse is recommending the use of current market values and replacement costs.

Other Current Cost Concepts

Accretion.-- The accretion concept may be thought of as a current cost concept. The accretion concept defines income as "an increase in economic power which can be measured with reasonable objectivity" (61, p. 14).

Edward Phillips gives the following list of income concepts to show how the accretion concept compares with other concepts as to objectivity:

1. Psychic income
2. Economic present value income
3. Accretion income
4. Accrual accounting income
5. Cash basis accounting income

"Accretion recognizes income if the increase in value is reasonably measurable; e.g., reflected in increased market value" (61, p. 17).

Phillips believes conceptual reasonableness is sacrificed for objectivity as you go down the list.

"The case for the accretion concept rests on the proposition that market values are sufficiently more objective than computed present values to justify their use despite the loss of conceptual soundness and that the further gain in objectivity does not justify waiting for 'realization' as presently defined" (61, p. 17).

"Economic present value income" is similar, if not the same as discounted cash flow.

Under the accretion concept, expenses as well as revenues are recognized when "reasonably measurable." This, not the matching concept, determines timing of expenses and revenues.

Hornsgren's proposal.--Charles T. Hornsgren proposes a current cost concept which includes a liberal recognition test and a strict realization test. The rules for realization include recognition as the first of three rules:

1. Recognition--Sufficiently definite, verifiable evidence to permit objective measurement of a value increase.
2. Market transaction--An event "originated by the voluntary interaction between the accounting unit and some other unit" (62, quoted from 63, p. 14).
3. Goods or services rendered--The "removal of restrictions against assets" (62, quoted from 64, p. 32).

Thus, revenue may be recognized without realization taking place. Revenue recognized would include "(a) holding gains related to assets still on hand

plus (b) gains attributable to current exchange transactions" (62, p. 326).

Thus, Horngren's concept of recognition would not include an increase in value due to production. Valuations used in determining the amount of revenue to be recognized would probably be the current cost of inputs.

Horngren's concept is a compromise plan aimed at reconciling the two extreme sides to income reporting:

The trouble is that practicing accountants sometimes adhere too stubbornly to original expectations as being overriding, while their critics lean toward measuring happenings as early as possible without worrying about (a) some loss of objectivity, or (b) how the decision finally turns out as a whole, in light of original expectations, and (c) the financial and tax implications of their net income measure (62, p. 328).

Horngren recommends this combination of recognition and realization. This would involve the use of two income concepts presented simultaneously.

AAA Committee.--In 1964 the American Accounting Association Committee on Concepts and Standards--Inventory Measurement recommended replacement cost for the valuation of inventory items. This recommendation was in the form of "Supplementary Statement No. 2" to the 1957 revision of "Accounting and Reporting Standards for Corporate Financial Statements" (65).

Their replacement cost concept for inventories would separate holding gains and losses from operating

revenues and expenses. Replacement cost would involve for a manufacturer the "current (replacement) cost of each element of the total cost of the inventory units" (65, p. 710).

The committee did not agree on whether or not holding gains and losses should be considered as realized. Three members of the committee (Firmin, Hepworth, and Wixon) believe that replacement cost evidence is "sufficiently definite and objective" to regard holding gains and losses as realized. The other three members (Horngren, Mautz, and Zlatkovich) believe that both holding gains and losses should be regarded as unrealized until the goods to which they relate are sold (65, p. 709).

The Most Desirable of the Current Cost Concepts

The previous section is largely composed of a discussion of various current cost concepts. This is not intended as a complete list of concepts because the possible variations are great. These concepts discussed are thought to be representative.

These concepts may be classified as to those which separate increase in value into operating income and holding gains and those which recognize increases in value due to production.

Holding gains and losses

Some of the current cost concepts discussed in the previous section report holding gains and losses. Such holding gains and losses are recognized as they arise. All other increases in value are not recognized until a sale (or other currently accepted basis for recognition) takes place. This amounts to recognizing increases in the value of inputs as such increases in value take place due to the holding activity of the enterprise, but it does not recognize increases in value due to any other of the business activities until the final sale takes place. The reporting of holding gains and losses separately from revenues and expenses due to regular operations can be useful in evaluating business performance.

Supposedly, all revenues and expenses other than holding gains and losses are due to the operations of the business. On the other hand, holding gains and losses may not be as simple. They cannot be assumed to always be purely a matter of luck as there may be planning involved. Management may foresee a rise in the price of certain inventory items and purchase quantities large enough to create a holding gain. Or, as a result of poor planning, management may have overstocked certain inventory items while facing foreseeable price declines of those particular items. Such gains and losses are due to the actions or lack of

actions of management; they are not just a matter of luck. Holding gains and losses may result from decisions by management.

There are definite advantages of separating holding gains and losses from operating income. If they are not removed, then income may include not only the operating income but also holding gains and losses of the current period and past periods applicable to assets sold or used up during the current period. If holding gains and losses are separated from operating profit each period, then the changes in value due to holding activities for the given period are known separately from such changes in value during other periods. The operating profit is known and can usually be attributable to management and not just luck.

On the other hand, G. Edward Philips suggests that the separation of holding gains and losses from other revenue and expense serves little purpose:

All business activity is directly or indirectly related to the production of goods and services, and it is impossible logically to split off gains and losses as being unrelated to such production. So-called productive operations are continually affected in a myriad of ways by things outside the control of management. Thus it is also impossible to distinguish revenues and expenses as those things over which management has control (66, p. 703).

Equality of gains and losses

As has previously been pointed out, this chapter assumes adjustments for changes in the general

price level. Changes in the general price level result from changes in individual prices. If all individual prices change at the same rate, an adjustment for changes in the general price level would be the only adjustment needed. Current cost concepts which result in the separation of holding gains and losses from operating income would be unnecessary because such gains and losses would not exist.

Since specific prices do not vary at the same rate, then holding gains and losses do exist. On the average, as many specific prices will be below the general price level as will be above it. Therefore, for the entire group of goods used in computing the general price-level change, the total holding losses will equal the holding gains. For an economy as a whole, holding losses will be equal to holding gains.

Although all holding gains and losses cannot be attributable to luck and all other gains and losses attributable to the effectiveness of management, this writer feels there is much value in such a separation. This gives a starting point for an analysis of how profit came about. Holding gains and losses are a matter of luck to the extent that price changes cannot be predicted; other income is usually due to the effectiveness of management. Holding gains and losses are attributable to the correct periods, and this is an aid in evaluating results.

Production Income

Some current cost concepts would result in the recognition of production income--that increase in utility due to production--before an actual sale takes place. The accretion concept and the realizable profit (opportunity costs) concept discussed previously are examples.

The production process adds utility to a product. Production is here used to refer to all activities needed to create goods and services, other than holding activities, and not just to the physical combination of materials or working with materials. If the production process is successful, a product is produced which has economic value greater than the inputs.

Reed K. Storey has the following to say about production:

This is true in both manufacturing and merchandising business. Both kinds of enterprise create utility since man cannot create material goods. He can merely rearrange and move goods so as to make them more serviceable. This is the service performed by both traders and manufacturers (67, p. 450).

Current cost concepts which recommend the recognition of the increment in value attributable to production seem to be fewer in number than those current cost concepts which emphasize the recognition of holding gains and losses. Edwards and Bell present two current cost concepts but select the one which

emphasizes the holding gains and losses. Their opportunity cost, or realizable profit, concept is considered the less useful of the two concepts.

A tentative conclusion is that a current cost concept which emphasizes the distinction between operating profits and holding gains and losses but does not recognize production income until the time of sale would either be the most easily measured concept or would be the most useful current cost concept. The prevalence of such concepts in accounting literature would indicate this. Edwards and Bell reached the conclusion that it would be most desirable.

But why would this be true? Why would this type of current cost concept be most desirable? Criteria suggested at the end of Chapter II will be used here.

One possibility is that this concept is more feasible because it is closer to current practice than a concept which would recognize production income. This would create a less radical change and would perhaps be easier to understand.

Another possibility is that a current cost concept which recognizes production income is so close to a net realizable value concept that the net realizable value concept might better be accepted rather than the current cost concept. A comparison of net realizable value concepts with current cost concepts is included in the following chapter.

Still another possibility involves objectivity. The difference between the two classes of current cost concepts presented in this chapter is in the recognition of production income prior to sale. Thus, the difference involves the valuation of inventories. Obtaining measurement of the inputs contained in inventories is likely to be more objective than obtaining measurement of an inventory item just as it is. In general, there is a ready market for inputs; measurement is readily available. In general, there is also a ready market for the final product; again, measurement is readily available. But in between the two points--during production--a market for the product, in whatever form it happens to have, may not exist. The current cost of the inputs may be easier to determine (feasibility) and more objectively determined.

The use of a current cost concept which recognizes increments of value due to production does not necessarily preclude the computation of holding gains and losses. Such computation would require some measure of replacement cost of inputs as well as a measure of the value of items in their present form. Thus, this type of current cost concept could have the advantages of both types. The difficulty and expense of finding both measures of value could mean that a separation of holding gains and losses from production income on inventory items still on hand may be highly impractical.

Omitting increments in value due to production on inventory items still on hand often proves to be feasible. For example, if approximately the same amount of inventory at the same stages of production is on hand at the end of each period, then net income is the same for any given period whether inventory valuation includes the increment in value due to production or not. There will be a misstatement of value on the balance sheets, but the error is approximately the same on the beginning balance sheet as on the last, and the relevance (usefulness) of the statements is not materially affected.

If there is very little work-in-process or finished goods at the ends of the accounting periods, then omission of production income on such inventory items is of little significance.

Perhaps it is for these practical reasons that writers advocate current cost concepts which emphasize holding gains and losses and not increments in value due to production. Current cost concepts which emphasize holding gains and losses do have the advantage of greater objectivity and feasibility than other current cost concepts. On the other hand, current cost concepts which measure income on a production basis have greater relevance because they result in a closer approximation to value and because holding gains and losses may be measured by these concepts also.

Comparison with the Historical
Cost Concept

The preceding section has been a discussion of the current cost concept--or variations of the current cost concept. The preceding chapter was a discussion of the historical cost measurement basis with emphasis on the current realization concept. The present section will be a discussion of the implications of the current cost concept. These implications are brought out by comparing the current historical cost concept with the current cost concepts.

Usefulness

One of the criteria suggested at the end of Chapter II to be used in comparing measurement methods was usefulness, or relevance. Is historical cost or current cost more relevant to those who use accounting data?

In Chapter I, it was assumed that all users of financial data wished to know financial position and results of operations. To the extent that economic value (the present value of future net cash flows) is an accurate (or more nearly accurate) indicator of financial position and income, then current cost is more relevant than historical cost. Economic utility, or expected service potential, is perhaps the ideal measurement of any asset. Valuation would then be the expected future inflowing streams of cash. Market value

(an indication of current cost) may be thought of as a measure of these expected future receipts because market values represent the expectation which people have of future receipts.

R. J. Chambers, an advocate of current information, sees no usefulness in historical cost:

We therefore regard it as beyond question that the only information which is useful at a point of time, is information relating to the financial position at that time. The conventional balance sheet is no more useful than last year's news with this year's dates superimposed (68, p. 271).

Accounting Statements

Statement readers are accustomed to the financial statements currently prepared under the realization concept. Shortcomings of these financial statements were pointed out in Chapter III. Despite these shortcomings, it is possible that many people can better understand the statements as they are currently prepared than if statements were prepared under a current cost concept. This would be especially true if certain complications in the accounting statements are found to be desirable or necessary. For example, gains and losses might be separated into real and fictional elements due to changes in the general price level. Also, it might be desirable to separate realized from unrealized profits and losses.

The small businessman and the small investor might find current cost statements confusing as indicated in the following quote:

Accounts are kept, profits are computed, and policy decisions are made by several hundred thousand individual businessmen and their bookkeepers and clerks. Most of them would have grave difficulty in applying or even comprehending the principles of measuring cost expirations in terms of hypothetical purchasing power. The economic data available to them are certain to be inadequate and their interpretations of several dozen tables of price-index numbers are likely to be diverse to say the least. Depreciation calculations contain enough elements of variation now; price-index adjustments would so magnify the inconsistencies as to render the computations meaningless (3, p. 71, quoted from 69).

Although Greer and Wilcox were talking here of general price-level adjustments, they would probably be just as concerned about general and specific price-level adjustments. Complications in the accounting statements in order to reflect current cost rather than historical cost would perhaps offset to some extent the increased usefulness which might be brought about by the use of current cost.

On the other hand, accounting statements fail to tell the complete truth. As was pointed out in Chapter III, accounting statements may be misleading. This has been pointed out by able accountants such as Henry W. Sweeney in his Stabilized Accounting and Kenneth MacNeal in his Truth in Accounting.

If the actual situation is complicated, it cannot be made less complicated by preparing uncomplicated statements. If the actual situation is complicated and if the current cost concept reflects the actual situation much better than the use of the

realization concept, then the current cost concept should be used even if the resulting accounting statements are more complicated.

Accounting statements usually present financial data of a complex business enterprise. If accounting statements were to be presented in terms simple enough for anyone to understand them, they might mislead a person into thinking that the financial affairs reflected in the statements were also simple. At the end of the previous chapter it was suggested that accounting statements should either be simple enough to be understood by a person with very little knowledge of accounting or be so complicated and technical that the reader would realize his inability to use the statements. This discussion indicates the second would be the more desirable alternative.

Inventory valuation

One of the main differences between the historical cost concept and a current cost concept is in the valuation of inventories. This valuation affects both the balance sheet and the income statement.

The first major current cost concept would result in inventories being increased or decreased due to holding gains and losses. The use of the second major current cost concept would result in inventories being increased or decreased for all increments or

decrements in value. As has previously been pointed out, there would be no effect upon net income if beginning and ending inventories under current cost differed from their corresponding inventories under historical cost by the same amount. In all cases, however, the balance sheet reflects more accurate valuations under current costs.

Other asset valuations

The application of the current cost concept to other assets results in the recognition of holding gains and losses and not production income. Current cost concepts do not vary greatly except in the valuations of inventories. The use of a current cost concept for the valuation of assets means that values are more meaningful.

If assets are valued at current costs, then the asset expirations reflected in the income statement measure more accurately the value of services rendered.

Unrealized income

The use of current costs results in the recognition of revenue before such related income is realized in the sense that "realized" is usually used. Some current cost concepts suggest a distinction be made between realized and unrealized income. Such a distinction would aid in bridging the gap between the use

of the historical cost concept and the use of current cost.

Dual accounting statements

The suggestion is often made that dual accounting statements be prepared. One set of statements would be prepared under traditional accounting and the other set under another method--in this case, current cost. This use of dual statements would emphasize the difference between the two concepts.

Implications for cost accounting

Inventory flow assumption

The accounting profession has faced the problems of inventory flow assumptions for several years without definite solutions. A variety of methods such as Lifo, Fifo, and average cost are considered acceptable. A change in revenue recognition concepts could affect inventory flow assumptions.

Current cost concepts could eliminate the need for any assumption about inventory flow, but this would not be possible if a distinction is made between realized and unrealized revenue. If such a distinction is made an inventory flow assumption is as applicable as ever.

Absorption costing vs. direct costing controversy

The assumption in direct costing is that income should vary with sales--not with a combination of sales, production, and changes in inventories. The conflict between full costing and direct costing has been going on for some time.

A change in concepts of revenue recognition would affect this controversy. The adoption of a cost concept which measures the value of an item in its present state would eliminate the direct costing controversy altogether. On the other hand, the adoption of a cost concept such as replacement cost which adjusts only for the current cost of the inputs would have no effect on the controversy at all.

Objectivity

No matter how relevant the results of a given measurement method may be, unless the results are objective (in the sense of verifiability and freedom from bias), they are not acceptable in accounting. Usefulness and objectivity are often thought of as opposites. If one is given more weight, the other must be given less. This is not necessarily true, for objectivity may contribute to usefulness. Paul E. Fertig expresses this idea: "The purpose of being 'objective' is to convince financial statement readers that statements are free of ulterior motives or whim" (70, p. 139). The more weight the statement reader

can attach to statements, the more useful they may become to him.

The characteristic of objectivity may make accounting data more useful, but it does not follow that the greater the objectivity, the greater the usefulness. For example, accounting statements prepared on the cash basis may be more objective than accounting statements prepared on an accrual basis, but accrual basis accounting statements are usually more useful. Accounting statements prepared under either basis are considered sufficiently objective. Likewise, historical cost is more objective than current cost. But does current cost have sufficient objectivity?

Accountants have traditionally used acquisition cost because of the difficulty of measuring objectively economic value. Also, historical cost is an objective measure of economic value on the date of acquisition.

In other words, when assets are intelligently acquired, their expected services must be equal to or greater than those available under acquisition alternatives. Therefore, historical costs are a measure of expected service potential at date of acquisition (65, p. 703).

William A. Paton has said that cost and value are "not opposing and mutually exclusive terms" (71, p. 193). Cost and value are assumed to be the same on the date an asset is acquired.

In fact cost is significant primarily because it approximates fair value at date of acquisition. Cost is not of basic importance because it represents an amount paid; it is important as a measure of the value of what is acquired (71, p. 193).

Subjective cost.--In contrast to the usual point of view, R. H. Homburger points out that actual costs are subjective:

The amount of the cost of an asset to any particular business is dependent not only on the time and place of acquisition, but on the judgment, hopes, fears, and preferences of the buyer as well as of the seller. While cost, as a measurement, is subjective with regard to those factors, it is also objective to the degree and extent that cost reflects an existing market price. This has led to the unavoidable question whether a measure based on current market value would not be preferable to cost, if substantial differences exist between the two (72, pp. 96-97).

Homburger describes accounting measurement as social in nature, and therefore it contains a subjective element.

According to this view, market values may be as objective as historical cost. If this is true, objectivity may be retained while increasing the usefulness of accounting statements.

Lower of cost or market.--The lower of cost or market rule is an accepted rule of accounting for the valuation of certain assets. Market value is considered objective enough for measurement purposes when market value is less than cost. Many accountants see an unsupported lack of consistency here. Should losses be recognized when market values drop below costs while gains are not recognized when market values

rise above costs? Paton says that "present value is no less and no more significant to management and all other parties concerned when such value happens to be above recorded cost than when it is lower" (71, p. 197).

However, Paton looks at the practical side of the issue and considers the problems of determining value, especially of specialized assets. For this reason Paton suggests that departure from cost should be considered "only where such a substantial and persisting change has occurred as to render accounting on the old basis inadequate and invalid in view of the recognized purposes of accounting" (71, p. 198).

The question of the objectivity of current cost is still unsettled; many writers believe it is sufficiently objective. Current costs of inventories may usually be more objectively determined than current costs of other assets. The question of the objectivity of current costs is one of the biggest drawbacks to the use of current costs.

Feasibility

Feasibility implies that the information is worth more than it cost. Current cost information does cost more than historical cost information; it is usually in addition to historical cost information. Feasibility would depend upon which current cost variation is chosen, as some would be more difficult

to utilize than others. Some variations such as Edwards and Bell's business profit would seem to be feasible because they are not too difficult to implement.

Summary

The current cost concepts discussed in this chapter have been classified according to whether they emphasize holding gains and losses or whether they emphasize the recognition of production income as production takes place. Of the many variations of current cost which have been suggested by various writers, those which emphasize holding gains and losses predominate accounting literature.

Of the two types of current cost concepts, the type which emphasizes holding gains and losses is more objective and feasible than the other type. Also, the separation of holding gains and losses from other income results in useful financial data as it gives some indication as to whether the income is due to managerial effort or just chance or the passage of time.

The type of current cost concept which recognizes income as production takes place may be more useful than the other type in that it is closer to economic income (increase in value), but this refinement of accounting is seldom considered worthwhile.

Historical cost has been compared with current cost on the basis of relevance, objectivity, and feasibility. Current cost is more relevant to the usual needs of management and most external users because it results in financial statements which more nearly reflect financial position and results of operations than does historical cost. On the other hand, the difficulty readers might have in using current cost statements might diminish their usefulness.

Historical cost is certainly more objective than current cost. However, the variations of current cost suggested by some writers possess sufficient objectivity.

Historical cost is easier to obtain than current cost, but some of the variations which have been suggested would make the use of current cost feasible.

CHAPTER V

NET REALIZABLE VALUE

Introduction

Chapter IV was a discussion of the use of current cost as an alternative to the historical cost concept. The present chapter is a discussion of another possible alternative--net realizable value.

There are variations of the net realizable value concept; several are discussed in this chapter. The net realizable value concept is compared with the realization concept and is also compared with the current cost concepts.

Rationale of Net Realizable Value

Net realizable value is usually intended to measure expected selling price discounted at a rate of interest and less cost to complete and sale. There are other possible variations. Theoretically, the concept results in the measurement of value increments as they occur. In order for the concept to be practical, it is desirable to know how, why, and when value increments occur.

Several theories of income were mentioned in Chapter IV. Income may be due to risk taking or

unusual managerial skill, but payments for risk taking and unusual managerial skills (above average decision-making ability) may be considered as earned by the factors of production. If payments are not made to the appropriate factors of production--owners and management--for these functions of risk taking and unusual managerial skill, then the residue after all factors of production are paid will include increments in value due to these functions. All such residue is considered to be income in this study. This will differ from the concept of pure economic profit (due entirely to chance). Pure income, or profit, is also included in the concept of profit used here.

Accounting profit also includes interest on the capital invested by the owners. This portion of profit is particularly emphasized in the net realizable value concept. In some variations of net realizable value the expected sales prices, and sometimes expected expenditures, are discounted back to the present to arrive at the present value by use of some rate of interest. From the present time until the time of sale the value of the asset gradually increases until, at the time of sale, the value is the sale price. The increase in value over time from the first valuation is due to interest. In economic theory, this interest is attributable to a particular factor of production--capital.

If accounting profit is defined to include value increments due to risk taking, unusual managerial skill, pure profit, and the use of capital, then the next question is "When does profit arise?" In Chapter IV it was pointed out that profit is attributable to all of the processes of business: buying, holding, manufacturing, and selling.

This significant problem in income determination hinges on revenue measurement and the matching of costs with revenues. The basic problem is measurement. The historical cost concept, the current cost concepts, and the net realizable value concepts are all concerned with the measurement of revenue. The historical cost concept makes no attempt to distinguish between the value increment arising during the various phases of business activity. Current costs and net realizable value, on the other hand, do make such an attempt.

Holding gains and losses may be composed of interest as a payment for the use of capital and income as a payment for risk taking as well as pure profit (due entirely to chance). To the extent that management is able to plan for holding gains and losses then they are a payment for unusual management skills. Operating income due to buying, manufacturing, and selling, is attributable largely to unusual management skill.

Going Concern.--The net realizable value concept utilizes the going concern concept. According to Canning, going concern value means "the valuation should be dependent solely upon the contemplated use of the valued thing in the operations of the enterprise" (73, p. 218).

Instead of basing valuations on prices that now exist the net realizable value concept bases valuations on prices that are expected to be received when the goods are sold less expenses expected to be incurred and less an appropriate amount for interest.

Referring to inventory items, Canning says: "The present worth of the amount of money that can be got for them in the conditions in which the enterprise is placed, less the present worth of the future outlays and expenses properly referable to such a dollar-volume of trade expresses not merely the chief but the only significance this existing stock of goods can have" (73, p. 219).

The usual situation is that a going concern will plan toward the completion of goods. The situation may arise where the market value of a good in process is greater than the net realizable value. If this situation is expected to continue, an entity may change its plans and begin selling the product when it reaches this certain stage of production. In general, such a situation is likely to be a temporary

one, and an entity is unlikely to be in a position to change its production and selling plans temporarily in order to make a short-run gain.

For this reason, then, a firm is more interested in the amount for which its finished goods will sell than the market value of a good at any given point in time. The main problem is in the difficulty of measurement. Market value may be more easily measured than selling price at some date in the future. When expected sale price is reduced by the cost of completion and discounted at some rate of interest to arrive at net realizable value, it is likely that market value is more easily determined, especially for raw materials and goods in process. As goods approach the time of sale, net realizable value becomes easier to measure.

Another application of going concern is also expressed by accountants. The view is taken that if an entity is expected to continue operations indefinitely, then net realizable value is not applicable. Gains and profits should be postponed until they can be expressed more objectively in subsequent periods. Gilman says: "Acceptance of the accounting period convention, and its subordinate convention of the going business, introduced a new accounting concept, namely, that inventorying at realizable values was not appropriate for periodical reports, there being at the end of each period a fictitious rather than

an actual termination of the business unaccompanied by substantial change of proprietorship" (74, p. 96).

Those who use the going concern concept as an argument against net realizable value may have a different concept of net realizable value than those who use the going concern concept as an argument for net realizable value. This first group may think of net realizable value as the net amount realizable upon a forced or immediate liquidation.

Variations of the Net Realizable
Value Concept

In general, net realizable value may be thought of as the expected selling price less expected expenses of completing and selling. There are many possible variations of this concept.

American Accounting Association

The American Accounting Association, in its Supplementary Statement No. 2 to its 1957 Statement, gives several possible variations of the net realizable value concept. Net realizable value "assumes that all income or loss arises exclusively through the acquisition (purchasing or producing) activities of the business entity" (65, p. 706). The value of inventory is a measurement of expected revenue less expected costs of completion and disposal. All profit is attributable to the buying or producing activity, and no profit is attributable to the other activities.

A slightly different concept is called "net realizable value less normal operating income on activities not performed." A normal operating income is determined. The normal operating income on activities not performed may be found by multiplying a computed fraction times the cost of completion and disposal. The numerator of the fraction is the normal operating income, and the denominator of the fraction is total costs including materials, conversion, selling, and administration. This is one possible method of computing "normal operating income on activities not performed." The main problem is to find a realistic method. A disadvantage of this method is that the income attributable to each activity is not necessarily proportional to costs incurred in that activity. "Any method of allocation has limited significance in the absence of arm's length market tests at intermediate stages during the holding or converting process" (65, p. 707).

Still another version of net realizable value is called "net realizable value less normal operating income." This variation may be similar to historical cost. However, if replacement cost and selling prices move together, this variation gives results similar to the use of a current cost concept which recognizes holding gains and losses.

The Supplementary Statement No. 2 suggests the use of replacement costs rather than net realizable value because of the difficulty of measuring the latter:

Many subjective estimates are required in its implementation: expected revenue, expected expenses, and allocation of margins between acquisition and distribution functions. Furthermore, if selling prices fluctuate in harmony with replacement costs, the replacement cost method generally will yield a reliable approximation of net realizable value less normal operating income. Therefore, replacement cost can generally meet conceptual and practical criteria more easily than can some version of net realizable value (65, p. 708).

John B. Canning

John B. Canning suggests that cost, market, and net selling value be exhibited simultaneously as each of them has a special significance (73, p. 221). Although Canning recognizes several ways of determining the value of finished goods the method he suggests allows for selling and general expenses as well as a normal profit:

The one suggested here is to multiply each unit selling price by a fixed constant, k . This constant is determined as follows. (1) Standard ratios to sales (preferably averages of the concern's own experience) should be found for loss on bad debts, selling expenses, and general expenses including costs of collection (but not interest paid or other distribution items like income taxes). (2) Some normal industrial rate of return converted to an average rate on the concern's own inventories should be found. The constant which is to be multiplied into each selling price then becomes one minus the sum of the rate allowances for subsequent expenses and for a normal profit on the inventory (73, p. 222).

For raw materials and unfinished goods, cost to complete must be estimated and used in computing present value. As the actual sale is further in the future than is the case of finished goods, errors in computing value are likely to be greater.

This method is what the AAA Committee called "net realizable value less normal operating income." Perhaps not all profits, but at least normal profits, are postponed until the time of sale.

Sprouse and Moonitz

Sprouse and Moonitz define assets as follows:

"Assets represent expected future economic benefits, rights to which have been acquired by the enterprise as a result of some current or past transaction" (2, p. 20). The value of an asset depends on the future economic benefits which are expected:

In other words, the problem of measuring (pricing, valuing) an asset is the problem of measuring the future services, and involves at least three steps:

1. A determination if future services do in fact exist. For example, a building is capable of providing space for manufacturing activities.
2. An estimate of the quantity of services. For example, a building is estimated to be useable for 20 more years, or for half of its estimated total life.
3. The choice of a method or basis or formula valuing the quantity of services arrived at under 2, above (2, p. 23).

At this point, the authors list the three exchange prices which have already been quoted: A past exchange price, a current exchange price, or a future exchange price. This third choice is repeated here as it is of primary importance in this chapter:

A future exchange price, e.g., anticipated selling price. When this basis is used, profit or loss, if any, has already been recognized in the accounts. Any asset priced on this basis is, therefore, being treated as though it were a receivable, in that sale or other transfer out of the business (including conversion into cash) will result in no gain or loss, except for any interest (discount) arising from the passage of time (2, p. 24).

This future exchange price seems to be the most theoretically correct method of measuring future benefits. There are often practical disadvantages such as lack of objective, verifiable data. For this reason Sprouse and Moonitz do not recommend the use of net realizable value for the measurement of all assets.

Net realizable value could be applied to receivables. The time until collection is usually so short that discounting is not of much value.

The application of their net realizable value concept to inventories is more meaningful. The authors feel that this concept should be applied "whenever the ultimate proceeds from sale can be established" (2, p. 27). "As a specific case in point, inventories which are readily salable at known prices with negligible costs of disposal, or with known or readily predictable costs of disposal, should be measured at

net realizable value (i.e., anticipated sales proceeds less costs of completion and disposal)" (2, p. 27).

Sprouse and Moonitz's net realizable value concept would result in the recognition of revenue when an increase in value takes place--whether the increase is due to an increase in the specific price level (holding gain) or due to an increase in value as a result of production. The authors say it this way: "This procedure will have the result of assigning most if not all of the change in resources and the related profit or loss to the period of production (or other activity) when the actual effort was made" (2, p. 27).

Although the concept is not always applicable, "measurement of inventories at net realizable value is the preferred method whenever the measurement is objectively determinable" (2, p. 28).

The authors do not believe their net realizable value concept is applicable to plant and equipment:

They do not represent potential revenues, as do the inventories, and therefore are not amenable to treatment as though they were receivables. As a consequence "net realizable value" has no relevance, except as a measure of scrap or second-hand value (2, p. 33).

Sprouse and Moonitz do not go into enough detail to explain fully how their concepts would be applied. For example, they note the desirability of separating gains (losses) due to changes in the specific

price levels from revenue due to the production of goods or the rendering of services. Such a separation is automatic in their current cost concept. It is not automatic in their net realizable value concept.

The separation would be possible to obtain by measuring the net realizable value at different points in time. The change in net realizable value from the time inputs are acquired until they are placed into production would be a measure of gain or loss due to changes in the specific price levels. The change in net realizable value due to production would be a measure of profit due to production. Sprouse and Moonitz do not mention such a separation at all. Perhaps this is a detail they feel is not essential to their study.

This net realizable value concept is based on the assumption "that profit is attributable to the whole process of business activity, not just to the moment of sale" (2, p. 10). This idea is not intended to be an original one with Sprouse and Moonitz. They quote the idea from accounting leaders of the past and present. One such quote is from George O. May: "Manifestly, when a laborious process of manufacture and sale culminates in the delivery of the product at a profit, that profit is not attributable, except conventionally, to the moment when the sale or delivery occurred!" (75, p. 30, quoted in 2, pp. 10-11).

Another such quote is from William A. Paton:

"If there is a major point upon which there is general agreement in accounting, it is that revenue results from the over-all process of production . . ." (76, p. 39, quoted in 2, p. 11).

The preceding variations of net realizable value emphasize the wide range of differences in the concept. Perhaps profit is attributable to the entire process of business activity, but these variations range from a concept which results in no normal income realization until the time of sale, through concepts which result in some income realization throughout the business processes, to a concept which results in the realization of all income immediately upon the initial purchase.

The most logical variation of net realizable value seems to this writer to be discounted estimated sales price less discounted estimated future expenditures required for completion and disposal and less profit allocated to incompleting activities.

Actual Use of Net Realizable Value

The concept of net realizable value is not just theoretical at present; it is actually applied in some situations. The use of net realizable value is an exception to the realization concept, but some applications of net realizable value are accepted

accounting theory according to both Accounting Research Bulletin No. 43 and Accounting Research Study No. 3.

The following quote is from Accounting Research Study No. 3:

It is generally recognized that income accrues only at the time of sale, and that gains may not be anticipated by reflecting assets at their current sales price. For certain articles, however, exceptions are permissible. Inventories of gold and silver, when there is an effective Government-controlled market at a fixed monetary value, are ordinarily reflected at selling prices. A similar treatment is not uncommon for inventories representing agricultural, mineral, and other products, units of which are interchangeable and have an immediate marketability at quoted prices and for which appropriate costs may be difficult to obtain. Where such inventories are stated at sales prices, they should of course be reduced by expenditures to be incurred in disposal, and the use of such basis should be fully disclosed in the financial statements (2, p. 34).

According to currently accepted accounting procedure, "the allocation of revenue to accounting periods in terms of production rather than sale is not an entirely unreasonable procedure if production is the main end of the enterprise, subsequent sale being merely a routine incident, to be taken for granted (28, p. 455).

There are also situations in which neither the current cost concept nor the historical cost concept applies. In such cases net realizable value may be the logical measurement concept. By products which do not have a ready market after separation from the main product without further processing and for which historical cost cannot be determined are examples.

Contrast with the Historical
Cost Concept

Objectivity

The historical cost concept is considered to be more objective than net realizable value in most cases. Use of the current realization concept implies that assets are carried at cost or adjusted cost until a sale takes place. Cost is usually objectively determined as it results from a market transaction with an entity external to the enterprise. Similarly, a sale gives an objective basis for revenue recognition; again, a market transaction with an entity external to the enterprise usually takes place.

Net realizable value, on the other hand, does not result from an arm's length market transaction involving the enterprise itself. Rather, net realizable value is based on transactions involving the enterprise which are expected to occur in the future. Transactions which have already occurred will, in general, result in valuations which are more objective than valuations based on future transactions.

Profit without a sale.--The realization concept depends upon a sale as a basis for recognizing revenue, for many accountants believe a sale is absolutely necessary. Their position can easily be backed up by illustrations. Obviously, no profit is made if sales are never made, regardless of the amount of production.

Gilman presents a few possibilities. "Recognition of income on the basis of production could hardly fail to result in a most fantastic situation in the case of a new company organized to produce cash registers in competition with the National Cash Register Company, or adding machines in competition with Burroughs, or automobiles in competition with Ford" (74, p. 122).

In a few cases, net realizable value may be more objectively determined than cost. This is why net realizable value is sometimes used for valuation purposes.

Usefulness

Although net realizable value is not as objective as valuations used with the realization concept, this writer believes the use of the net realizable value concept could often result in accounting figures closer to value. Some degree of objectivity might well be sacrificed in order to more nearly approximate value. Net realizable value would not be useful unless it could be measured with a fair degree of accuracy. If net realizable value is completely subjective, most of its usefulness for external accounting statements is lost.

Net realizable value is here suggested as a more useful measurement concept than original cost when original cost does not closely resemble value and net

realizable value can be determined with only a small probable degree of error.

Accounting statements

For the assets to which net realizable value is applicable, a more useful valuation may be shown in the accounting statements than the valuation used with the realization concept--historical cost. This statement assumes a net realizable value with a reasonable degree of accuracy.

The use of the net realizable value concept on the income statement would have significantly different results from the use of the realization concept. Some revision of the income statement would be needed to reflect this concept. For example, an income statement might show the present value of estimated future receipts. Current expenditures and the present value of expected future expenditures would be subtracted from the revenue to arrive at net income. If it is desirable to divide net income between that which is realized and that which has not been realized, other changes in the income statement would be required.

The impact of the net realizable value concept upon the balance sheet would also be great. It is likely that fewer complications would arise, however.

Net realizable value does not seem appropriate for all assets. This measurement basis seems appropriate for inventories, accounts receivable, and other

current assets. Net realizable value is, in effect, used for the valuation of accounts receivable when an allowance for doubtful accounts is subtracted from the total accounts receivable. The difference is the amount which is expected to be collected. There is no allowance for discounting at some rate of interest as this is of little significance.

The concept is less applicable to other assets such as plant, equipment, and intangible assets. These are assets used in the operations of the enterprise and are not intended to be sold. None of the variations of net realizable value seems applicable to these assets.

In this writer's opinion, the use of net realizable values which are reasonably accurate in the accounting statements, especially the income statement, would result in statements which are more useful than those statements which are prepared under the realization concept. The increased usefulness results from the closer approximation to value.

The disadvantages are much the same as those discussed in the previous chapter dealing with current cost. The main problem would probably be the lack of understanding on the part of statement readers. An approach to solving this problem would be the publication of dual statements--one prepared on the basis of the realization concept and the other on the basis of net realizable value.

Feasibility

The feasibility of net realizable value as compared with historical cost depends upon how difficult it is to determine net realizable value and how useful it would be. The unavoidable conclusion is that feasibility depends upon the circumstances. If net realizable value can be determined with a high degree of accuracy and without great cost, it is likely that the increased usefulness would outweigh the additional cost.

Contrast With the Current Cost Concept

In contrasting the net realizable value concept with the current cost concept, it may be inappropriate to make general statements about which is more useful and which is more objective. Because of the possible variations of each concept, it is not possible to say that one is more objective and the other more useful.

As has been pointed out in Chapter IV, variations of current cost fall into two major classes. Since these two general concepts of current cost are so different, it is best to compare net realizable value with each one separately. The comparison is limited to those assets to which net realizable value is applicable, such as inventories, accounts receivable, investments, and other current assets.

Holding Gains and Losses

Net realizable value is first compared with the current cost concept which emphasizes the holding gains and losses. Comparison is difficult because of the possible variations of each.

Objectivity

Current cost concepts which emphasize holding gains and losses give rise to substantially objective valuations. The current prices of inputs into a manufacturing process or merchandise held for sale by a merchandising enterprise may be determined by consulting a vendor's current price list or a current invoice or by telephoning the vendor. There is usually an active market for such inputs or such merchandise, so the current price may be considered objective.

The net realizable value of inventories is less objective than the current cost of inventories. This seems to be true of the several variations of net realizable value. This is largely because the two major components of net realizable value--selling price and expenses to be incurred--will be definitely determined in the future. Even though they may be predicted with a high degree of accuracy, they are by definition less objective than valuations which currently exist. The nearer inventory items are to actual sale, the more objective is net realizable value.

The current cost of accounts receivable is less meaningful than the current cost of inventories. Conceivably, the current cost of accounts receivable may be considered to be the current cost of the merchandise or service from which the accounts receivable resulted. Such a valuation would be an objective one, but it is not a very practical one, as the sale is usually considered an objective basis for the realization of income and valuation is increased by the amount of the income. The allowance for doubtful accounts is intended to reflect the net value, and thus the market value, of total accounts receivable. This market value would have little or no relation to the replacement cost concept of current cost while net realizable value is applicable.

The current cost of investments is an objective valuation if the trading of the security is active. If there is little or no trading activity, then the current cost, if one could be determined, would probably not be objective.

The objectivity of net realizable value of investments depends upon the type of investment. Net realizable value of stock held as a long-term investment is difficult to measure and not objective. Net realizable value of bonds is more objectively determined. The presence of, or lack of, a market value of

investment is controlling in determining which concept--net realizable value or current cost--is more objective.

Usefulness

If an accurate determination can be made of net realizable value, then net realizable value is a more useful concept to use in the financial statements. Valuations arrived at by both concepts could be shown in the balance sheet by giving additional information in parentheses or in the footnotes. The choice of methods is more important in the income statement. The use of this current cost concept results in the reporting of holding gains and losses along with income traditionally realized. Edwards and Bell refer to this as eliminating the realization concept on a time basis but holding to it on a production basis. On the other hand, the use of net realizable value results in the reporting of all increases in value during a period of time as income of that period.

Income under either concept might be divided into realized and unrealized elements. Income is realized when it passes the point of sale.

Net realizable value is more useful than current cost if net realizable value can be determined with a reasonable degree of accuracy for it is theoretically a better expression of value than current cost.

Feasibility

Current cost is usually much easier to determine than net realizable value and therefore is more feasible. Net realizable value may result in a valuation which more closely approximates value.

Production Income

Net realizable value is now compared with the second major class of current costs which measures all increases in market value--not just the increases due to holding gains and losses. It is difficult to determine which is more objective for this would depend on the variation of each concept. The two concepts tend toward the same valuation. Market value of an asset is a sort of an average estimate of net realizable value by all those who buy and sell that particular asset in the market.

A market may not exist for goods in process; an objective basis for the valuation of the asset in a certain form may not be present. Net realizable value may thus be more objective and more useful than this current cost concept in certain situations.

In general, comparison of the usefulness, objectivity, and feasibility of net realizable value and this current cost concept depends upon the variation of each. So one general concept cannot be said to be better than the other.

Summary

Net realizable value is another alternative to the historical cost concept. There are many variations of net realizable value. One common variation is expected selling price less costs of completion and sale. Another common variation is the same except that both the selling price and future cost are discounted back to the present at some appropriate rate of interest. The concept chosen as most logical is discounted estimated sales price less discounted estimated future expenditures required for completion and less profit allocated to incompleting activities.

The effect of the use of net realizable value is that increments in value for all reasons are recognized in the period in which they occur. The results are similar to those obtained under the variations of current cost which recognize production income.

Net realizable value is a very useful concept when it can be determined with a reasonable degree of accuracy. Unfortunately, net realizable value cannot be measured with the desired degree of accuracy in many cases. Furthermore, the net realizable value concept is not applicable to all assets, e.g., fixed assets and some intangible assets. Net realizable value is much less objective than historical cost and somewhat less objective than current cost.

CHAPTER VI

DISCOUNTED CASH FLOW

Introduction

The past three chapters have been discussions of three alternative measurement methods. This chapter is a discussion of a fourth alternative--discounted cash flow. At the present time, it is unlikely that the discounted cash flow measurement basis will be adopted for general use. Although it is perhaps the most ideal method, it is the most difficult to apply.

Assets may be thought of as service potentials. The value of an asset may be expressed as the value of its service potential; an asset may be measured by measuring its service potentials. The discounted cash flow concept (sometimes called the discounted future receipts concept or discounted services concept) is designed to measure the service potentials of either individual assets or assets as a group.

Net realizable value is a similar concept and could be used to mean the same thing. As used in this study, net realizable value refers to assets such as inventories which are expected to be sold. Net realizable value is applicable to very few assets as was

discussed in Chapter V. The discounted cash flow concept would apply to all assets.

Discounted cash flow may be referred to as "net present value of expected future cash flows" and "net present value of expected future cash flows with adjustments for risk" (11, pp. 505-06). "Discounted" means reduced by some rate of interest because of the time factor. The concept refers to a net valuation--reduced by future expenditures also discounted back to the present.

Although the concept might be applied to certain individual assets, it is probably more appropriately applied to the enterprise as a whole. Individual assets may have service potential only when used along with other assets in an enterprise, or they may have greater service potential when used with other assets.

Average service potential of a given asset to an average enterprise is possible, but it may have little significance for a given enterprise. Discounted cash flow usually measures the earning capacity of a given enterprise.

Reed K. Storey, in an article entitled "Cash Movements and Periodic Income Determination" presents six statements concerning the nature of periodic income and its determination which are particularly relevant to the discounted cash flow concept. Mr. Storey draws upon an article by Edward G. Nelson, "The Relation

Between the Balance Sheet and the Profit-and-Loss Statement," which appears on pages 132-41 of the April, 1942, The Accounting Review. The six statements are listed here:

1. Over the life of a business, revenue is equal to the cash receipts from operations, and expense is equal to the cash disbursements from operations; the profit (positive or negative) is therefore equal to the difference between cash receipts and cash disbursements resulting from operations.
2. For any period less than the life of the enterprise, revenue is equal to the cash that will be received (past, present, or future) as a result of the operations of the period, and expense is equal to the cash that will be disbursed (past, present, or future) as a result of the operations of the period.
3. Periodic income determination is essentially a process of asset valuation because the value placed on net assets at the beginning and end of an accounting period determines the profit allocated to that period, or conversely the part of the total profit allocated to periods determines the value of the assets.
4. The rate of profit (whether it is assumed to be equal in all periods or not) is a rate of growth of capital value because it measures the proportion by which a given asset or group of assets increases in value during the period due to operations.
5. The value of an asset determined by the invested capital method (adding outlays and allocated profit) equals its value determined by the present value of net revenues method (discounting net revenues by the same profit-rates used in allocating profits under the invested capital method).
6. Income and asset valuation depend on the expected amount and time distribution of cash movements which take place primarily in the future and are therefore subjective in nature (67, p. 452).

This step-by-step development is an aid in understanding the nature of discounted cash flows.

Economic Concept

There are many different economic theories of income. One cannot accurately speak of "the" economic theory of income, but one can generalize and speak of an economic theory of income which is perhaps more prevalent than other theories. J. R. Hicks is usually given credit for putting into words the concept of income as the amount that can be spent during a period of time and yet leave the entity as well off at the end of the period as it was at the beginning of the period:

The purpose of income calculations in practical affairs is to give people an indication of the amount which they can consume without impoverishing themselves. Following out this idea, it would seem that we ought to define a man's income as the maximum value which he can consume during a week, and still expect to be as well off at the end of the week as he was at the beginning (77, p. 172).

For purposes of this study, discounted cash flow is equated to economic income.

Subjectivity

Discounted cash flow appears too difficult to measure and too subjective to be used in the valuation of all assets. Arthur L. Thomas says the discounted service approach "cannot, even in theory, give a precise value to individual assets. It may, though, be able to give a fairly precise value to companies as a whole, or to entire economies" (78, p. 68). The value of this concept in accounting may be in the valuation

of entire enterprises. For example, this concept might be useful in buying or selling an entire enterprise.

With current methods of prediction and measurement, it seems that the discounted cash flow concept is not a likely candidate for a measurement base. Perhaps new techniques in the future will make the concept more applicable.

Comparison with other Measurement Bases

The three measurement bases already discussed are now compared with the discounted cash flow concept. This is not to discover the best base; it is to compare each base with a measurement of economic income.

Historical Cost

The current use of the historical cost concept in recognizing revenue would have the same results as this economic theory only in isolated circumstances. For example, the two concepts could result in the same amount of revenue if there are no price-level changes during the period and there are comparable inventories at the beginning and end of the period.

The use of the historical cost concept is not intended to measure revenue from an economic point of view. The accountant is not necessarily interested in the same measure of revenue in which the economist is interested. Both the economic concept and the accounting concept involve increments in value. The

main difference is in the timing of the recognition of such increments. There are also some differences in emphasis.

For example, the accountant is usually interested in the income of specific entities while the economist usually is not. "This specific interest of the accountant makes him more conservative than the economist faced with the same problem--for example, the accountant typically hesitates to recognize a favorable change 'too early' because it may never be 'realized,' and the party to whom the benefit flows may prematurely demand his share or act on the presumption that it is his" (31, p. 12).

Current Cost

The economic concept includes in income increases in wealth over time. Such increases in value are included in income whether they are converted into a liquid form or not.

The currently used realization concept is further from this economic concept than the current cost concepts. A sale or delivery is the usual criterion for recognizing revenue at present. Increases in value, especially those increases in value due to the production of goods, are not recognized under the realization concept until the sale or delivery takes place. This could be far removed in time from the

actual increase in value. This increase in value refers to both value increments due to production and holding gains and losses.

The current cost concepts are more similar to the economic concept than is the realization concept. The first group of current cost concepts (emphasizing holding gains and losses) comes closer to the economic concept than the realization concept but not as close as the second group of concepts (emphasizing production income). The second group of concepts might have practically the same results as the economic concept. Differences between the concepts would be due to differences in the way they are implemented.

Net Realizable Value

The economic concept described in the preceding paragraphs is similar to the net realizable value concept. The difference is in the assets to which the concepts apply. Net realizable value is best applied to certain current assets. The economic concept, expressed here as discounted cash flow, applies to the valuation of all assets and therefore to the increase in value, income.

Summary

The three major measurement bases in accounting for financial data are historical cost, current cost, and net realizable value. A fourth base, which is not

likely to be acceptable for use in accounting in the foreseeable future, is discounted cash flow. This is intended to be an expression of the economic concept for asset valuation and income measurement.

Discounted cash flow is most applicable to asset groups such as an entire enterprise. This economic concept cannot be applied with the same degree of objectivity as the other measurement bases suggested in the preceding chapters. If discounted cash flow could be implemented, it would be the ideal measurement method.

CHAPTER VII

SUMMARY AND CONCLUSIONS

Accounting is the measuring of financial data. Financial data is measured in order to meet the needs of management as well as persons and entities outside the accounting entity--external users. These external users include investors, creditors, social control agencies, labor unions, employees, consumers, and the general public.

Management uses the information provided by systems of accounting to aid in making decisions in three areas: planning, controlling, and evaluating. Accounting also serves to make management aware of the need for decisions; this is essential in order for the "management by exception rule" to apply. These three areas of managerial interest imply that management is interested in what has happened in the past (evaluation), what is happening at the present (control), as well as what is expected to happen in the future (planning). Accounting serves management's needs in all three areas; accounting is not confined to recording the past. Evaluation of past events is largely to aid in controlling and planning.

The primary accounting statements consisting of the balance sheet, the income statement, and the capital statement are used by management, but management's needs extend beyond these statements. Management needs much more detailed information than is ordinarily provided in these primary statements. Also, management requires information much more frequently than is provided by these primary statements. Management may use these primary statements as a starting point in reviewing the results of financial affairs. From the primary statements they may go to other accounting records and statements for more details on specific points and for more frequent information.

The external users as a group have diversified interest in the measurement of financial data of an entity. The published financial statements are the main source of information to these users, although some users obtain additional information. Creditors may receive information according to the contract between the entity and the creditor as well as additional information concerning collateral and earning power. Potential creditors may also ask for information more detailed than that appearing on the financial statements. Governmental agencies have the authority to require specific types of information. These are typical examples of external users receiving information in addition to that presented in the financial statements.

Investors and prospective investors compose the largest group of users of accounting statements. Investors are interested in some combination of dividends, appreciation, risk, and diversity. It is not known exactly how investors use accounting statements and to what extent financial statements affect their decisions. It is assumed that investors use accounting statements to determine financial position and results of operations.

Internal users (management) and external users have different needs. Although high levels of management may use the primary accounting statements as a starting point, they desire much more detailed and more frequently provided information on specific items. At lower levels of management even more detail and more frequently provided data are desirable. The lower levels of management may have no need for the primary accounting statements.

External users, faced with decisions which differ from management's decisions, need essentially different information. These external users are more interested in results of management's efforts than in the detailed information needed for managerial decisions in various areas of an organization. External users, especially creditors, desire a report on management. They are more interested in plans for the future than in the process of managerial planning. The

published financial statements are intended to meet the needs of most external users while they serve the needs of management to only a small extent.

Although the type and detail of financial data desired by external and internal users are not the same, both groups of users are interested in an appropriate measurement of financial data. The purpose of this paper is to analyze and compare the most prominent of the measurement methods which have been suggested in the accounting literature. The measurement methods, or bases, chosen for inclusion are historical cost, current cost, net realizable value, and discounted cash flow.

Accounting has always been a system of measuring financial data. The idea that measurement theory applies to accounting is not new, but recent years have witnessed an increased emphasis on the application of measurement theory in accounting.

Measurement may be defined as the assignment of numerals to represent properties of objects or events according to rule. Measurement is sometimes defined more broadly to include the assignment of numerals to objects or events themselves. This broader definition includes mere classification within the sphere of measurement.

A one-to-one relationship must exist between the quantities of the properties or the objects and the

number system used in measurement. The number system should possess ordered numbers, ordered differences between numbers, and a unique origin. A scale of measurement is established when numbers are assigned to objects or properties of objects in such a way that the relations between the numbers indicate relations between the objects or properties of the objects.

According to Stevens the lowest scale, called the nominal scale, involves mere classification and does not necessarily involve order, distance, or origin. Many experts would not consider this as a scale at all. The ordinal scale, the next scale, implies order and includes the features of the nominal scale. The next scale, the interval scale, has the features of the ordinal scale with an added feature of a meaningful size of the distance between pairs of numbers. An interval scale with a natural origin is called a ratio scale, the highest type of scale. Each scale after the first grows out of the preceding scale. The application of each scale is restricted to a more specific area than the preceding one.

There are three kinds of measurement. (They have no relationship with the types of scale.) These are fundamental measurement (which has meaning through natural laws relating various quantities of the construct to each other), derived measurement (which has meaning through laws relating the property to other properties),

and fiat measurement (which has meaning by arbitrary definition).

Measurement theory is essential to accounting because the purpose of accounting is to measure. Measurement is concerned with the quantitative aspects of objects. Accounting is also concerned with quantification. Perhaps accounting should also be concerned with nonquantitative aspects of objects, and perhaps in the future this will be a significant feature of accounting. This paper discusses accounting from a quantitative aspect only. Accounting is sometimes defined even more narrowly to include quantitative measurement in financial terms only.

In order for measurement in accounting to take place, several decisions must be made. The objectives of the entity is the first factor to determine. The profit motive is usually assumed to be the primary motive of business entities. Other objectives do exist, but they are usually subgoals.

Before measurement may take place, the types of factors which may serve to attain the objectives or objectives must be determined. The selling of products and the rendering of services are usually considered to be the means of obtaining the objectives. Accounting attempts to measure only the financial and some other quantitative aspects of the selling of products and rendering of services.

Accounting cannot usually measure income directly. The formulation of rules has been found necessary in order to determine "accounting income." Income as determined by the application of accounting rules may be considered a surrogate, or substitute, for real income.

A measuring method and a measuring unit must be selected before income and the subgoals may be measured. This is the basic measurement task of accounting. The choice of a measurement method is the central theme of this paper. The measurement unit is the language of the measurement method. Accounting expresses financial data in monetary terms, but this involves the problem of the changing purchasing power of the dollar. Are measurements to be made in terms of dollars with no recognition made of the changed purchasing power between two points in time?

After these decisions concerning objectives and methods have been made, the measurement process itself may take place. Analysis of the results and the use of measurement follows the measurement process. The measurement methods and units should be determined in light of the use expected to be made of the results. Since the primary goal of a business enterprise is to make a profit, accounting should not only measure the attainment of the goal but should actually make a contribution toward reaching that goal.

The goal of accounting should be to measure value. The rules applied in accounting arrive at a substitute for value and increases in value. Substitutes and estimates fail to measure actual value, so amounts reflected in financial statements may imply accuracy which does not exist. Complete accuracy is usually unnecessary, the degree of accuracy depending upon the purpose for which the measurement is being made.

The user of accounting data should be made aware of the degree of accuracy reflected in the data. Perhaps financial statements should indicate the probability and degree of error inherent in measurement methods used and the results of the measurement.

Accounting measurement utilizes all four types of scales of measurement. The classification used in the chart of accounts is an example of the nominal scale. Ordinal scales are used in statement analysis. The time dimension is an example of the use of the interval scale. The use of dollars is an example of the ratio scale.

The kind of measurement used in accounting is usually fiat. Most measurement methods such as historical cost and current cost are examples of measurement by fiat. Net realizable values and discounted cash flows approach fundamental measurements. Four criteria are chosen to be used in discussing and comparing these four measurement methods. These criteria are relevance (usefulness), objectivity (verifiability and freedom from bias), feasibility, and quantifiability.

The first measurement method is historical cost (Chapter III) which is generally accepted for use in accounting statements. Historical cost (sometimes called original cost and transaction price) is an objective basis for that which is exchanged. The use of this measurement method in the accounting records implies that accounting is the allocation of historical costs and revenues to the fiscal periods.

There are several concepts so closely related to historical cost that they are almost inseparable. One of these is the going concern concept. Business enterprises are assumed to have a continuous life, and the accounting records are based on this assumption. This means that liquidation value may be of little value, and this is often interpreted as support for the historical cost concept. An interpretation which is less acceptable in current practice is that net realizable values and discounted cash flows would be a natural consequence of the going concern concept.

Another concept related to the historical cost concept is the time period concept. The use of the time period makes it necessary to determine income and asset measurements before the enterprise life is over. Rules must be made to estimate the results of operations.

Realization is the concept used to determine what revenue is to be recognized during a given time period. The dominant interpretation of the realization

concept is that a change in value has taken place with sufficient objectivity to warrant recognition in the accounts. A sale is usually thought of as having sufficient objectivity and is generally the accepted criterion for realization. Assets remain on the books at historical cost until realization is deemed to have taken place.

The related concept of matching is used to determine what expenses should be deducted from the recognized revenue. Those costs which were necessary to attain the revenue of the period should be matched with the revenue.

Another concept directly related to the historical cost concept is objectivity. Objectivity implies verifiability and freedom from bias. Objectivity is one of the most important advantages of historical cost.

The conservatism concept is also related to historical cost. Historical cost is the most conservative concept of those discussed here.

Of the concepts discussed here, the one most closely related to historical cost is the realization concept. Suggestions have been made to use a more liberal realization concept than is currently accepted. Even in current practice there are several exceptions to the general rule that a sale is required for realization. In some situations such as shipbuilding realization may occur during production. Completed production

is required in some situations such as mining of metals and producing agricultural products.

The use of historical cost along with the closely related realization concept results in some shortcomings in the financial statements. A reader is likely to be misled if he assumes that financial statements reflect values. In order not to be misled, the reader must realize what measurement method is used and the implications of its use.

Under the historical cost concept, capital gains and losses are not recorded as they arise. Also, when capital assets are consumed, capital gains and losses become part of normal profit. Another major limitation implicit in the use of historical cost is the failure to recognize changes in value as production takes place and as services are rendered.

The use of historical cost may make difficult the comparing of the accounting statements of a particular entity over a period of time. One reason for lack of comparability is the use of alternative methods which are permissible with the historical cost measurement method. Another major reason for lack of comparability is price-level change. General and specific price levels do change from period to period and thus distort the financial picture based on historical cost.

The use of historical cost also results in lack of uniformity between enterprises. The problems of alternative methods and price levels are again involved.

It may seem that management should not be misled by financial statements produced under the historical cost concept when they have access to more information if desired. Managers may not understand accounting well enough to know what concepts underlie the preparation of accounting statements and the inherent limitations of the statements. Even if managers do understand accounting, they must make their own adjustments to financial statements and therefore they may lack the information they need.

Investors and prospective investors also need relevant information in the financial statements as they must generally rely on such statements even more than management. There are three reasons why investors may not rely on published financial statements. First, the statements may not give adequate information to form the basis for a decision. The statements may be intentionally biased in addition to shortcomings already mentioned. Another criticism of published financial statements is that they provide investors with very little information concerning the future.

The second possibility as to why investors and prospective investors do not use published financial statements in making decisions is that other sources of information may be more helpful. Secondary sources such as investment brokers, financial periodicals and news reports, and investment managers for

institutional investors may be used. Other sources include hot tips, dividend records, and daily stock-market activities. The use of these sources does not necessarily imply a lack of usefulness of financial statements. They may provide a different type of information and meet different objectives.

The third possibility as to why investors and prospective investors do not use published financial statements in making decisions is that they may not possess sufficient knowledge of accounting. A possible solution would be to prepare statements in such a way that they could be understood and used by those who have some knowledge of financial data but who are not experts in accounting.

Users of financial statements other than management and investors generally have less need for the statements because they may use other sources of information. However, they may be misled if they rely entirely on the published financial statements.

An alternative to the historical cost measurement method is current cost (Chapter IV) which is a term chosen to include many variations of market value and replacement cost. Variations of current cost seem to fall into one of two types: those which separate holding gains and losses from operating income and those which recognize income on a production basis. The second type might also distinguish holding gains and losses from other income.

Income as used in this study means both unexpected increments in value (pure profit) and increments due to above-average decision-making ability and risk taking. Accounting income also includes interest on capital. Increments in value for any of these reasons may be considered income whether recognized or not.

Income is not necessarily recognized when increments in value take place, but determination of when increments take place is helpful in deciding when to recognize revenue. The business process includes purchasing, production, holding, and selling, each of which may give rise to value increments. Alternatives to the historical cost measurement method suggest the recognition of some of these increments as they take place.

Current cost concepts are intended to measure changes in the specific prices as contrasted with general price-level changes. (It is assumed that appropriate adjustments will be made for changes in the general price level as well.) The increment measured depends upon the particular current cost concept used.

Edwards and Bell recommend two current cost concepts--realizable profit and business profit. Realizable profit is composed of realizable operating profit and realizable capital gains. Realizable operating profit is the increase in opportunity cost due to production and is thus the increment in value due to production. (Production here implies all business activities

other than holding.) Realizable capital gains are the gains due to the increase in opportunity cost over time and thus the increment in value due to holding.

Edwards and Bell's business profit concept is composed of current operating profit and realizable cost savings. Current operating profit is the difference between current cost before production and current value after production. (Current cost is the cost of acquiring inputs at the present time, and current value is the value actually realized for goods or services sold.) Realizable cost savings is the increase in current cost over time. This concept results in the recognition of increments in value due to holding while the remaining increments are not recognized until the time of sale. Edwards and Bell would choose business profit as being the more useful of the two concepts.

Sprouse and Moonitz suggest a current cost concept which they call replacement cost. Although they do not make it clear how replacement cost should be determined, they seem to be suggesting the use of what Edwards and Bell call current cost. This implies that holding gains and losses would be recognized as incurred but that the recognition of other increments in value would be postponed until the time of sale.

Other current cost concepts fall into one of the two categories. The accretion concept is an example of those which emphasize production income while

Horngren's concept (see page 108) is an example of those concepts which emphasize holding gains and losses.

The separation of increments in value due to holding activities from other business activities is a good starting point in analyzing operating results. Although it may not always be possible to determine the cause of holding gains and losses, they are at least assigned to the period in which they arose and are not included with other income.

Current cost concepts emphasizing holding gains and losses have the advantage of being closer to current practice than the other type of concepts. The current cost of inputs can be determined without much cost and difficulty (feasibility) and objectively determined.

Current cost concepts which emphasize production income are recommended less often than concepts emphasizing holding gains and losses. Concepts emphasizing production income are more theoretically desirable because they approximate value more closely. Also, this concept may be used to determine both production income and holding gains and losses, but the difficulty and expense may make this method less practical than the other type of concepts.

Historical cost and current cost have been compared on the basis of usefulness, objectivity, and feasibility. To the extent that economic value is an accurate indicator of financial position and income,

then current cost is more useful (relevant) than historic cost. The necessity of changing from the use of historic cost to current cost in the financial statements would somewhat limit the usefulness of the statements until readers became accustomed to the new measurement method. Complications in the accounting statements in order to reflect current cost rather than historical cost would perhaps offset to some extent the increased usefulness of current cost.

One useful aspect of current cost concepts which recognize production income is that the direct costing controversy would be eliminated. The other current cost concept would have no effect on the controversy.

Usefulness and objectivity are not necessarily in conflict as objectivity may contribute to usefulness. The more significance the reader can attach to financial statements, the more useful they may become to him, and objectivity may make the statements more significant.

Historical cost is definitely more objective than current cost, but does current cost have sufficient objectivity? In many cases current cost does have sufficient objectivity. When current cost can be determined with sufficient objectivity to be included in the financial statements then its use seems to be feasible.

Although there are several variations of net realizable value (Chapter V), the concept generally implies recognition of value increases or decreases as they occur. One variation is expected revenue less expected costs of completion and disposal. All profit is attributable to the buying or producing activity, and no profit is attributable to the other activities.

Another variation is identical to that suggested in the preceding paragraph except for a reduction by a normal income on activities not performed. Still another variation postpones all operating income until the time of sale. These variations may or may not use a rate of discount to compute the present value of future revenues and expenses.

The most logical variation of net realizable value seems to be discounted estimated sales price less discounted estimated future expenditures required for completion and less profit allocated to incompleting activities. This variation would assign value increments to the activities performed. The determination of holding gains and losses from other income is possible, but it is not usually built into this measurement method. The net realizable value concept seems to apply to only inventories, accounts receivable, and other current assets.

The net realizable value concept is compared with historical cost on the basis of objectivity,

usefulness, and feasibility. Historical cost is generally more objective than net realizable value. Net realizable value has an advantage over historical cost because it is a closer approximation to value. Net realizable value is suggested as a more useful measurement concept than historical cost when historical cost does not closely resemble value and net realizable value can be determined with only a small probable degree of error. If net realizable value can be determined with a high degree of accuracy and without great cost, then the use of the concept would be feasible.

Net realizable value is compared with current cost on the basis of the same criteria. The current cost concepts which emphasize holding gains and losses are generally more objective than net realizable value. Net realizable value is more useful in that it is a closer approximation of value, but current cost is useful because it separates holding gains and losses from other income. Current cost is usually much easier to determine than net realizable value and therefore is more feasible.

The use of the net realizable value concept gives substantially the same results as the use of a current cost concept which recognizes income on a production basis. Comparison of the two concepts on the basis of usefulness, objectivity, and feasibility is of little value.

Discounted cash flow (Chapter VI) is the fourth and last measurement method discussed. This concept may be applied to individual assets or groups of assets. Its application to groups of assets is more practical as it is difficult to break down an enterprise's cash flow between the various assets. This flow concept is similar to net realizable value except that it applies to all assets.

Discounted cash flow is a good measure of economic income and can therefore be considered the ideal measurement method. If discounted cash flows could be determined for an enterprise then it would be the most useful measurement method. However, discounted cash flows appear too difficult to measure and too subjective to be used in the valuation of all assets.

Of the four measurement methods discussed, discounted cash flows is the ideal measure of economic value. Net realizable value is the same thing but applies to only a limited number of assets. The current cost concept which measures production income comes closer to being ideal than the other current cost concept. The current cost concept which emphasizes holding gains and losses ranks next, and historical cost ranks last.

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This dissertation was prepared under the direction of the chairman of the candidate's supervisory committee and has been approved by all members of that committee. It was submitted to the Dean of the College of Business Administration and to the Graduate Council, and was approved as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August, 1967


Dean, College of Business Administration

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Chairman





