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The Years 1965-1980 as Experienced in Six Macroeconomic Functions

Hans Brems

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July 1981

The Years 1965-1980 as Experienced in Six Macroeconomic Functions

Hans Brems, Professor
Department of Economics

THE YEARS 1965-1980 AS EXPERIENCED IN SIX MACROECONOMIC FUNCTIONS

Abstract

Instead of offering a qualitative or a quantitative chronology of the sixteen turbulent years 1965-1980 the paper arranges pairwise twelve important macroeconomic variables and draws scatter diagram of six familiar macroeconomic behavior functions, some discovered by Keynes or the Keynesians, others by the monetarists, but all part of our tool kit. The paper uses no source other than the Economic Report of the President transmitted to the Congress January 1981. The paper simply tries to form a rough impression of how well the six functions withstood the turbulence.

4. THE YEARS 1965-1980 AS EXPERIENCED IN SIX MACROECONOMIC FUNCTIONS

By Hans Brems

The sixteen years 1965 through 1980 began with an escalation of a war setting off an inflation that was to accelerate from two to ten per cent per annum over the sixteen years--subsiding in 1971-1972 under price controls and in 1975-1976 under heavy excess capacity but refueled in 1972-1974 by oil, food, and decontrol shocks and in 1977-1979 by another oil shock.

The story of such turbulence could be told as a qualitative chronology emphasizing policy measures adopted and discarded. Or the story could be told as a quantitative chronology tracing important variables as functions of time. The present paper will do neither. Instead it will arrange pairwise the twelve variables

$C \equiv$ physical consumption

$g_P \equiv$ rate of inflation

$I \equiv$ physical investment

$M \equiv$ supply of money

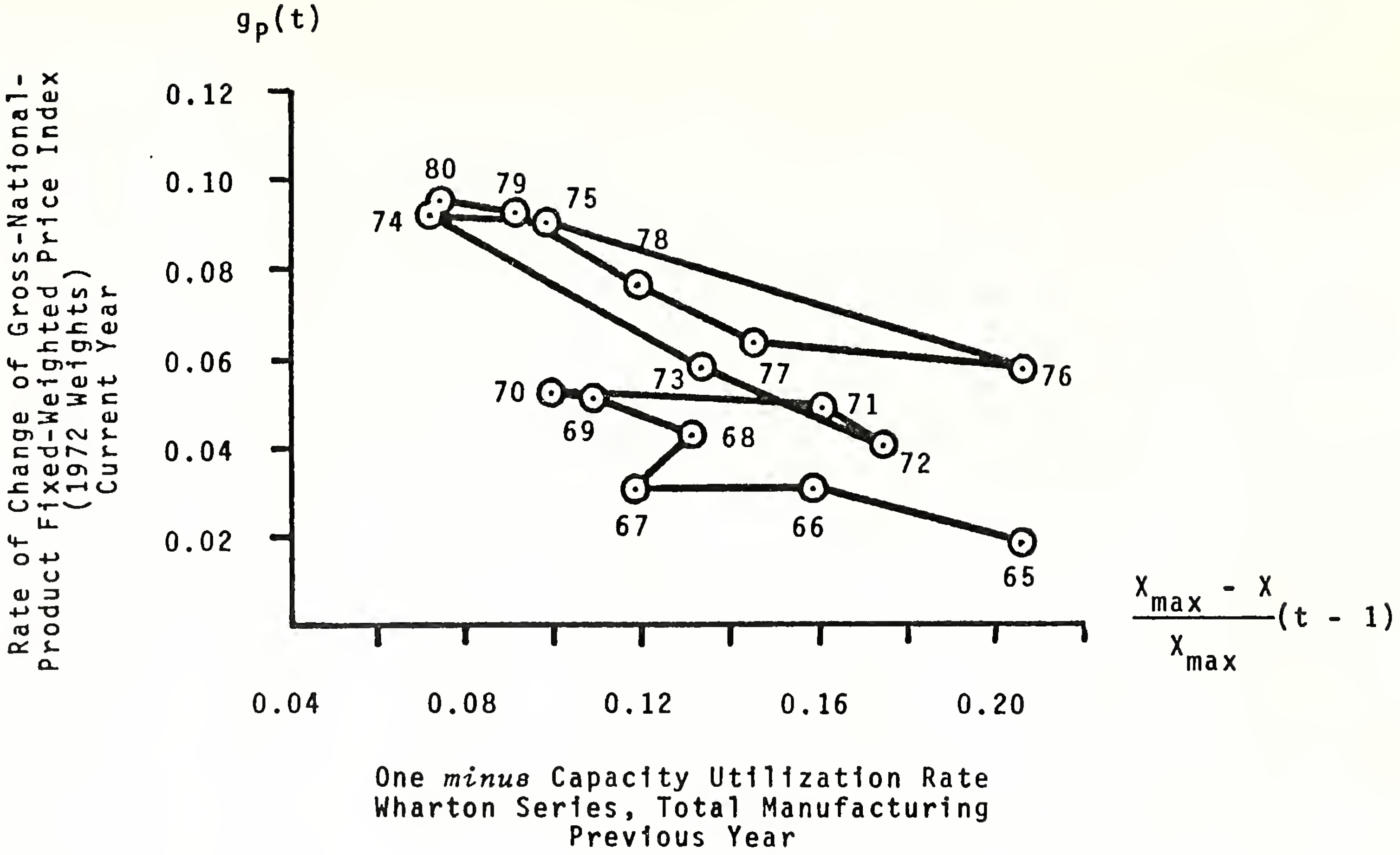
$P \equiv$ price of goods and services

$R \equiv$ tax revenue

$r \equiv$ nominal rate of interest

$\rho \equiv$ real rate of interest

$X_{max} \equiv$ physical capacity



Economic Report of the President Transmitted to the Congress January 1981, Washington, D. C., 239 and 281.

Figure 1

Inflation Tempered by Excess Capacity
United States 1965-1980

$X \equiv$ physical output

$Y \equiv$ money value of output

$y \equiv$ money disposable income

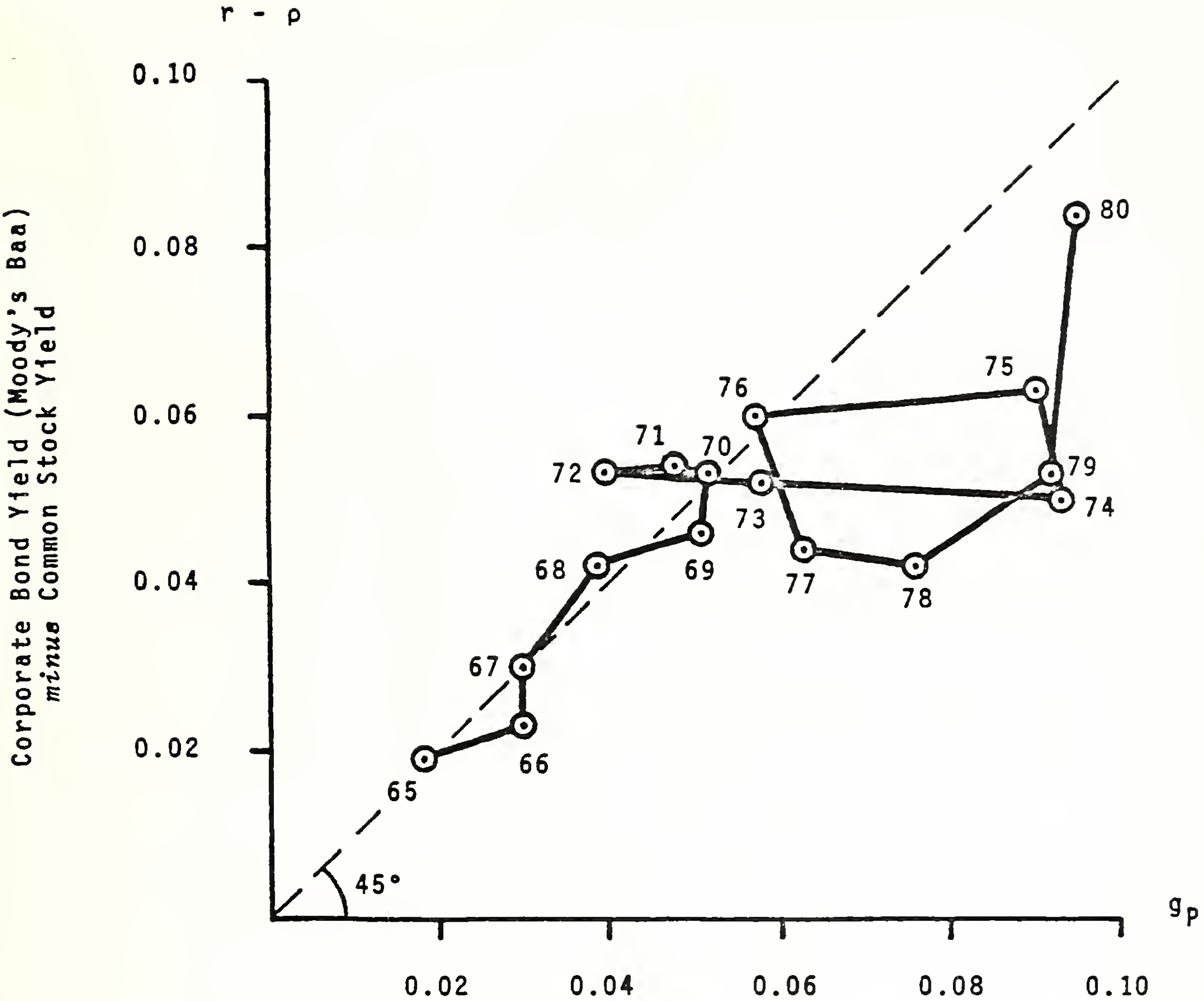
or ratios or differences between them and draw scatter diagrams of six macroeconomic behavior functions discovered by Keynes, Keynesians or monetarists but all part of our tool kit.

The paper will use no source other than the Economic Report of the President transmitted to the Congress January 1981. The paper will simply try to form a rough impression of how well the six functions withstood the turbulence.

1. Inflation Tempered by Excess Capacity

Expecting inflation, firms will be compelled to contribute to it by raising their own price. But all price policy is a compromise between cost considerations and demand considerations: firms will be more reluctant to raise their own price at high excess capacity than at low excess capacity. Inflation, in other words, is tempered by excess capacity--but perhaps with a lag.

Price policy is part of a corporate routine requiring hearings of accounting, marketing, production, and finance staffs. Once reached, a decision will not be revised for some time. As a result, current-year price change could be expected to reflect previous-year rather than current-year excess capacity. Will it?



Rate of Change of Gross-National-
Product Fixed Weighted Price Index
(1972 Weights)

Economic Report of the President Transmitted to the Congress January 1981, Washington, D. C., 239, 308, and 335.

Figure 2

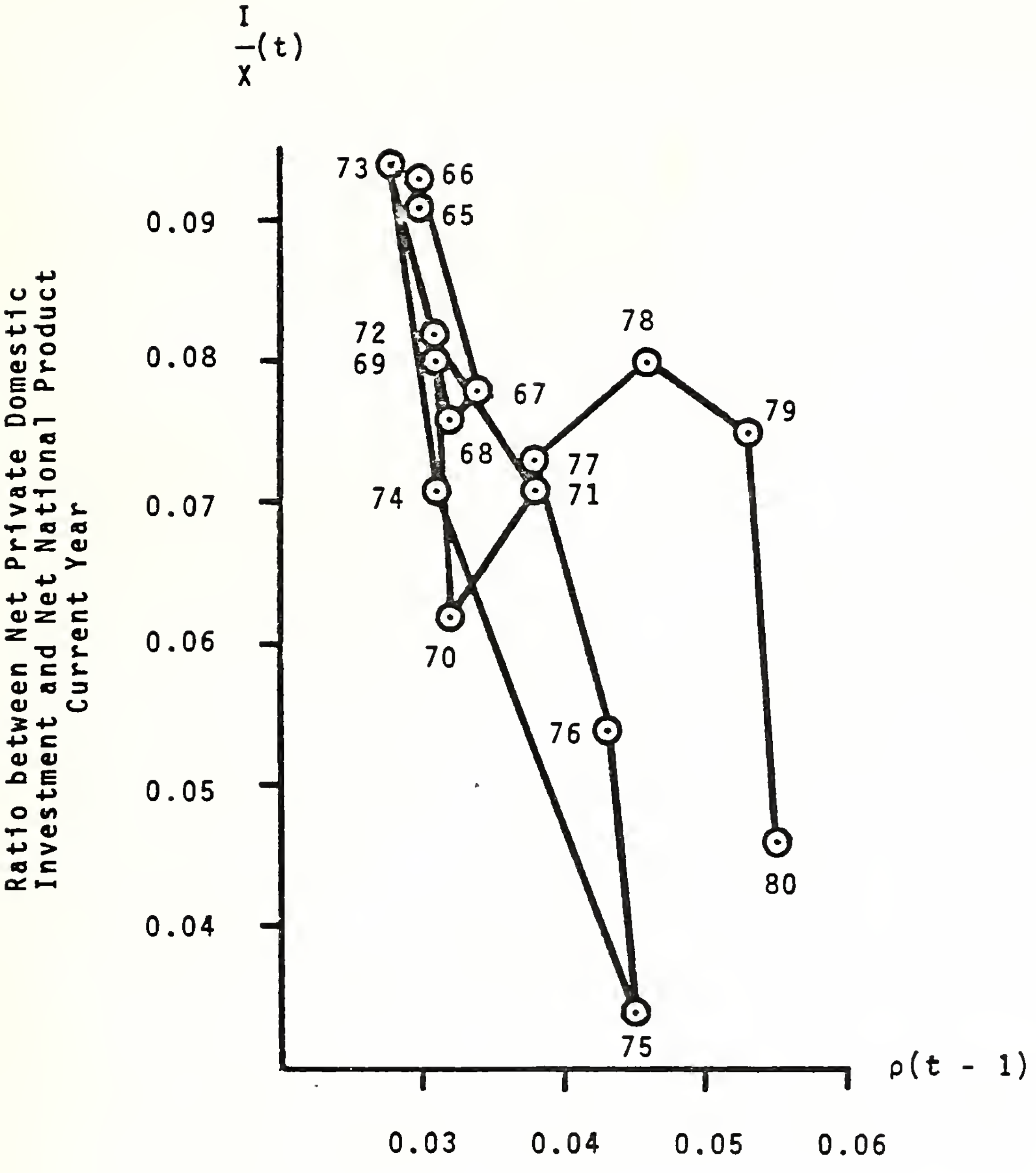
Inflation and the Two Rates of Interest
United States, 1965-1980

Figure 1 plots the rate of change of the gross-national-product fixed-weighted price index of the current year as a function of one minus the Wharton capacity utilization rate of the previous year. There is a visible tendency for years having a high rate of excess capacity to induce next year a rate of inflation lower than that induced by years having a low rate of excess capacity. But no more than a tendency is visible. The function comes, as it were, in three layers, i.e., 1965-1970, 1971-1974, and 1975-1980. The two shifts may have been caused by the first and the second oil shock, in other words by something external to the U.S. economy.

2. Inflation and the Two Rates of Interest

Figure 2 uses the corporate-bond and the common-stock yields, respectively, as proxies [Brems (1980: 82-85)] for the nominal and real rates of interest and plots their difference as a function of the rate of change of the gross-national-product fixed-weighted price index. If the bond and dividend yields were perfect representatives of the nominal and real rates of interest, respectively, their difference would always equal the rate of inflation, and all observations in a diagram like figure 2 would lie on a 45° line. Will they?

The observations of the first five years stay very close to the 45° line, and so do the observations of 1976 and 1980. But both oil shocks generated unprecedented rates of inflation, and the security markets apparently considered such rates temporary. Both when the



Economic Report of the President Transmitted to the Congress January 1981, Washington, D. C., 233, 252, and 335.

Figure 3

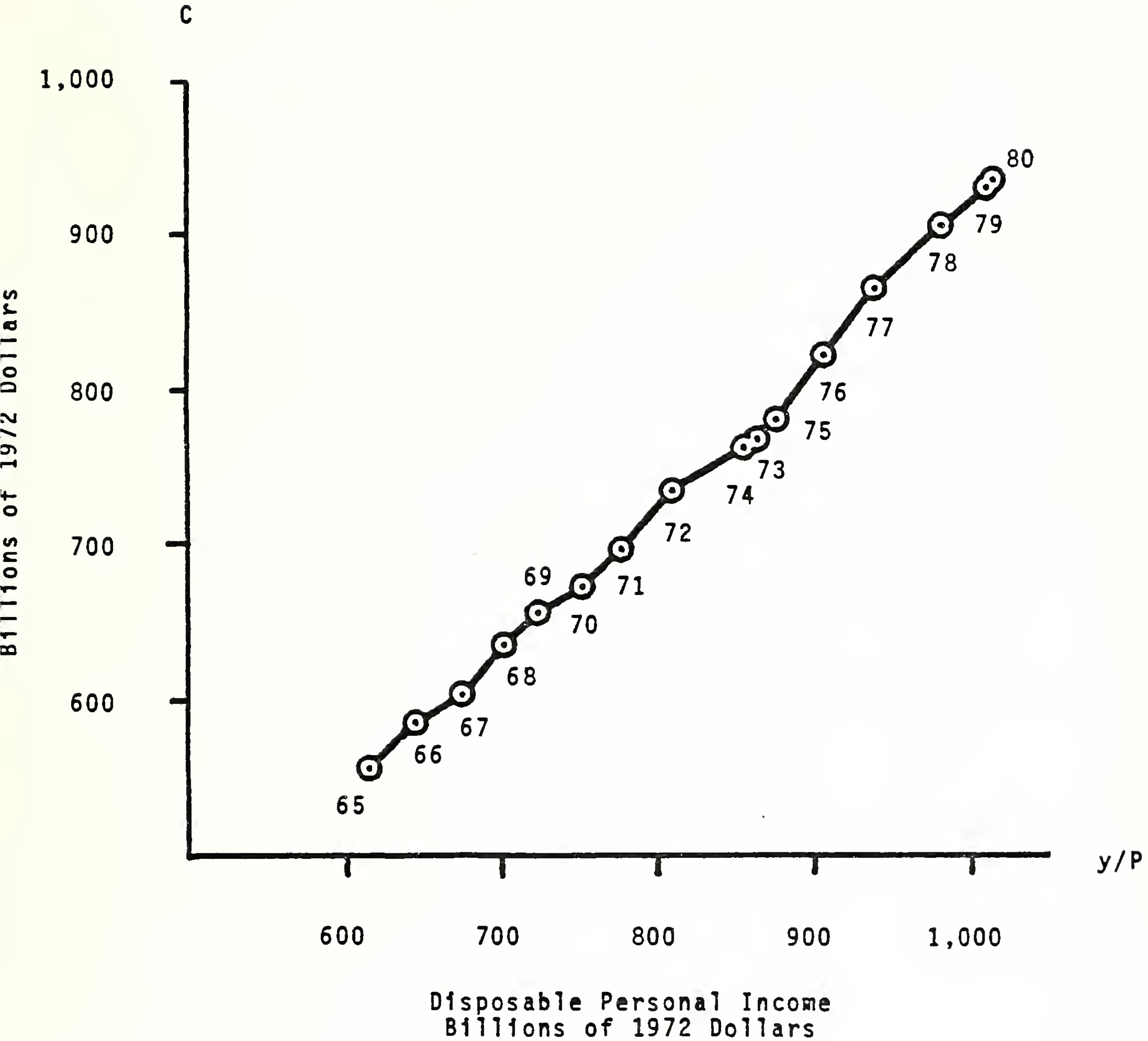
Investment and the Real Rate of Interest
United States, 1965-1980

rates turned out to be temporary--as in 1975-1976--and when they did not--as in 1980--the security markets eventually returned to the immediate neighborhood of the 45° line. When all is said and done, there is a visible tendency for years having a high rate of inflation to induce a gap between the nominal and real rate of interest which is larger than that induced by years having a low rate of inflation.

3. Investment and the Real Rate of Interest

Physical net investment serves the purpose of expanding physical net national product X, hence will normally be growing at the same rate as the latter. Only if net investment were a function of something else than X would the ratio I/X be varying. That something else could be the cost of capital, but which cost, the nominal or the real rate of interest? Physical investment is the acquisition of physical goods for the purpose of producing more such goods, and the price of the goods is growing at the rate of inflation. Consequently investment would not be discouraged by a nominal rate of interest that was high merely because of inflation. Only a high *real* rate of interest would discourage investment--and perhaps with a lag.

Like price policy, investment policy is part of a corporate routine requiring time-consuming staff hearings. But a price-policy decision may at least be executed by the stroke of a pen. The execution of an investment policy decision requires more time. Digging, construction, and delivery times will elapse before everything can be



conomic Report of the President Transmitted to the Congress January 1981, Washington, D. C., 259.

Figure 4

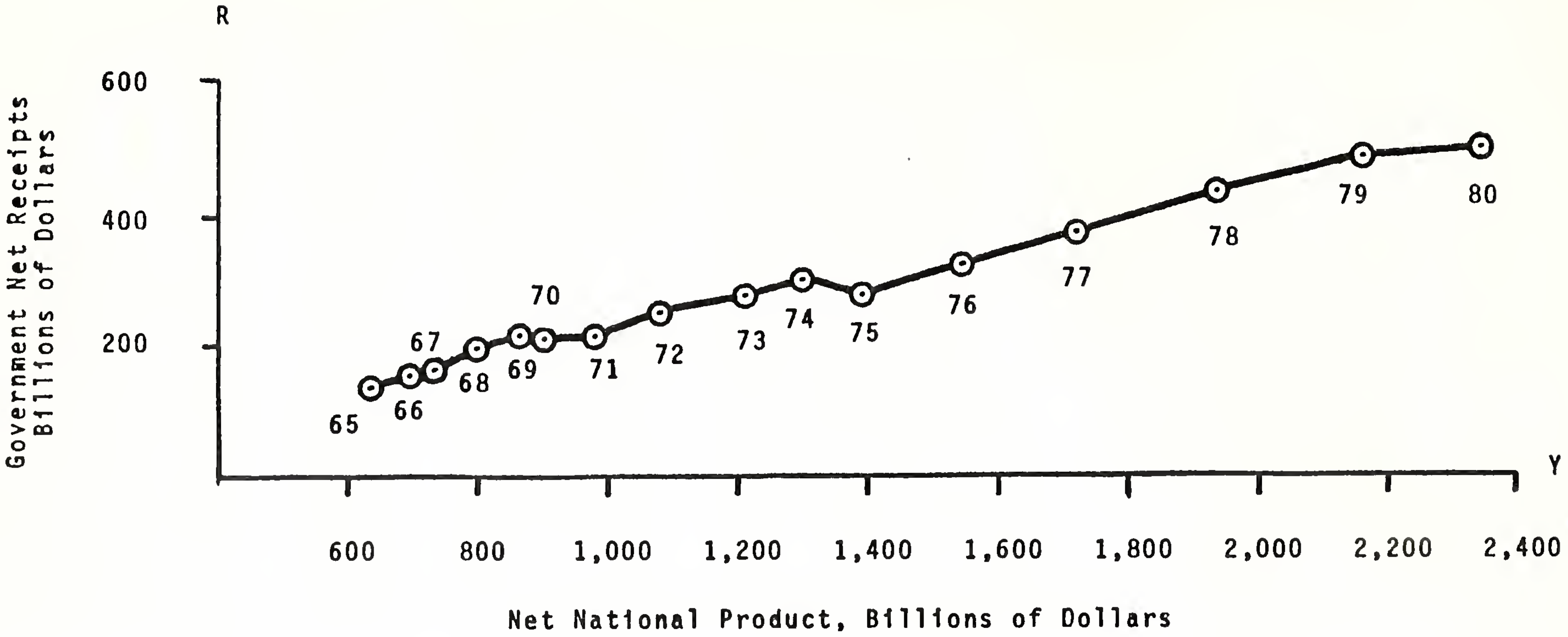
A Consumption Function
United States, 1965-1980

in place and appear as completed investment in the national income accounts. As a result, the current-year investment-product ratio could be expected to reflect a previous-year rather than a current-year real rate of interest. Will it?

Figure 3 plots the current-year ratio between net private domestic investment and net national product as a function of the previous-year common stock yield. Figure 3 shows a visible tendency for years having a high real rate of interest to induce next year an investment-product ratio lower than that induced by years having a low real rate of interest. But no more than a tendency is visible. The first thirteen years 1965-1977 cluster along a distinct beam, but the last three years 1978-1980 veer off the beam and display a higher investment-product ratio than one would have expected from real rates of interest as high as between five and six percent.

4. A Consumption Function

Figure 4 is our venerable consumption function. Personal consumption expenditures in billions of 1972 dollars are plotted as a function of disposable personal income, also in billions of 1972 dollars. There is the familiar tendency for years having high disposable personal income to induce a personal consumption expenditure higher than that induced by years having low disposable personal income. As usual, but with the one exception of the first oil shock 1973-1974, consumption and income are both monotonically rising.



Economic Report of the President Transmitted to the Congress January 1981
Washington, D. C., 242 and 252.

Figure 5

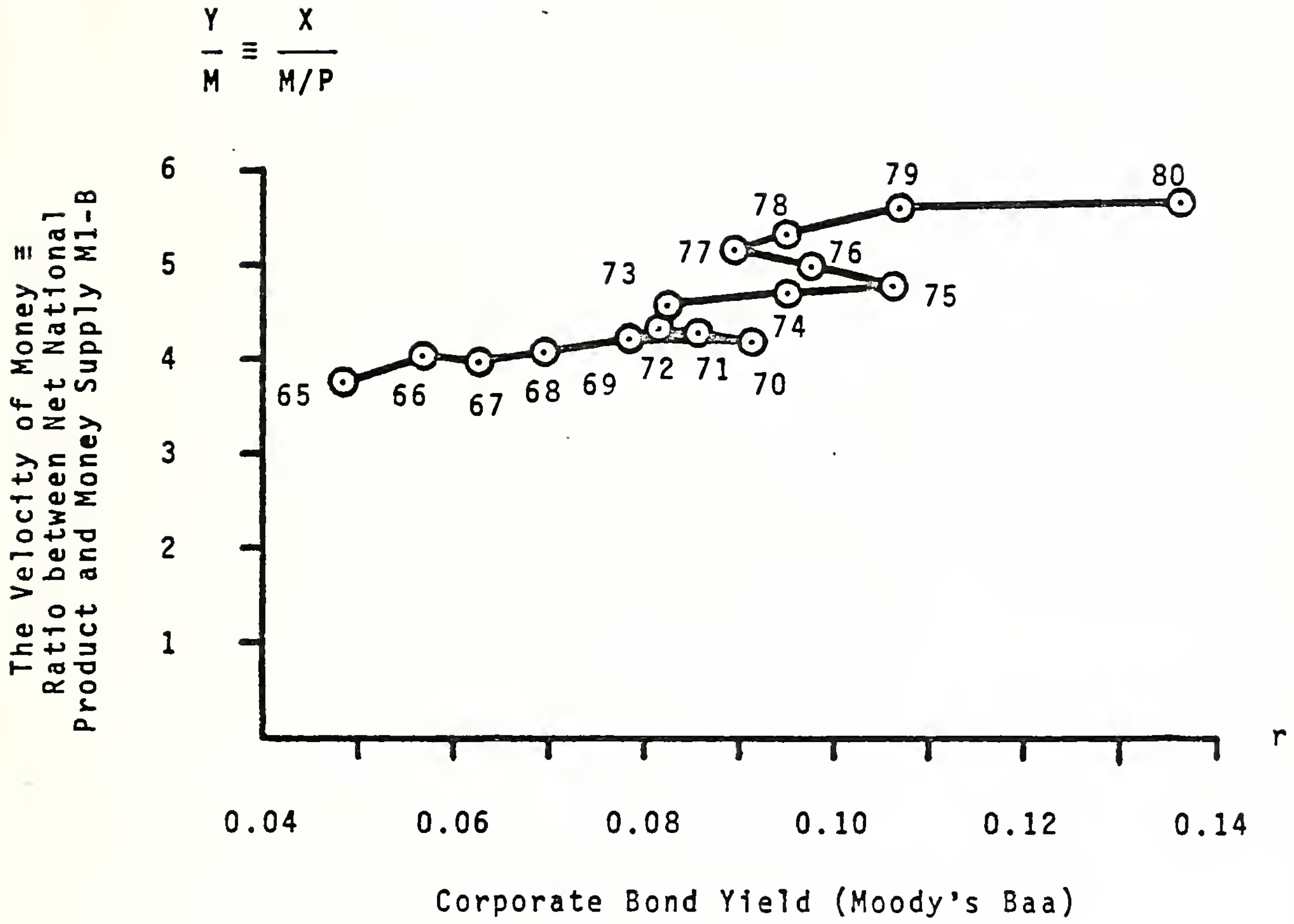
A Tax-Revenue Function
United States, 1965-1980

After the 1973-1974 oil shock the consumption was never the same. Before the shock its slope was well below 0.90. After the shock the slope is much higher. Clearly consumers have met accelerated inflation by saving less.

5. A Tax-Revenue Function

Government gross receipts are defined as personal tax and nontax payments plus corporate profits tax liability plus indirect business tax and nontax liability plus contributions for social insurance. From government gross receipts subtract the part of it paid back to the private economy in the form of transfer payments, subsidies, and interest on government debt and arrive at government net receipts. The part paid back to the private economy is a compensation for no goods or services produced, hence is part of neither net national product nor national income but is part of disposable personal income. Disposal personal income equals net national product minus undistributed corporate profits after tax minus government gross receipts plus transfer payments, subsidies, and interest on government debt. Or, ignoring what the government collects with one hand only to pay back with the other, disposable personal income simply equals net national product minus undistributed corporate profits after tax minus government net receipts.

May we ignore what the government collects with one hand only to pay back with the other? We may if our focus is the dichotomy



Economic Report of the President Transmitted to the Congress January 1981, Washington, D. C., 252, 301, and 308.

Figure 6

Velocity of Money and the Nominal Rate of Interest
United States, 1965-1980

of government versus private. We may not if our focus is income redistribution or the incentive effects of transfer payments and taxes. The people from whom the goverment collects with one hand are not the same as those to whom the government pays back with the other.

Figure 5 plots government net receipts as a function of net national product. There is a clear tendency for years having a high net national product to generate government net receipts higher than those generated by years having a low net national product. With the one exception of the first oil shock 1974-1975, net receipts and net product are both monotonically rising.

6. Velocity of Money and the Nominal Rate of Interest

Money M serves the purpose of tranacting the money value Y of the net national product, hence will normally be growing at the same rate as the latter. Only if the demand for money were a function of something else than Y would the ratio Y/M be varying. What does that ratio represent?

The money value Y of net national product is measured in dollars per annum, but the money supply M is measured in dollars. Dividing the former by the latter yields a flow-stock ratio having the dimension pure number per annum. That is nothing but the number of times per annum that money transacts product, i.e., the velocity of money.

What could that something else than Y be of which the demand for money were a function? It could be the cost of holding money, but which cost, the nominal or the real rate of interest? The opportunity cost of holding money in noninterest-bearing liquid form is the nominal rate of interest it could earn in an interest-bearing form. So if the nominal rate of interest were up, money would be more expensive to hold, and firms and households could be expected to try to hold less of it by making it circulate more rapidly. Will they?

Figure 6 measures the velocity of money as the ratio between net national product and the money supply M1-B. The latter, in turn, is defined as currency plus demand deposits plus other checkable deposits at banks and thrift institutions. Figure 6 plots the velocity of money thus measured as a function of the nominal rate of interest represented by the corporate bond yield.

There is a visible tendency for years having a high nominal rate of interest to induce a velocity of money higher than that induced by years having a low nominal rate of interest. But no more than a tendency is visible. Like figure 1, figure 6 comes, as it were, in three layers. This time they are 1965-1972, 1973-1976, and 1977-1980. It has always been said that the velocity of money is a matter of habits of payments, and perhaps it takes shocks to change habits.

7. Conclusion

With a minimum of technique we have arranged pairwise twelve key macroeconomic variables and drawn scatter diagrams of six macroeconomic functions, i.e., a Phillips function, a two-rates-of-interest function, an investment function, a consumption function, a tax-revenue function, and a velocity-of-money function.

The scatters form beams of widely differing width. But even the narrowest beams, those of the consumption and tax-revenue functions, show the powerful impact of the food and oil shocks.

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