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REVIEW

CONTENTS

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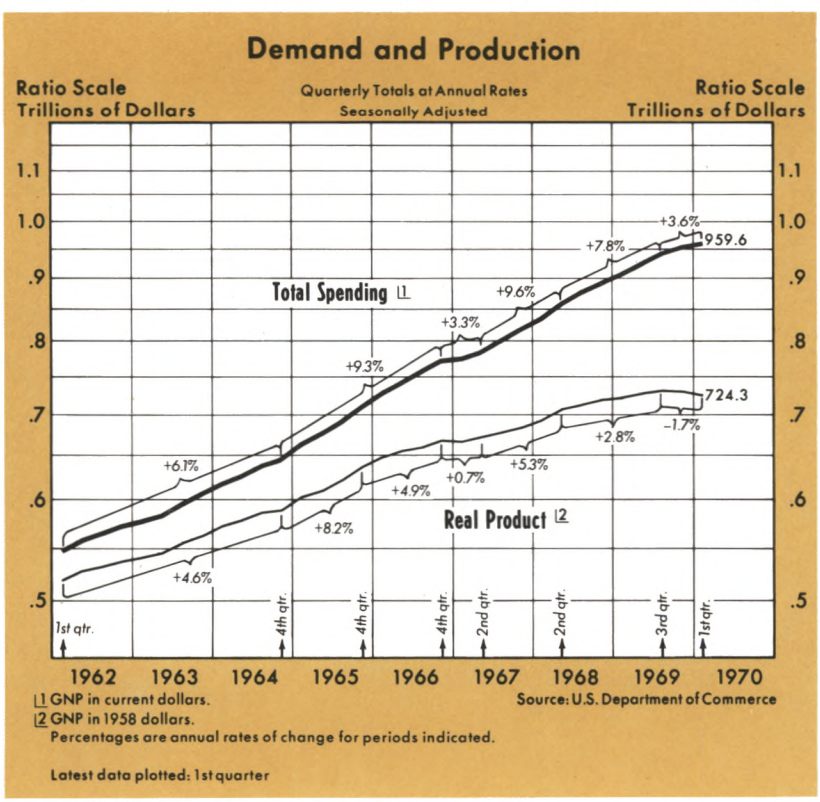
Transition to Reduced Inflation

GROWTH OF TOTAL SPENDING slowed further in the first quarter of this year, following a significant moderation late last year. This reduced expansion of total spending has been accompanied by a substantial decline in real economic activity with little change in the upward trend of prices. The goal of a reduction in the rate of increase of prices remains to be achieved.

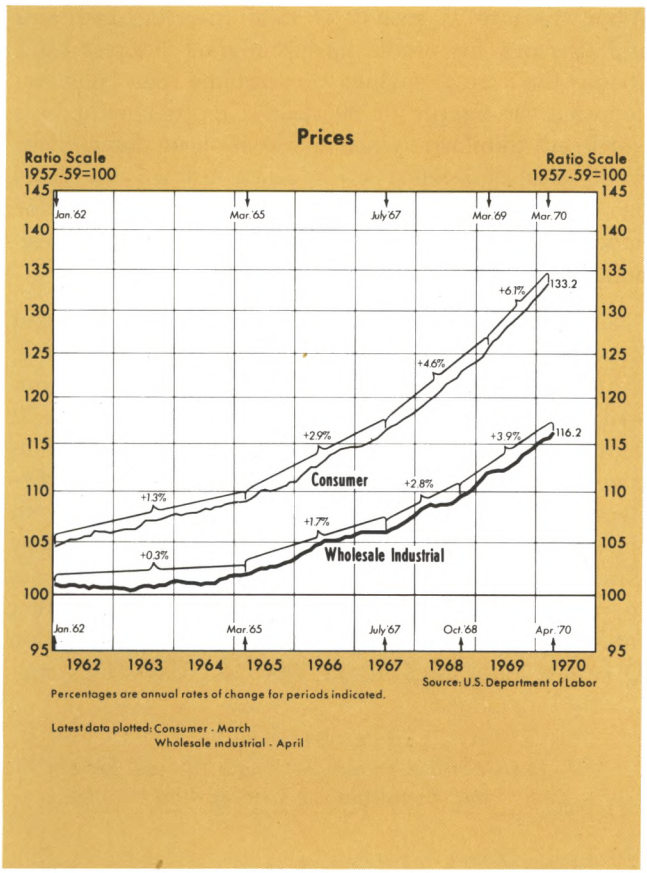
Reduction in the rate of inflation typically follows a slowdown in the growth of total spending with a substantial lag. It took several years to significantly reduce each of the other postwar inflations, and the current inflation is the strongest we have experienced in the last twenty-five years. As a result, the rate of increase of prices can be expected to come down slowly in response to a moderated expansion of total spending. Real product will probably continue for some time to bear most of the impact of the reduced rate of growth of spending, but further reduction in real economic activity seems likely to be more mild.



The Effects of Restraint

Total spending is estimated to have increased at only a 3.6 per cent annual rate from the third quarter of 1969 to the first quarter of this year, markedly slower than the 8.5 per cent rate during the previous two years. The reduced growth of total spending since last fall includes moderation of spending for consumer durables and for inventories. Spending for consumer durables, normally one of the first activities to feel the pinch of public policy restraint on total spending, fell slightly from the third quarter, after increasing at a 10.7 per cent rate in the previous two years. Inventory accumulation slowed sharply in the first quarter of this year in response to sluggish sales. Total nonfarm inventories increased at a $0.4 billion annual rate following an increase of $7.8 billion in 1969.

Prices – The GNP deflator, often used to measure changes in general prices, showed a 6.3 per cent annual rate of increase in the first quarter of this year, but is not an accurate indicator of price trends in this instance. The accounting procedure used to measure total spending treats Government pay raises as increases in the prices paid by the Government sector. Thus the recent Government pay increase, retroactive to January, was entered into the first quarter data as an increase in the GNP deflator. Therefore, the general price index for the quarter must be received cautiously. Without the pay increase, the index rose at a 5.3 per cent annual rate in the first quarter, about the same rate as in the previous year. The distortion of the price data caused by the handling of the Government pay increase is indicated by the behavior of the other price measures in the same period. Consumer prices, for example, rose at a 6.3 per cent annual rate from late fall to late winter, compared with a 5.8 per cent rate in the preceding year. Prices of wholesale industrial commodities rose at a 4.3 per



cent rate from late fall to late winter, compared with a 4 per cent rate in the previous year. It seems reasonable to conclude, therefore, that the rate of increase of general prices did increase from the fourth quarter to the first quarter, but not by as much as the general price index indicated.

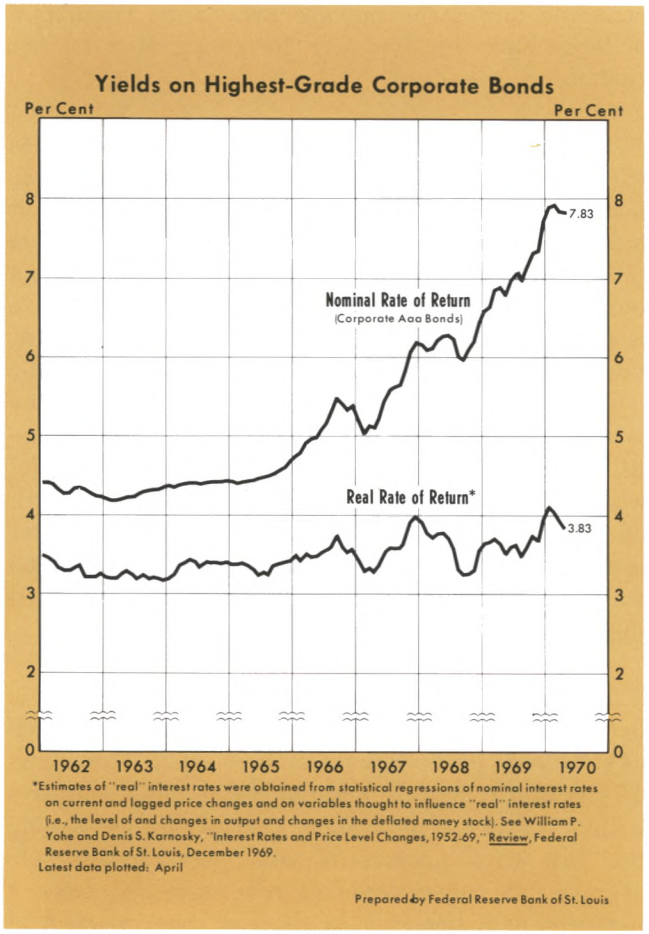
While care must be taken in analyzing the apparent acceleration of inflation in the first quarter, one must also remain aware that the pace of inflation has not yet moderated. Furthermore, there is little evidence that the rate of increase of prices will decline sharply in the near future. Instead, the rate of inflation will more likely decline slowly, in response to moderated growth of total spending.

Output – Real product fell at a 1.7 per cent annual rate from the third quarter of 1969 to the first quarter of this year. Industrial production declined at a 3.2 per cent annual rate from July to April. Paralleling the decline in the growth of total spending, the demand for labor, especially in manufacturing, has weakened. Total employment was about unchanged from January to April, compared with a 2.7 per cent rate of increase during the previous two years. Payroll employment has increased at about a 1 per cent annual rate since last fall, compared with about a 3 per cent rate during the previous two years. Population of labor force age has been increasing at a 1.6 per cent rate.

The recent slowdown of real economic activity was inevitable if the inflation rate of the past four years is to be reduced. Over the past few years production increased at unsustainable rates under the pressure of excessive growth of total spending. Real product increased at a 5 per cent rate from mid-1967 to late 1968, compared with an estimated 4 per cent rate of increase in capacity. During that period the rate of unemployment fell to 3.4 per cent of the labor force, and shortages of skilled labor became widespread. Employment of progressively less efficient workers contributed to a marked reduction in growth of labor productivity. Output per man-hour, after increasing at a 3.6 per cent rate from 1961 to 1965 and a 2.8 per cent rate from 1965 to 1968, decreased slightly during 1969.

The economic slowdown since last summer has been quite mild, however, compared to other periods of slowdown in the last twenty-five years. The recent 1.7 per cent rate of decrease of real product compares with a 4.7 per cent average rate of decline during the first two quarters of other contractions. On average, the unemployment rate increased from 4 per cent to 6 per cent in the first two quarters of other postwar slowdowns, yet the average quarterly rate increased from 3.6 per cent of the labor force to 4.2 per cent in the first two quarters of this slowdown. Corporate profits after taxes have declined at about a 14 per cent annual rate since the third quarter of last year, markedly less than the average 30 per cent annual rate of decline experienced in the first two quarters of previous contractions. Most other measures of economic activity have also moderated much less than in similar periods in the past.

Interest Rates – Short-term interest rates declined rather sharply early this year, probably reflecting a shift in market expectations as it became apparent that economic activity was slowing. The yield on 4- to 6-month commercial paper fell from an average of 9.00 per cent in early January to 8.03 per cent in late March. The rate on Treasury bills declined from 8.02 per cent in January to 6.16 per cent in late March. Subsequently, short-term rates have risen somewhat. The rate on commercial paper averaged 8.33 per cent in early May and the rate on Treasury bills averaged 6.80 per cent. Long-term interest rates have changed little on balance since early in the year.

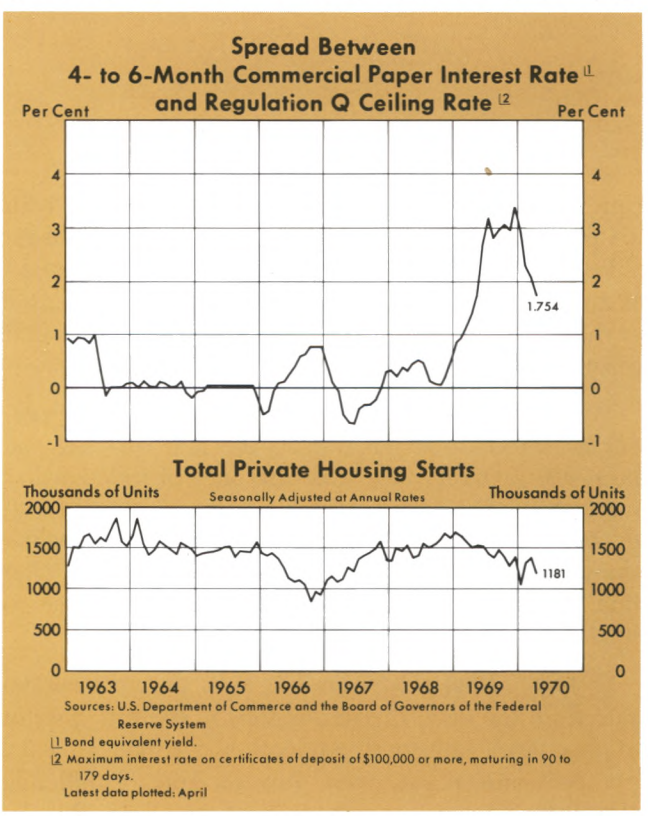


The yield on seasoned corporate Aaa bonds averaged 8.04 per cent in early May, up slightly from a 7.90 per cent yield in early January. Failure of long-term interest rates to decline as economic activity has weakened suggests continued strong demand for long-term funds, probably bolstered by expectations of continuing inflation.[1]

In the past, interest rates have generally declined along with economic activity, and were apparently expected to fall with moderation of spending this year. Never before in the postwar period, however, have interest rates been so influenced by inflation as since 1966. Expectations of inflation have accounted for most of the rise in interest rates since 1966, and if rates are to fall significantly, these expectations must first be reduced. There is little prospect of reducing expectations, however, until the actual rate of inflation begins to slow.

Trends in housing are influenced considerably by Government regulations which set the maximum interest rates savings institutions can pay on deposits.[2] When the rate of growth of total spending increases and demand for credit pushes market interest rates above the rates savings institutions can pay on deposits, the supply of residential mortgage funds is restricted. Similarly, when moderation of demand for credit pushes interest rates down toward the level paid on time deposits, the flow of funds into time deposits increases, and expands the supply of residential mortgages.

Since there are only limited amounts of saving and loan funds available in the economy at any one time, shifts in the demand for funds for nonresidential construction have caused changes in the amount of credit supplied for housing. The accompanying chart compares residential housing starts with the spread between market interest rates and the ceiling rates on time deposits under Regulation Q.[3] There is a very close correspondence between periods of weakness in residential construction and periods when market interest rates were significantly above the Regulation Q ceiling rates, such as in 1966 and 1969. This suggests that with current Regulation Q ceilings, interest rates in 1970 would have to be significantly lower



[1]See this *Review* (December 1969), pp. 18-38.
[2]See this *Review* (June 1968), pp. 5-12.

[3]Under the provisions of Regulation Q, the Federal Reserve sets the maximum interest rates commercial banks can pay on time and savings deposits. Similar regulations on savings institutions are administered by the Federal Home Loan Bank Board and Federal Deposit Insurance Corporation.

than they were last year if residential construction is to increase significantly.

The Government has recently been attempting to induce large institutional investors to place more funds in the housing market in order to encourage residential construction. Such a program would have little effect on total credit available in the economy. While it could lead to more housing construction, this plan would tend to reduce the flow of funds into other credit markets.

Monetary and Fiscal Actions in 1970

The rate of inflation probably cannot be reduced rapidly, but a gradual decline is possible. Should spending continue to grow at a reduced pace, the rate of resource utilization will continue to fall and contribute to slowing in the rate of inflation. If the growth of total spending were to accelerate, however, the pressure to cut back on production would ease significantly. This would mean that the pressure to hold back on price increases would also be reduced.

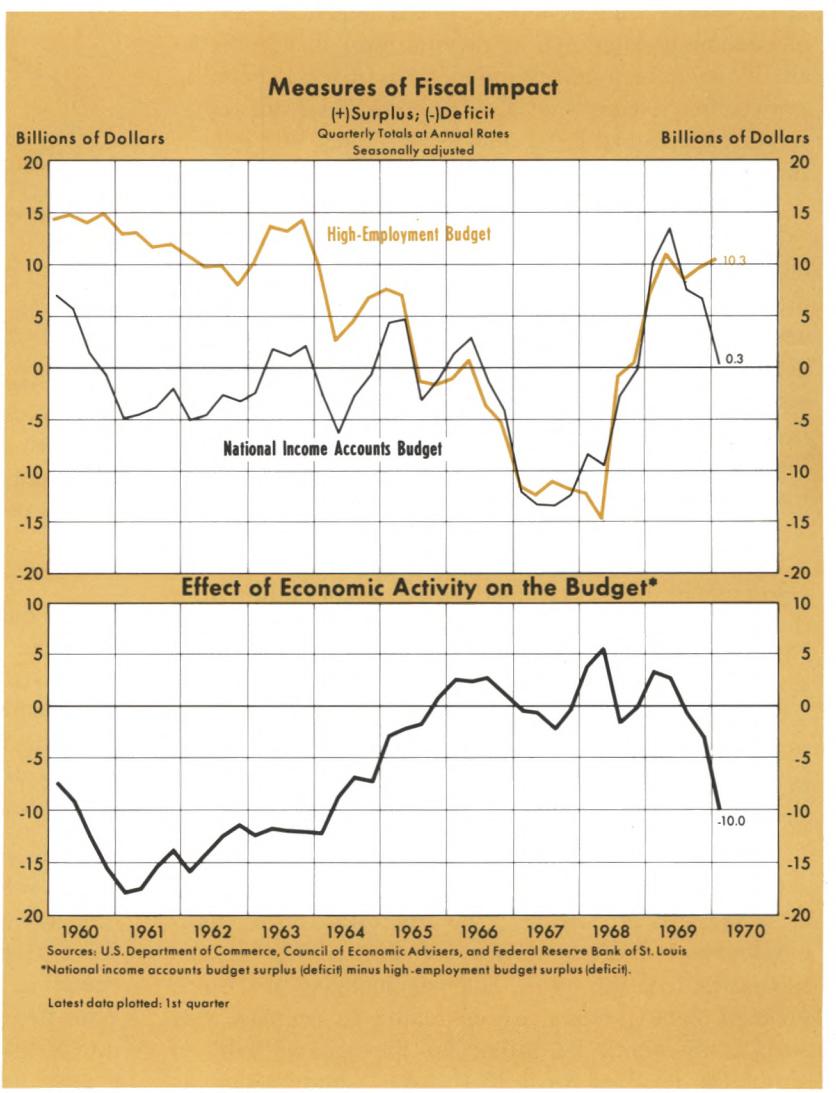
The strength of total spending through the rest of this year depends in large part on the past and future course of monetary and fiscal actions. The effect of last year's restrictive policies continues to be a strong force in the economy, while recent and future actions will have progressively more influence as the year proceeds.

Monetary Actions — The trend of monetary actions has apparently shifted in the first quarter of this year. The money stock rose markedly in March and April and has increased at a 5.7 per cent rate since December, following a six-month period of no growth.

Resumption of monetary expansion should not be expected, however, to produce sharp and sustained declines in interest rates. An increase in the rate of monetary expansion can restrain interest rates for a short period by increasing liquidity and the supply of credit, but the effect is not long lasting. Increased monetary expansion also stimulates total spending with a brief lag, which in turn results in higher prices, stronger expectations of inflation, and in upward pressure on interest rates from increased demand for credit.

Reduction of money growth tends to have the opposite effect on interest rates. In the short run, interest rates may rise in response to monetary restraint. After a few months, however, the slower growth of money causes growth of total spending to slow and the demand for credit to moderate. The net result is downward pressure on interest rates.

Fiscal Actions — In January the Federal Government proposed a budget for fiscal 1971 which suggested that fiscal actions would remain restrictive. A budget surplus of $1.3 billion was planned, about the same as was expected for the current fiscal year. Since January there have been several fiscal actions which threaten to shift the budget for both fiscal 1970 and fiscal 1971 from surplus into deficit. The recently enacted 6 per cent pay increase for all Federal em-



ployees seems likely to increase budget expenditures above the January estimates by $1.2 billion in the fiscal year ending June 30 and by $2.6 billion in fiscal 1971.

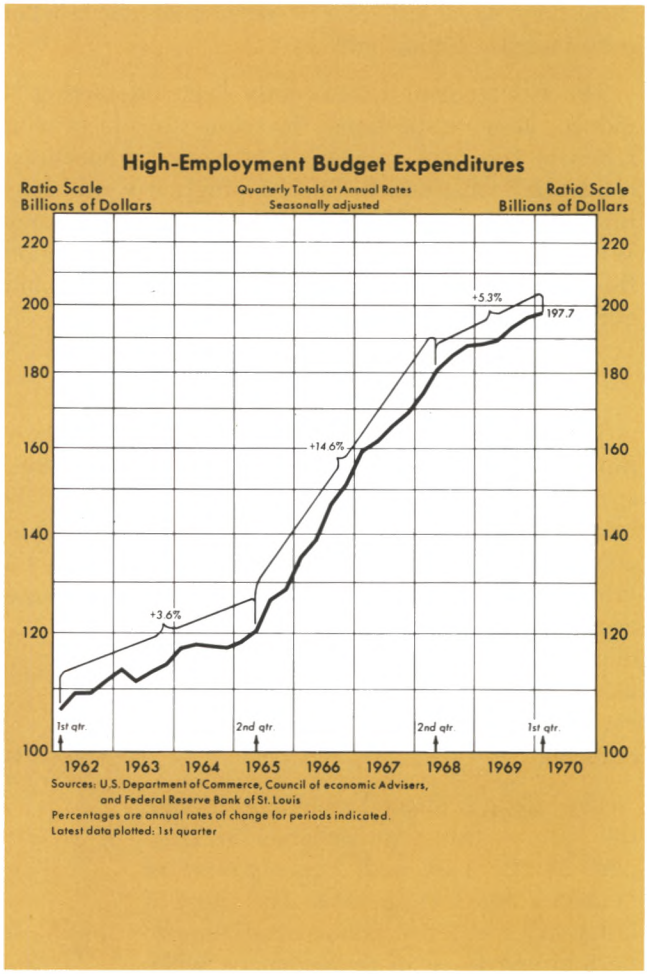
The budget picture is further clouded by the probable course of economic activity. Growth of tax revenue normally slows in periods of business slowdown, and if the economy continues on its current path or even picks up moderately, the Government can expect only slow growth in revenue. This would serve to push the budget further into deficit, unless Federal Government expenditure growth is curbed beyond current plans.

The prospect of a budget deficit suggests to some observers that the Government would be contributing to further inflation. Care must be taken, however, in attaching too much significance to budget figures in analyzing the effect of fiscal actions on economic activity. The budget tends toward deficit in periods of economic slowdown as revenue growth automatically slows in response to moderation of total spending growth in the economy. This response does not represent expansionary fiscal actions or policy but reflects the effect of slower economic expansion on the budget.

The high-employment budget was developed to eliminate some of the misleading information about fiscal actions which arises from actual budget figures, and was first popularly used in the early 1960's to argue that fiscal actions were actually restrictive despite large deficits in the actual budget. It removes most of the effect of real economic activity on the budget and attempts to indicate only the effect of the budget on economic activity.

Growth in Government spending, on a high-employment basis, has moderated considerably from the high rates of increase experienced in 1966 and 1967. Although the pay increase for Federal employees and increased Social Security benefit payments will cause a large increase in the second quarter of this year, the growth in expenditures from late 1969 to late 1970 is expected to be at about the same rate as in the previous year.

Government spending and revenue in fiscal 1971, as proposed in January, would result in a high-employment budget surplus of $13 billion in the second half of this year. The pay increase provisions enacted since January are estimated to decrease this surplus by about $4 billion in the second half, to about the level of fiscal 1970. Actual budget deficits



which develop in response to continued moderation of economic activity might be as large as those of the 1961-63 period. As was true then, however, they need not indicate a shift in the influence of fiscal actions on the economy toward stimulus.

Conclusions

The mild slowdown experienced since last fall has been the logical consequence of restrictive monetary and fiscal actions. Businesses have responded to moderation of total spending growth by cutting production, but only later will the effect of reduced growth of spending be reflected in a slower advance in the level of prices.

There is no reason to expect sudden improvement in the rate of inflation. Eliminating substantial inflation has never been a quick or painless process, and the current inflation is the strongest we have experienced in the postwar period. There appears to be little danger that the current slowdown will develop into a full-blown recession. It appears that the danger, if any, is in the other direction.

Let's Not Retreat in the Fight Against Inflation

A speech by DARRYL R. FRANCIS, President, Federal Reserve Bank of St. Louis, before the Mississippi Bankers Association Convention, Buena Vista Hotel, Biloxi, Mississippi, May 19, 1970

THIS IS A WELCOME OPPORTUNITY to discuss my view of the state of our economy with friends of long standing, the bankers of Mississippi. As business leaders in Mississippi and in your local communities, it is, of course, always important that you keep in touch with economic stabilization efforts to promote a high level of employment and relatively stable prices. At this particular time, I want also to discuss with you some pitfalls which could threaten the success of those efforts and defeat their objectives.

By way of background, I will examine two topics, tracing first the development of our inflation since 1965, and next, some reasons for the extremely slow response of inflation to monetary and fiscal restraint of the past two years. This background is essential to my principal point which is this – a possible threat to the success of current stabilization actions. This threat comes from some frequently expressed desires to achieve several good but incompatible objectives by year's end – namely, a markedly lower rate of inflation, little further rise in unemployment, and a sharp reduction in market interest rates. I say actions to accomplish these short-run objectives constitute a threat because attaining any one of them would require extreme monetary actions, leading to later conditions quite contrary to desired policy objectives. Moreover, these near-term objectives cannot be achieved simultaneously.

In developing the background topics and outlining the possible impediments to achieving current policy objectives, my remarks will draw heavily on recent research at the Federal Reserve Bank of St. Louis. For the past two years our economists have been attempting to quantify the response of total spending, real output, the price level, the unemployment rate, and market interest rates to monetary and fiscal actions. Monetary actions in this research are measured by changes in the nation's money stock – that is, demand deposits and currency held by the nonbank public. Fiscal actions refer to changes in spending and taxing provisions of the Federal Government budget.

One important conclusion suggested by these studies is that actions of the Federal Reserve which change the rate of monetary expansion exert a relatively quick and pervasive influence on total spending, and changes in Federal Government expenditures relatively less, unless accompanied by accommodating changes in the money stock. Changes in Federal taxing provisions are found to have an insignificant influence on total spending.

Current Inflation

I turn now to my first background topic – an examination of our inflation since 1965. After six years of relative price stability from 1958 to 1964, we have since experienced accelerating inflation. The general price level rose at a three per cent annual rate from late 1965 to mid-1967, then at a four per cent rate to the end of 1968, and finally, during the past five quarters, at a five per cent rate. The inflation rate shows few signs of abating up to now.

This five-year record of accelerating inflation resulted from the pressure of total spending on the ability of our economy to produce goods and services, particularly since early 1966. From the first quarter of 1966 to mid-1968, total spending rose at a 7.5 per cent annual rate, while output of goods and services grew at about a four per cent rate, or approximately the rate of growth of the economy's productive potential. At full employment of our resources, expansion of real output depends on growth in the labor force, capital plant, and technology. In recent years these factors have fostered growth of production potential at about a four per cent annual rate.

By 1968 and 1969, inflation had developed a very strong momentum which has complicated greatly the problem of reducing the rate of increase of prices.

This momentum is the result of households, businesses, and labor unions attempting to protect their economic positions by building anticipated price increases into contracts for goods, services, and loans. In this manner, the "demand pull" inflation of 1965 to 1968 was subsequently changed into "cost push" inflation. I want to point out, however, that excessive total spending was the basic cause of our present inflation problem, and that the so-called cost push inflation is also a result of earlier excessive total demand.

Where did the excessive increase in total spending come from? Mainly it was a result of overly expansive monetary actions. The money stock increased from April 1965 to April 1966 at a six per cent annual rate, at that time the fastest rate since the inflationary period of the Korean War. Following 1966 when the money stock remained unchanged for eight months, money grew at a seven per cent rate during 1967 and 1968, the most rapid rate since World War II.

That period when the money stock remained unchanged during the last eight months of 1966 set the stage for curbing inflation. This could have led to a balanced rate of spending if it had not been followed by resumption of expansion in money at a very rapid rate in 1967 and 1968. Our studies indicate that if expansion in money had been maintained at a moderate four per cent rate instead of the seven per cent rate actually recorded in 1967 and 1968, the rate of inflation since late 1966 most likely would not have surpassed 3.5 per cent, instead of reaching five per cent as it did last year. Moreover, if the four per cent growth in money had been maintained up to the present, the rate of inflation would be receding, and if that moderate rate of monetary expansion were to be continued through 1972, price increases would be down to about a 1.5 per cent rate by the end of that year.

Excessive total spending has not only been the cause of price inflation but also of the great increase of market interest rates during the past four years. Our research indicates that market interest rates are highly responsive to anticipated price changes. Past increases in the price level, such as those during the last five years, cause participants in the money and capital markets to expect a continued high rate of inflation. An inflationary premium is thus built into market interest rates. We attribute almost all of the sharp rise in market interest rates since 1966 to an accelerating inflation fostered by excessive monetary expansion.

As was the case with the general price level, the monetary restraint of 1966 set the stage for lower interest rates. Our studies indicate that a moderate four per cent growth in money from the end of 1966 to the end of 1969 would have produced a peak in short-term interest rates, as measured by the rate on four- to six-month commercial paper, of around 5.5 per cent, and these interest rates would have been about 4.5 per cent this spring, instead of the present eight per cent or more. Further continuation of this moderate growth in money would have produced short-term interest rates heading to below four per cent by late 1972. Long-term interest rates would have moved in a similar manner. With a four per cent growth in money, seasoned corporate Aaa bond rates would have probably peaked at about 6.25 per cent, would likely have been about 6 per cent this spring compared with the actual level of almost 8 per cent, and would be moving to about 5 per cent in late 1972.

It must be evident to everyone that our failure to take advantage, during 1967-1968, of the eight months of restraint in 1966 was a golden opportunity lost. Had the period of restraint been followed by a moderate, instead of rapid monetary expansion, the many economic dislocations caused by the continuation of high and accelerating rates of inflation after 1966 could have been prevented. Commercial banks and savings institutions could have done very well with short-term market interest rates not in excess of 5.5 per cent, as these institutions would not have undergone the problems caused by the disintermediation of the last three years.

Furthermore, the housing industry would have been in much better condition throughout this period. Labor contract negotiations today would have been less acrimonious and disruptive. And, of course, the whole of society would have benefited by a lesser rate of inflation.

A logical question to be asked is, "Why was this opportunity to control inflation lost?" The published record and statements of prominent economists indicate several reasons. First, there was the mistaken belief at the time that easing actions of monetary authorities could prevent increases in market interest rates in the short run or, as some argued, actually lower them permanently. Such actions were deemed desirable in order to shelter savings institutions and the housing industry from market forces set in motion by the excessive total spending. Second, many argued that monetary actions, as indicated by changes in the money stock, have little influence on total spending. As a consequence, those holding this view were little disturbed by the exceedingly rapid growth in the money stock. Third, in contrast with the previous

view, many believed that rapid growth in money was desirable in early 1967 to avoid an anticipated recession. Finally, the national debt was increasing, and it was thought desirable by many that the Federal Reserve "even keel" the money markets at times of Treasury financings.

All of these reasons have proven to have been spurious. The resumption of rapid monetary growth in 1967 and 1968 gave us higher interest rates, not lower; less funds for housing, not more; greater strains in the financial markets, not less; and more difficulty with managing the Federal debt, not less.

Slow Response to Recent Stabilization Actions

With inflation mounting, restraining actions have been adopted since mid-1968, but the response of inflation has been agonizingly slow. People naturally ask why. The answer is fairly simple – as a result of avoiding monetary actions to curb inflation until 1969, an inflationary momentum was allowed to develop. As a result, the general price level has continued to rise rapidly up to the present time, and market interest rates remain near their extremely high levels of late 1969. This is the legacy of the excessive total spending from 1965 to 1968, which requires more restraint and patience to overcome now that inflation is moving under its own momentum.

As a step toward restraint, monetary expansion was reduced to a four per cent rate during the first half of 1969. Further restraint was applied in the second half of 1969 when there was no growth in money. The impact of such monetary actions has fallen primarily on total spending and real output of goods and services and not, as yet, to any appreciable extent, on the price level.

Some have begun to question whether monetary restraint will result in slower growth in the price level in a reasonable period of time. But our research indicates that a marked move to monetary restraint, such as we had in 1969, generally slows total spending with only a two- to three-quarter lag, and this was the case in 1969. Such a change in the rate of growth of total spending is accompanied by a simultaneous decrease in the rate of growth of output. And so it was in the last year. It is not until a further two or three quarters that prices respond appreciably to the slower growth in spending. So we should not have expected price restraint in 1969. The course of the price level depends not only on total spending but also on anticipated price movements. The greater the anticipated rise in prices, the longer delayed is the response of the price level to monetary restraint. This is what we mean by the problem of inflationary momentum.

So here we are again in 1970, with the stage set for reducing the rate of price increase, just as was the situation at the beginning of 1967. But 1970 is not exactly like 1966: inflation has built up a longer and stronger momentum since then. Consequently, it is more difficult to curb inflation this time; and the public, as well as economic policy makers, must be patient in waiting for the results of monetary restraint to appear.

Many have become concerned that the extreme monetary restraint of 1969 may result in excessive retardation of economic growth and have recommended a resumption of monetary expansion. I, too, share these concerns, and I favor a moderate rise in the money stock. We should avoid, however, a repeat of the 1967-1968 experience when concern over a possible recession was one of the major bases for excessively stimulative monetary actions. This effort will take time – longer than it would have taken if pursued to completion following 1966. Now, as many as three more years will probably be required for the rate of price advance to fall below two per cent, assuming a moderate rate of growth in the money stock.

While moderate growth in money will reduce price increases to a tolerable rate by late 1972, this achievement will not be without some transitional costs. During the next three years, growth of real output would remain below the economy's productive potential, and, as a result, the unemployment rate would continue to increase. If our measurements of the response of prices and unemployment to stabilization actions are reasonably correct, and I believe they are, the excesses of 1965 to 1968 cannot be corrected without temporary costs in terms of lost output and employment opportunities.

Some Threats to a Successful Fight Against Inflation

I turn now to my final subject – some possible threats to a successful fight against inflation. Many may not be satisfied with the price level, output, unemployment, and interest rate movements between now and late 1972 that I have just indicated are likely to follow from a moderate rate of monetary expansion. Many recommend that present stabilization actions be altered so that in 1970 the rate of inflation be reduced to below four per cent. Others argue that the unemployment rate should not be al-

lowed to reach five per cent this year. Some propose that market interest rates be reduced markedly in the near term. It is argued that once these immediate objectives have been achieved, moderate monetary growth can safely be resumed in 1971 and 1972.

But these desired accomplishments are not mutually compatible. To achieve any one of them this year, we are probably not willing to consciously pay the costs in terms of the other two. In addition, achieving any one of these short-run objectives may set in motion forces which would lead to unacceptable consequences at the end of two or three years.

I have already indicated that a policy of moderate four per cent rate of monetary expansion during the next three years will most likely produce reasonably stable prices by late 1972, along with lower interest rates. Let us now examine the implications for late 1972 of alternative monetary policies over the balance of this year which would be designed to achieve the three short-run objectives I have just outlined. In each case, I will assume, after 1970, a four per cent rate of growth in money. Given the existing inflationary momentum, extreme monetary actions in terms of growth in money would be required to achieve any one of the three objectives by the end of this year.

Let us first examine the proposal that the rate of inflation be reduced below four per cent by the end of this year. Many have actually forecast a rate of price increase in the 3.5 to 4 per cent range. In order to accomplish this objective – a rate of inflation below four per cent – the money stock would have to be *decreased* at about a four per cent rate from the first to the fourth quarter. The price situation would be very good in 1972, when the price level would be rising very slowly. Such an action would result now, however, in an extremely severe recession. Output would probably decrease sharply during the next five quarters, and the unemployment rate would be markedly higher in 1972 than now. In my opinion, the employment and output costs of attaining rapid price level restraint in 1970 would be far too high for it to be given serious consideration.

The next short-run proposal to be examined is the one calling for actions to avoid further recession and to hold the unemployment rate below five per cent during the remainder of this year. This proposal is based on the same kinds of fears of a recession as, in early 1967, led to a high rate of growth in the money stock. Accomplishment of this objective, according to our studies, would require a ten per cent rate of monetary expansion during the last three quarters of this year.

Such a course of monetary action would provide little reduction in the rate of price advance this year and a rate of inflation still in excess of three per cent in late 1972. It could be said that this would be very slow progress in curbing inflation, and I would agree. This course of monetary expansion would result in only a temporary spurt of growth in real output. By 1972, as a result of the shift back to a moderate rate of monetary expansion, real output would be growing at about half the increase in full employment potential. Consequently, the unemployment rate would most likely increase to above 5 per cent by late 1972.

Finally, I would like to consider the possibility of achieving a sharp and immediate reduction in market interest rates. Such an objective has been suggested, just as in 1967 and 1968, in order to help savings institutions and the housing industry. With respect to long-term interest rates, because the inflation premium incorporated in them is so great, the rates could be affected only slightly by year's end even with extremely rapid monetary expansion. Furthermore, if rapid monetary expansion were used to reduce long-term rates this year, these rates would remain at relatively high levels through 1971 and into 1972. With respect to short-term rates, we may expect some declines this year if money supply increases only moderately. More rapid monetary expansion could bring slightly greater declines, but at the expense of higher rates in 1971 and 1972.

Pursuit of such an interest rate policy would result in no headway in controlling inflation this year and only slight improvement by 1972. As a result of the continuing high rate of inflation, short-term interest rates would soon return to their present levels, or higher, and long-term rates would rise further from their present levels. The year 1972 would still be one of high interest rates. But that is not the whole picture; the shift back to a moderate rate of money growth after this year would result in very slow increases in output in 1972 accompanied by a rising unemployment rate.

The preceding analysis suggests several implications. First, given the existing momentum of inflation, relatively stable prices cannot be achieved in a short period of time, unless we are prepared to accept very high costs in terms of reduced output and employment. Second, monetary actions in 1970 to achieve the short-run employment and interest rate objectives mentioned are self-defeating over the longer run. Third, delaying moderate monetary expansion until after the end of this year, in order to achieve these unemployment and interest rate objectives, would

seriously impede efforts to curb inflation within the next three years. Finally, if we are to contain inflation, there will be accompanying output and employment costs. Such costs can be postponed this year by high growth rates in money, but they cannot be avoided if we are ever to achieve relative price stability.

Conclusion

In conclusion, it is my opinion that the current resumption of monetary expansion be kept moderate and maintained for at least the next three years. Such a course, in my view, is optimal – it would produce relative price stability by 1972 without incurring as high a cost in terms of output and employment as would a more restrictive course of action. Although unemployment would rise, this problem in the long run cannot be treated by monetary and fiscal policy and should be treated by other means. For example, better approaches to ameliorate unemployment would be to remove the many impediments to the free functioning of our labor markets, to improve the mobility of our labor force, and to upgrade the skills of the disadvantaged.

As at the beginning of 1967, the stage is now set for achieving relatively stable prices. Let us firmly resolve to seize the opportunity. Let us further resolve that our patience will be equal to the time required. Above all, let us not throw away this opportunity for achieving price stability, as we did a few years ago. If we do, not only will our efforts to date go for nothing, but the battle against inflation will be more difficult and more costly the next time we attempt to make a stand. So this time, let's not retreat in the fight against inflation.

Neutralization of the Money Stock

by PATRIC H. HENDERSHOTT*

THE AUGUST 1969 ISSUE of this *Review* contained three papers dealing with the adequacies of the observed money stock as an indicator of Federal Reserve policy actions. In the first paper[1], Emanuel Melichar asserted, on the basis of my analysis[2], that the money stock is an inaccurate measure of policy actions. He suggested as an alternative my neutralized money stock – the observed money stock after removal of the impact of the business cycle. In the second paper[3], Michael Keran argued that observed money is a better indicator than neutralized money because the Federal Reserve offsets the impact of the business cycle on the money stock.[4] Finally, in the third paper,[5] Leonall Andersen examines empirically the argument that the money stock is influenced by the business cycle. He concludes that it is not.

In this short note, I first consider Keran's theoretical argument against neutralizing the money stock. Keran's argument is a familiar one that I had hoped my book would put to rest. I then point out that the results of Andersen's empirical work are neither inconsistent with my results nor very surprising. Andersen defines his monetary policy variable so broadly that there is scarcely any room left for an endogenous money stock.

Keran's Critique of the Neutralized Money Stock[6]

Keran's principal argument is that money is an exogenous variable controlled by the Federal Reserve, not an endogenous variable, and thus that it is the best measure of Federal Reserve policy actions. He seems willing to acknowledge that the banking system's demand for free reserves, foreigners' demand for the U.S. gold stock, and the public's demand for commercial bank time deposits are all negatively related to U.S. interest rates. He contends that money is not endogenous because the Federal Reserve acts to offset the impact of these responses on the money stock.

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[1]Emanuel Melichar, "Comments on the 'St. Louis Position,'" this *Review* (August 1969), pp. 9-14.

[2]Patric Hendershott, *The Neutralized Money Stock: An Unbiased Measure of Federal Reserve Policy Actions* (Richard D. Irwin, Inc., Homewood, Illinois, 1968).

[3]Michael Keran, "Reply," this *Review* (August 1969), pp. 15-18.

[4]He also mistakenly criticizes Melichar for using the neutralized money stock as a measure of the impact of all monetary influences on the economy. There is no basis for Keran's criticism. Melichar states explicitly in numerous places in his paper that the neutralized money stock is used as a measure of monetary policy actions only (see particularly pp. 11-12). Further, Melichar's use of a policy, rather than a total monetary, measure is appropriate because Bowsher and Kalish, in the paper that induced Melichar's response, were quite straightforward in their identification of changes in the rate of change in the money stock with changes in Federal Reserve policy actions. See "Does Slower Monetary Expansion Discriminate Against Housing?," this *Review* (June 1968), pp. 5-6.

[5]Leonall Andersen, "Additional Empirical Evidence on the Reverse-Causation Argument," this *Review* (August 1969), pp. 19-23.

[6]I want to correct one exception to Keran's otherwise quite accurate summary of my work. Keran asserts (p. 16) that I constructed the "modified-neutralized" money stock, which implicitly treats gold flows as if they were offset by Federal Reserve actions, because the Federal Reserve likely offsets such flows. My real reason for calculating this is clearly stated in the paragraph immediately preceding the figure containing the modified-neutralized money stock:

> The appropriateness of a comparison of Federal Reserve policy actions with the expressed intent of policymakers depends on whether the definition of policy actions employed is the same as that which the policymakers had in mind when they discussed their actions and issued directives.
>
> . . . Since it is likely that policy statements refer to actions net of offsetting gold movements, a modified-neutralized money stock, which differs from the neutralized money stock in that the impact of the business cycle is not removed from the gold reserves component, is calculated and compared with the expressed intent of policymakers (p. 132).

(A footnote is attached to this paragraph pointing out that a "neutral" policy was defined in the FOMC minutes as staying out of the market after offsetting gold flows.) Thus, Keran's statement (p. 16) that there "is no reason why Hendershott should have stopped with allowing only for offsetting actions with respect to gold" is incorrect.

The concept of an endogenous money stock can be formalized as follows. The money stock depends upon the actions of the Federal Reserve, denoted by the vector MP, and a vector of interest rates R:

$$(1) \quad M = f(MP,R),$$

where MP is defined so that increases in it lead to increases in M. Since an increase in interest rates leads to increases in free reserves and time deposits, which are uses of reserves, and to a decline in the U.S. gold stock, which is a source of reserves, money is unambiguously related to R in a positive manner.

The MP vector includes a source-of-bank-reserves variable, legal reserve requirements, the discount rate, ceiling rates on time and saving deposits, and other selective controls sometimes employed. In my book I treated the Federal Reserve's portfolio of government securities plus various minor reserve components as the source-of-bank-reserves variable.[7] Here I adjust this variable for changes in legal reserve requirements, denote it by P^*, and substitute P^* for MP, thereby capturing the principal monetary policy instruments in one variable:

$$(2) \quad M = g(P^*,R).$$

Let us make the unlikely assumption that the Federal Reserve *always* varies P^* so as to offset exactly the impact on M of changes in R. For example, if R falls, the Federal Reserve raises P^* by precisely enough to hold money constant. This would, indeed, remove money from the class of endogenous variables.[8] But it would hardly make the money stock an accurate indicator of Federal Reserve actions. In fact, we have explicitly assumed, following Keran, that every time interest rates change, the Federal Reserve takes actions that, on net, are not reflected in the money stock. And these actions are quite interesting. Since interest rates have tended to fall just prior to, or concurrently with, the onset of U.S. recessions, Keran implicitly admits that the Federal Reserve has taken expansive actions at this crucial juncture of the cycle. Moreover, because the money stock is unchanged, his position forces him to conclude that the Federal Reserve is essentially doing nothing.[9] Since only those actions over and above the offsetting ones are attributed to the Federal Reserve, this procedure is clearly biased toward an unfavorable interpretation of anti-recession policies. In contrast, I have argued that *all* Federal Reserve actions should be credited to the monetary authority.[10] Thus, in order to obtain an unbiased measure of Federal Reserve policy actions, I removed the impact of the business cycle from the money stock, leaving a series whose cyclical movement reflects only Federal Reserve actions (and other exogenous forces).

For an illustration of the implications of Keran's view, consider a business recession that leads banks to sell securities to the public and repay its borrowing from the Federal Reserve. Since the public gives up deposits in this exchange with banks, the stock of money declines. If the Federal Reserve offsets this decline by purchasing securities (in particular, by purchasing the securities the banks wish to sell, thereby preventing interest rates from rising and money demand from falling), Keran would interpret the Federal Reserve as doing nothing; if the Federal Reserve does nothing, Keran would interpret it as taking restrictive actions; if the Federal Reserve offsets only part of the decline by purchasing a portion of the securities banks are selling, Keran would interpret it as *selling* securities.

Keran's defense of the observed money stock as the best indicator of Federal Reserve policy actions is very reminiscent of the argument of those who use observed interest rates as the indicator of policy actions. The latter would view a decline in interest rates during a recession as indicative of an easy monetary policy, even if the Federal Reserve were partially offsetting a decline in private security supply by selling securities. Keran views a decline in the money stock during recessions as indicating restrictive actions, even if the Federal Reserve were partially offsetting a decline in bank demand by purchasing securities. The views are, of course, equally erroneous.[11]

Perhaps an analogy with fiscal policy will make my argument even more compelling. Say that the

[7]The minor reserve components are those Keran denoted by C_t and O.

[8]The endogenous tendency of money would, of course, still remain. That is, if the Federal Reserve ceased to follow its offsetting policy, money would behave endogenously.

[9]Keran's views are quite similar to those expressed by Culbertson in "Reply," *Southern Economic Journal*, (April 1963), pp. 330-35. For a detailed critique of Culbertson's position, see Hendershott, pp. 99-102.

[10]Hendershott, pp. 93-99.

[11]In addition to the discussion in *The Neutralized Money Stock*, pp. 1-5, see Patric Hendershott and George Horwich, "Money, Interest, and Policy," Institute Paper No. 250, Krennert Graduate School of Industrial Administration, Purdue University (June 1969), pp. 21-23 and 29-31. (This paper was presented at the U.S. Savings and Loan League Conference on Saving and Residential Financing in May 1969 and will be published in the proceedings of the conference.)

Federal Government raised tax rates during recessions in order to maintain a constant, balanced budget. Would we view this fiscal policy as being contractionary or not? The "old view" is that since the budget is still balanced, policy must be neutral. The "new view," which is based on the "high-employment budget surplus" concept and to which the St. Louis Federal Reserve Bank subscribes,[12] says that policy is restrictive because the Government actually raised tax rates. If we were to apply Keran's analysis, we would be led to the old view. That is, Keran would "not count" the increase in tax rates because it was an automatic offsetting response to the decline in tax receipts accompanying the recession. Thus, the fiscal policy of raising tax rates during recessions would be interpreted as a neutral policy with respect to the business cycle.

As I pointed out in my book, the neutralized money stock measure of monetary policy is analogous to the full-employment budget surplus measure of fiscal policy; the impact of the business cycle is absent from both. To accept one measure and not the other is inconsistent and, I suspect, quite revealing of one's biases.

Andersen and Endogenous Money

Andersen has taken a quite narrow view of the endogenous money stock concept. In particular, he views the money stock as being related to a monetary policy variable and gross national product (GNP). In light of the free-reserves, gold, and time-deposits responses noted above, the money stock should be related to a policy variable and interest rates. And such a distinction is important. For example, I concluded that GNP has had only a small impact on money, where interest rates have had a large impact.[13]

In addition to relating the money stock to the "wrong" endogenous variable, Andersen defines the monetary policy variable so broadly that his inability to estimate successfully an endogenous money stock relation is hardly surprising. In particular, the two reserve components that I found to be primarily responsible for the strong stock-interest rate relation — member bank borrowings from the Federal Reserve and the U.S. gold stock — are treated as policy-determined by Andersen.[14] The only interest rate relations that Andersen allows are the admittedly weak excess-reserves relation and a stronger time deposit relation which has, however, only a small impact on the money stock.

In conclusion, Andersen's empirical estimates are based on a model which, by choice of the policy and endogenous variables, rules out the expected money stock links to the economy. Thus, the estimates should not be interpreted either as a criticism of my work or as an adequate treatment of the subject.

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[12]See Federal Reserve Bank of St. Louis *Review* (August 1969), p. 4.

[13]Hendershott, pp. 140-41.

[14]Hendershott, p. 117 and Keran, p. 16. Subsequent discovery of a computational error in the neutralization of the money stock reveals that the gold relation was not as strong as initially believed. For a discussion of the error and an analysis of the correctly neutralized money stock, see Patric Hendershott, "A Quality Theory of Money," *Nebraska Journal of Economics and Business* (Autumn 1969), or Hendershott and Horwich, pp. 25-28.

The Comment to this article begins on the next page.

Neutralization of the Money Stock – Comment

by MICHAEL W. KERAN

HENDERSHOTT raises some interesting issues with respect to my earlier critique of his neutralized money stock concept. Before considering the specific issues he raises, it would be useful to define certain relevant terms. This will allow us to more sharply focus the debate with respect to areas of agreement and disagreement.

Terminology

1) ***Federal Reserve Actions*** – A most comprehensive measure of Federal Reserve actions are changes in Federal Reserve holdings of government securities adjusted for changes in reserve requirements. Hendershott calls this (P*), and uses this as his measure of Federal Reserve policy actions. This measure simultaneously captures the two major policy instruments of the Federal Reserve: open market operations, and changes in reserve requirements. Other Federal Reserve policy instruments, such as the discount rate, are generally assumed either to move in line with (P*), or to be of lesser importance.

2) ***Defensive and Dynamic Operations*** – Federal Reserve actions (P*), as described in (1), can be divided into defensive operations and dynamic operations. Defensive operations are those Federal Reserve actions which are designed to prevent undesired changes in member bank reserves (or some other intermediate financial target) as a result of changes in factors not under the control of the Federal Reserve, such as offsetting gold flows or changes in Federal Reserve float. Dynamic operations are Federal Reserve actions designed to change the desired level of member bank reserves (or some other intermediate financial target) in response to changes in monetary policy. As dynamic operations represent the Federal Reserve economic policy actions, they are assumed to vary systematically over the business cycle.

3) ***Monetary Influence on the Economy*** – This should reflect the net impact of all monetary influences on the real sector of the economy, that is, employment, income, and prices. This influence may or may not be under the dominant control of the Federal Reserve, depending upon how the Federal Reserve has actually operated. The appropriate measure of this monetary influence depends upon the linkage between monetary variables and the rest of the economy. One's concept of these linkages depends upon one's assumptions about economic behavior. Keynesian income-expenditure theory has typically measured this influence by market interest rates, while the modern quantity theory has typically measured it by changes in the money stock.

Hendershott's concern is with the first point. He wishes to construct an unbiased measure of Federal Reserve policy actions. This is a useful exercise in its own right, but it cannot be considered as providing evidence or insight into point (3) listed above. The best measure of Federal Reserve policy actions is not necessarily the best measure of monetary influence on the economy. This second question requires a separate theoretical and empirical verification which is not attempted either by Hendershott or by me in this article.[1]

[1]The author has considered the question of monetary influences on the economy in other articles. See Michael W. Keran, this *Review*, November 1969 and February 1970.

Areas of Agreement and Disagreement

Hendershott points out that I am inconsistent in rejecting the neutralized money stock as a measure of monetary policy actions when I have presumably accepted the principle of neutralization with respect to government spending and tax receipts as a measure of fiscal policy actions. He then attempts to demonstrate that the error one makes in analyzing policy actions of the Federal Reserve without a neutralized money stock is of the same character as in analyzing policy actions of the Federal Government without "neutralized" receipts and expenditures.

I do accept the conceptual desirability of a neutralized money stock as an unbiased measure of Federal Reserve policy actions, with the previously mentioned caveat that this should not be considered as providing any information with respect to monetary influences on the economy. My disagreement with Hendershott is on the empirical relevance of his particular neutralization process.

I tried to make that point in my original article when I said, ". . . what if open market operations had not been conducted in a way to offset the influence of borrowings and gold on the money stock? In that case Hendershott's neutralized money stock would have been a superior measure of Federal Reserve (policy) actions."[2]

My disagreement with Hendershott is with respect to the interpretation of Federal Reserve actions, (P^*). I assert that this is a measure of both policy actions and non-policy actions related to offsetting non-controlled sources of member bank reserves. Stated in a somewhat different way, the Federal Reserve engages in both defensive operations and dynamic operations, and only the latter should be considered as policy actions. Hendershott, on the other hand, asserts that (P^*) is an appropriate measure of "just" policy actions.

The issue which separates us is not theoretical but empirical in nature. As such, it is subject to standard statistical tests. In the original article I presented such a statistical test.[3] It indicated that a substantial share of the changes in P^* (I used the symbol S_A) could be explained by defensive operations designed to offset influences on member bank reserves from changes in non-controlled sources of reserves.

[2]Michael Keran, "Reply," this *Review* (August 1969), p. 17.
[3]*Ibid.*, p. 17.

If the Federal Reserve had not acted in this systematic way to offset non-controlled sources of reserves, then the question of whether the neutralized money stock was a superior measure of Federal Reserve policy actions would depend on how well Hendershott's explanation of public influences on these non-controlled sources of reserves stood up under critical analysis. Because Hendershott's results had not passed the first test, I did not examine his results in detail to see whether they had passed the second test.

Defensive versus Dynamic Operations

Hendershott argues that the public, through its influence on market interest rates, will influence certain sources of member bank reserves (specifically gold flows and member bank borrowing), and through this the observed money stock. When this public influence is estimated and removed, we have in the neutralized money stock an unbiased measure of Federal Reserve policy actions. My position is that whatever the cause of the gold flow or changes in member bank borrowing, the Federal Reserve has acted to systematically offset their influence on member bank reserves through the standard and long-standing procedure of defensive operations. On the basis of empirically verifying the existence of defensive operations to offset the influences of gold and borrowings on member bank reserves, I asserted that the observed money stock is superior to the neutralized money stock as a measure of Federal Reserve policy actions.

Hendershott does not question the statistical results presented. On what basis then could he continue to press this position that P^* measures Federal Reserve policy actions? He must assume that Federal Reserve defensive behavior is systematically different during periods when the Federal Reserve is following a tight money policy than during periods when it is following an easy money policy. That is, when the Federal Reserve wishes to follow an easy money policy it will not engage in net defensive operations which would tend to reduce total reserves of member banks. When the Federal Reserve is engaged in a tight money policy, it would not engage in net defensive operations which increase total reserves.

Statistical Tests

Only if Federal Reserve defensive operations are systematically different between periods of tight money and periods of easy money can Hendershott

assert that all Federal Reserve actions (P^*) be evaluated in a uniform way rather than being divided into defensive and dynamic operations. Two tests of this possibility are made. The first is to compare Federal Reserve defensive operations during periods of tight money policy with defensive operations during periods of easy money policy. A "Chow" test will tell us whether the data for these subperiods were drawn from different behavior populations.

The second test focuses on gold flows and member bank borrowings from the Federal Reserve. Because these are the major factors causing the neutralized money stock to deviate from the actual money stock, it is desirable to see if the value of these defensive coefficients changes between periods of tight and easy money policy.

To make the tests in such a way as to provide the greatest chance to validate Hendershott's position, periods of tight money policy and easy money policy are constructed according to the breakdown given by Hendershott.[4]

Tight Periods	Easy Periods
April 1955 - Nov. 1957	Aug. 1953 - April 1955
Aug. 1958 - March 1960	Nov. 1957 - Aug. 1958
Jan. 1962 - Oct. 1962	March 1960 - Jan. 1962
	Oct. 1962 - Dec. 1964

The results of the first test are presented in Table I. The dependent variable is Federal Reserve holdings of Government securities adjusted for a change in reserve requirements (ΔP^*). The independent variables are all other factors which influence member bank reserves and are not *directly* controlled by the Federal Reserve. If the Federal Reserve engaged in defensive operations, the sign of the gold, float, and borrowing coefficients would be negative, and the sign of the currency coefficient would be positive. The sign of the "other" coefficient is indeterminant.[5]

The first column shows the estimated coefficients for defensive operations in tight money periods, as designated by Hendershott, and the second column shows the estimated coefficients for his designated easy money periods. The Chow test, which is designed to test for a shift in the structure between these periods, was not significant at the 95 per cent level of confidence. There is no statistical evidence that the Federal Reserve conducted defensive operations differently during periods of easy money than during periods of tight money.[6]

Table I

FEDERAL RESERVE DEFENSIVE OPERATIONS

(Monthly Central Differences — Billions of Dollars)

$$\Delta P^* = \alpha_0 + \alpha_1 \Delta G + \alpha_2 \Delta F + \alpha_3 \Delta B + \alpha_4 \Delta 0 + \alpha_5 \Delta C_0$$

	Tight Money Periods	Easy Money Periods
Gold (ΔG)	— .53	— .58
	(2.72)	(3.22)
Float (ΔF)	.09	— .27
	(.44)	(1.68)
Borrowings (ΔB)	— .63	— .91
	(2.88)	(2.95)
Other ($\Delta 0$)	.95	— .26
	(3.13)	(.71)
Currency in Hands of Public (ΔC_0)	1.22	1.27
	(8.61)	(10.88)
Constant Term	— .03	.01
R^2	.81	.68
D-W	1.81	1.36

Note: Regression coefficients are the top figures; their "t" statistics appear below each coefficient, enclosed by parentheses. R^2 is the per cent of variations in the dependent variable which is explained by variations in the independent variable. D-W is the Durbin-Watson statistic.

Even though there was no shift in the general structure of Federal Reserve behavior between subperiods of tight and easy money, it is possible that Federal Reserve actions with respect to particular variables could have changed between subperiods. Because gold and member bank borrowings were found by Hendershott to dominate the difference between the actual and the neutralized money stock, it is important to see whether there was a shift in the value of these coefficients between periods of tight and easy money. This is done in the second test, and the results are presented in Table II.

The second test estimates the value of coefficients for the same variables as in Table I for the entire period, and compares them to the coefficients for just the tight money periods.[7] If, between periods of tight and easy money, the Federal Reserve had engaged in different defensive operations with respect to any

[4]Patric Hendershott, "A Quality Theory of Money," *Nebraska Journal of Economics and Business* (Autumn 1969).

[5]This is because it is a combination of sources and uses of member bank reserves.

[6]Perfect defensive operations could have implied coefficients with absolute values close to 1.0. In all cases the coefficients in Table I are significantly different from one (1) for both periods. Only defensive operations are accounted for in this regression. By introducing variables to account for dynamic operations, the estimations would have been more efficient. For an example of both defensive and dynamic operations as an explanation of ΔP^*, see Michael W. Keran and Christopher T. Babb, "An Explanation of Federal Reserve Actions (1933-68)", this *Review* (July 1969) pp. 7-20. In this latter case, the values of the estimated defensive coefficients are not significantly different from one in absolute value.

[7]This approach uses multiplicative dummy variables which have the property of allowing for shifts in the slopes of the independent variables between the two periods. See Arthur S. Goldberger, *Econometric Theory* (John Wiley and Sons, 1964), pp. 224-227.

Table II

FEDERAL RESERVE DEFENSIVE OPERATIONS

(Monthly Central Differences — Billions of Dollars)

(January 1952 — December 1964)

	Total Period	Tight Money Periods
Gold (ΔG)	— .63	.09
	(4.17)	(.30)
Float (ΔF)	— .31	.57
	(2.17)	(1.84)
Borrowings (ΔB)	— .98	.33
	(3.28)	(.80)
Other ($\Delta 0$)	— .23	1.15
	(.66)	(2.24)
Currency in Hands of Public (ΔC_0)	1.33	— .22
	(12.71)	(1.02)
Constant term	— .01	
R^2	.74	
D-W	1.48	

Note: Regression coefficients are the top figures; their "t" statistics appear below each coefficient, enclosed by parentheses. R^2 is the per cent of variations in the dependent variable which is explained by variations in the independent variable. D-W is the Durbin-Watson statistic.

of the variables specified, the second series of estimated coefficients would be statistically significant. If the Federal Reserve had not responded in different ways between subperiods, then the second group of coefficients would not be statistically significant.

In Table II the t statistics in the tight money period for gold and borrowings are statistically insignificant, which indicates that the Federal Reserve's response to these independent influences on member bank reserves was not significantly different during periods of tight and easy money policy. There is no statistical evidence that the Federal Reserve had responded to changes in gold and borrowings differently during the subperiods.

The statistical tests represented in Table I and Table II are consistent with each other. The results in Table I show that *total* Federal Reserve defensive operations did not change between the two periods. Table II indicates that Federal Reserve behavior, with respect to gold and borrowings, did not change between subperiods. To state these results in statistical jargon, Hendershott's results have passed neither the F test (Table I), nor the t test (Table II) of statistical significance. Therefore, it must be concluded that Federal Reserve defensive operations are not sensitive to changes in Federal Reserve policy, and that Hendershott is not justified in treating (P^*) as responsive to "just" policy changes. Because the neutralized money stock does not consider the interaction between Federal Reserve holdings of Government securities (P^*) and other sources and uses of reserves, it is not an unbiased measure of Federal Reserve policy actions.

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