

# MONEY SUPPLY EXPERIENCE OF THE ST. LOUIS FED

By  
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## Introduction

It is good to have this opportunity to respond to your invitation to discuss the research of the Federal Reserve Bank of St. Louis relative to the stock of money and its impact on the nation's economy. Although some people have been flattering in their comments on our work, others have been critical, referring to us as "mavericks." Many believe that our sole approach to analyzing the influence of stabilization actions is through the rate of change of money. In our research, many approaches have been examined, and our ideas have been continually evolving as a result of our studies, ideas received from others, and events as they unfold.

## Functions of a Research Department

Each Federal Reserve Bank and the Board of Governors has a Research Department, staffed by a number of capable economists. The role of these economists has taken various courses, depending on the wishes of management, the propensities of economists, and

external circumstances. Much of the staff effort at Federal Reserve Banks over the years has been in regional research, public relations, and the collection and improvement of data. Prior to the late fifties, these functions comprised the bulk of research activity at the St. Louis Fed.

In the late fifties the prime emphasis of the Research Department of the St. Louis Bank was rather abruptly changed from the previous regional-public relations-data collection focus and was concentrated on efforts directed toward studies that could contribute to the improvement of monetary management and other economic stabilization policies. The pressures against questioning the conventional wisdom and traditions from within any organization cannot be taken lightly.

We have attempted to improve the quality of our research. Each economist must subject his ideas and research to the scrutiny of others on the staff. The academic community and other outside experts have been drawn on extensively for suggestions, comments, and criticisms. The research results, as well as the data on which they are based and the procedures followed, have been published, and the public has been encouraged to comment. We especially welcome the thoughts of the academic community on any aspect of our work.

## Premises

It is helpful for anyone attempting to understand the St. Louis position to have some knowledge of our basic premises. At one time or another our staff will question any assumption, but most of the work we have done is based on certain premises.

A basic proposition to the study of economics is that resources are scarce, requiring allocation, a point sometimes forgotten when well meaning groups propose direct action to aid specific sectors of economic activity. A foremost premise of the St. Louis staff is that free competitive markets are the most efficient allocators of scarce resources. Proposals to interfere in the market system are closely scrutinized, and have usually been found undesirable. On this point, for example, the Bank has opposed wage and price controls, interest rate controls and other impediments to free functioning markets.

Another premise is that quantification of both actions and results is required for development and interpretation of rational procedures for stabilization policy. We question the use of such vague concepts as "easier," "feel of the market," and "even keel," in conducting monetary management; their use frequently contributes to misunderstanding. Those responsible for carrying out stabilization policies require considerable knowledge of the probable results of any particular course of action. Such knowledge

includes identification of strategic variables and specification of operational hypotheses about the end results expected from alternative courses of action. Development of this knowledge requires empirical substantiation of various economic theories.

Briefly, some additional premises include: (1) the existing body of monetary theory contains implications for current monetary management; (2) our economic system is basically stable, and most large fluctuations come from destabilizing government actions; (3) stabilization actions should be concerned primarily with fostering a reasonable amount of total spending, leaving the free markets to channel the influence throughout the multitude of individual markets; and (4) procedures, ideas, and policies are likely to be better if exposed to the critical eye of experts and the public generally.

### Analytical Concepts

In view of the assumption that quantification is essential, our staff has utilized a number of statistical concepts for stabilization analysis. Wide use has been made of daily average figures, seasonal adjustments, and compounded annual rates of change. In analyzing time series we have sought to take emphasis off the latest figure or off very short-run fluctuations and to consider instead periods of relatively uniform rates of change, depicted by brackets on charts. We have published annual rates of change tables, referred to as "triangles." The Bank has contributed to

the development of several widely used statistical series, for example, the daily average money supply, the monetary base, and the Federal high employment budget.

### Presenting Research Results

Since the quality of research is improved by subjecting it to public scrutiny, the publication of results has been stressed. One practice is to present regularly current developments regarding stabilization actions and economic activity with some comment on relationships.

Most of our basic research is published in the monthly Review. There is a reprint series of those articles in the Review which seem to be of interest. In addition, the Bank has a working paper series for those articles still in the process of completion or which we feel public interest would not justify including in our Review. Economists on the staff are encouraged to circulate drafts of articles among experts for comment prior to publication, and this has become a general practice on articles of a technical nature. The staff is also encouraged to publish in outside journals and to participate in programs at professional meetings.

### Research

Permit me to review some of the research projects of the Bank since the late 1950's which have been instrumental in developing our view of monetary management. In the limited

time available I can do no more than comment briefly on some of the more important ones, but they are all available for those interested.

### Free Reserves

One of the first major research projects at the St. Louis "Fed" after the change in emphasis in the late fifties was to evaluate the usefulness of the free reserves concept for policy implementation. At that time monetary policy was formulated and implemented primarily in terms of free reserves. The conclusions of the study were that commercial banks demand for excess reserves and borrowings changed markedly with interest rates, bank loan demand, and other factors, making free reserves a very poor guide for stabilization policy. Any rate of monetary expansion and of total spending was consistent with a wide range of levels or changes of free reserves, depending on other factors. As a result of this study, and others conducted elsewhere, free reserves are no longer generally considered a reliable measure of monetary actions.

### Money and Related Monetary Aggregates

In the early sixties the staff at the Bank made several studies of various monetary aggregates. In these studies turning points in economic activity were related to marked and sustained changes in the rate of change in money, time deposits, money

plus time deposits, total member bank reserves, and short-term government securities held by the public.

It was observed that marked and sustained changes in money or money plus time deposits have usually been followed by a cyclical turning point with a brief lag. It was also noted that time deposits, alone, did not conform to this pattern, and the addition of time deposits to money tended to weaken the relationship to economic activity. It was through these studies that the staff of the St. Louis Bank concluded that the growth rate of money, defined as private demand deposits and currency outside banks, was important in economic stabilization. These studies have been updated several times, and the conclusions were similar.

Little relationship was found between changes in the public's holdings of short-term government securities and economic activity. Consequently, the staff of the bank has not placed much confidence in debt management as a tool of economic stabilization.

It was also found that changes in money stock and in total member bank reserves have not always corresponded. Two main reasons for this stem from changes in time and Treasury deposits. Much of the slippage, or divergence, between reserves and money was eliminated by developing a series on "reserves available for private demand deposits." With this measure the Federal Reserve System still must consider other factors, such as commercial

bank desires for excess reserves, the distribution of reserves among banks having different reserve requirements, and the changing preference of the public for currency, in order to control money adequately.

### Velocity

Another investigation in the early sixties was designed to determine the relationship between changes in money stock and changes in total spending, or stated differently, do velocity changes nullify monetary actions? It was found that the influence of rapid changes in money on economic activity tends to be matched or greatly dampened temporarily by an opposite change in velocity. It was also observed that if a change in the rate of change in money is marked and sustained, holders begin making adjustments in their spending within a brief period, presumably in an effort to reach their desired cash balance levels. Indeed, after a lag of a few months, movements in velocity tend to supplement changes in the money stock.

### Time Deposits

In addition to the monetary studies mentioned before, time and savings deposits have been examined in more detail in several studies. One investigation, conducted before Regulation Q acted as a major constraint, noted that savings accounts and time certificates did not always move together. Savings deposits in



commercial banks behaved like savings and loan shares and deposits at mutual savings banks, showing little cyclical change in growth rate. Other time deposits varied more cyclically and tended to reflect differentials between rates paid on them and rates paid on Treasury bills, commercial paper and other money market instruments.

A later study reviewed the severe effects of Regulation Q interest rate ceilings on commercial bank time and savings deposits. Since one justification for Regulation Q ceilings was to restrict the growth of commercial bank credit, the effects may have been intended. However, the study observed that Regulation Q did not control total credit or limit total spending in the economy, since funds leaving bank time deposits were channelled through unregulated markets. However, Regulation Q did affect the allocation of credit, generally acting to prefer large businesses and governments that can tap the central money markets, and to penalize small businesses, real estate purchasers, and consumers that must rely on local institutions for credit.

#### Excess Reserves

An examination was made of member bank excess reserves, to determine the extent to which monetary actions of the System have been thwarted by changes in bank holdings of these reserves. The evidence seemed to indicate that each bank attempts to keep excess reserves at a practical minimum in view of all pertinent circumstances. Most of these reserves have been excess in a legal

sense only, since the bulk of them seem to have been needed for smaller banks to operate efficiently. Trend and cyclical movements in excess reserves have been moderate and related to items such as movements in interest rates, changes in banker demand for liquidity, and technological changes. Evidence is strong that Federal Reserve actions can offset these movements with only a very brief lag.

### Bank Credit

Bank credit and its major components have also been examined as a measure of monetary action. Changes in total bank credit have been broadly similar to changes in bank reserves, in money plus time deposits, and, to a lesser extent, in the money supply. Each of these aggregates has generally risen most rapidly in late recessions and early recoveries and each has usually risen only slightly or has declined around upper turning points of the business cycle. Before Regulation Q interest rate ceilings became effective, total bank credit and money plus time deposits were only slightly less useful than money as a measure of monetary actions. Effects of Regulation Q have caused bank credit and time deposits to depart from their cyclical patterns and have substantially reduced their value as monetary measures.

Most of the expansion in bank credit during recessions and early recoveries has taken the form of net acquisitions of securities. Later in business expansions, bank loans have usually

expanded rapidly, and banks have sold securities on balance. Bank investments have served as the adjusting mechanism between the public's demand for bank loans on the one hand, and the System's control of bank deposits and money on the other.

### Interest Rates

Interest rates have been examined on several occasions to determine their value as an indicator for Federal Reserve policy. One study in the mid-1960's found that interest rates have generally been high and rising during periods of rapid economic expansion and have been low and declining during periods of economic contraction. Although this behavior of interest rates appears to contribute to economic stabilization, the effect may not be great since the state of the economy itself appears to be the major influence on rates. As activity quickens, demands for credit rise faster than supplies, exerting upward pressure on rates. Conversely, when activity contracts, demands for credit fall more rapidly than supplies and downward pressures on rates develop. Because of the dominating influence of demands for credit on rates, interest rates have been an unreliable measure of monetary impact on economic activity. A prime example was the depression of the early thirties when interest rates fell to very low levels, but bank reserves, money and the economy continued to decline.

An econometric study investigated the reason for the relatively high and rising interest rates of the late Sixties. The

principal finding was that past price movements, particularly within the prior three years, exert a major effect on nominal interest rates, a phenomenon attributed to investor's expectations of future price movements. Consequently, most of the rise in market interest rates from 1965 to early 1970 can be attributed to rising inflationary expectations. Again, the finding casts further doubt on the value of using rates as an indicator of the thrust of monetary actions on economic activity. High rates do not necessarily indicate monetary restraint. Instead, they often indicate prior excessive monetary expansion, which results in rapidly expanding spending and inflation.

#### Fiscal Actions

Fiscal developments have been given almost continuous attention. Various budget measures have been analyzed, and the Bank has refined and published data on the high employment budget. This budget is an attempt to abstract from effects on the national income accounts budget caused by the impact of the economy itself on the realized budget. In these examinations, using all standard measures of the budgetary influence on the economy, however, the relationship between fiscal actions and changes in economic activity has not appeared to have been pronounced or consistent. This was observed in the early Sixties and subsequently verified by more sophisticated mathematical studies.

Probably the most publicized single research project of the bank was an econometric test of the relative importance of monetary and fiscal actions in economic stabilization. The response of economic activity to monetary actions was found to be stronger, more predictable, and faster than for fiscal actions. The study concluded that either the commonly used measures of fiscal influences do not correctly indicate the degree and direction of such influence, or there was no measurable net fiscal influence on total spending in the test period. The study came just after imposition of the 10 percent surtax and the limitations on growth of Federal spending. It implied that a slowdown in the excessive growth in total spending, widely predicted for late 1968 and early 1969 as a result of these actions, would not occur until the growth rate of money was slowed. As you know, spending did not materially slow in this period. Later studies at the Bank arrived at similar results for earlier periods (back to 1919) in this country and for eight foreign countries.

#### Money Stock Control

Questions have arisen concerning the ability of the System to control the growth of money. In 1967, a review was made of three approaches to money stock determination. In 1968, data on the monetary base were developed and published. The base has advantages as a short-run target for policy implementation since it can be controlled by the System and information on it is readily available. Changes in the multiplier between base and money do

occur with changes in relative growth rates of demand deposits, currency, time deposits, Treasury deposits and excess reserves. However, a system for controlling money, within reasonable and tolerable limits, has been developed using the base as a guide and making systematic adjustments in target levels as changes in the multiplier occur.

### The Model

In early 1970, a small sized model of the economy was developed and published. It summarizes much of the Bank's work by quantifying the effects of monetary and fiscal actions on total spending, output, prices, unemployment, and interest rates. The estimated equations indicate that changes in the money stock play a strategic role. Fiscal actions were found to have some short-run effects, but for periods of a year or longer the net effect on the growth rates of spending, output, and prices is near zero. Although the model makes no attempt to include other forces bearing upon spending, such as strikes, weather, and changes in business and consumer attitudes, it has explained over half the quarter-to-quarter changes in total spending and a much larger percentage of the more relevant cyclical movements. Another study extended the financial sector of this model to include stock prices.

Recently, attention has been focused on the response of output and prices to a change in the rate of monetary expansion. The results of this research are consistent with the neo-classical view that in the long-run the rate of money growth affects only the rate of inflation; it has no long-run influence on the rate of growth of output. In the short-run, however, a change in the rate of monetary expansion does have a significant, but temporary, influence on output.

### Conclusions

The research at the Federal Reserve Bank of St. Louis has been evolving for many years. I sincerely hope we do not become inflexible or dogmatic now. Many facets of economic stabilization have been investigated. We observed in the early Sixties that changes in money growth had been a good indicator of monetary actions, and that monetary actions had important effects on spending, production, and prices. Experience has not altered these conclusions. The rapid expansion in the money stock from 1965 through 1968 was accompanied by an excessive growth in total spending and a gradual build-up of inflationary momentum. The slower growth of money in 1969 was followed by a marked slowing in total spending and cutbacks in production.

Our research results have been more consistent with those of the pre-Keynesian era than they have of the Keynesian

framework which has dominated much of the economic thinking since the Thirties. The foundations as set out by Irving Fisher, Alfred Marshall and other classical economists seem to have provided a stronger basis for research efforts than much of the intervening material. Unfortunately, these earlier great economists did not apply themselves to the impact of public policies in the short-run. It is in this area that our studies have proven most fruitful.

The results of our research have not always been consistent with conventional thinking based on the Keynesian revolution. Because of this difference, I have, at times, found it necessary to dissent at Open Market Committee meetings on policy action, as you know from the published record. Yet, as I review that record and subsequent events, I would not now change one of those dissenting votes. In short, we at St. Louis have found the rate of growth of money a good basis for making policy decisions; yet, we do not feel that the time has arrived to lessen our efforts to improve stabilization policies.