

ECONOMIC COMMENTARY

Federal Reserve Bank of Cleveland

Understanding the Recent Behavior of M2

by John B. Carlson and Sharon E. Parrott

The behavior of the monetary aggregates—particularly M2—is often an important consideration in the Federal Reserve's monetary policy decisions.¹ The Federal Open Market Committee (FOMC), the monetary policymaking arm of the Federal Reserve System, periodically sets a target range for M2 growth, based on economic conditions and on its policy stance. In order to steer M2 growth within these bounds (currently 2½ and 6½ percent), policymakers must be able to predict with precision the demand for M2. This entails understanding why individuals and institutions hold transactions and savings deposits. The determining factors have traditionally been the level of income and the opportunity cost of holding M2 balances. Until recent years, these factors have accurately predicted M2 growth.

Since about 1989, M2 growth has been consistently weaker than predicted. This unanticipated weakness is worrisome, because it may impart unintended effects on the economy, such as a slowdown in aggregate spending. Chairman Greenspan's February Humphrey-Hawkins testimony acknowledged this concern by indicating that the policy easings in early 1990 were partly designed to reinvigorate M2 growth and thus to guard against this possibility. However, without understanding the underlying reasons for the shortfall, it is conceivable that, if temporary, M2's weakness could turn around and that the recent policy easings could lead to a greater-than-intended economic stimulus.

Therefore, even though M2 growth is currently around the midpoint of its 1991 target range, it is important to understand why the aggregate has consistently deviated from its expected path in recent years.

Chairman Greenspan's testimony offered several explanations for the unanticipated shortfall in M2 growth. One of these explanations, the extraordinary decline in assets at depository institutions, is related to the restructuring of the thrift industry. Thrifts' assets and deposit base have contracted substantially since 1988 (see figure 1). It has been suggested that, as a result of reduced confidence in the industry and lower interest rates that followed restructuring, some of the money flowing out of closed thrifts has not immediately flowed into other depositories, but has been channeled into instruments such as U.S. Treasury bills, which are not included in M2.

In this *Economic Commentary*, we examine how the the unexpected slowdown in M2 growth may be largely attributable to the restructuring of the thrift industry, and we explain why economic models predicting M2 growth have had problems tracking this weakness.

■ Thrift Restructuring and Deposit Growth

The effects of thrift restructuring on deposit growth seem evident in the behavior of savings deposits, small time deposits, and money market deposit

The weakness in M2 is a complex development and requires careful interpretation. The shortfall from our expectations appeared to be related to the stalling of nominal income in the fourth quarter [of 1990], and also to the circumstances surrounding the extraordinary decline in assets at depository institutions last year, which in turn had implications for future as well as current spending....Our policy easings over recent months were keyed partly to reinvigorating growth of M2 to a rate more likely to be consistent with satisfactory economic performance.

—Alan Greenspan,
Chairman, Board of Governors of the
Federal Reserve System,
1991 Monetary Policy Objectives,
Humphrey-Hawkins Testimony,
February 20, 1991

accounts (see figure 2). The slow growth of these deposits accounted for much of the weakness in M2 from April 1990 to January 1991, and their subsequent rapid growth has to a large extent driven M2's surge in early 1991.

When these M2 components are broken down by issuing institution, it becomes apparent that the softness stems largely from the substantial drop in these deposits at thrifts (see figure 3). Although banks have acquired some of these funds, the additional deposits only partially offset the effects of the thrift contraction.

To understand the connection between thrift restructuring and M2 growth, it is useful to review some key events that led to the current situation and to examine their implications for deposit pricing and, in turn, for M2 opportunity cost. The opportunity cost of M2 is commonly measured as the difference in the interest rate paid on M2 deposits—its own rate—and the interest rate that depositors could earn on a similar money market instrument.

Many analysts believe the thrift problem originated in the 1970s. Rising inflation and a consequent jump in nominal interest rates in that decade were particularly troublesome for thrifts, which according to regulatory design had borrowed short (deposits) and lent long (mortgages). Because rising interest rates were unanticipated, thrifts found themselves holding low-yielding mortgages but paying high rates for funds, leading to a severe deterioration in their capital.

Partly to alleviate the maturity mismatch, regulators decided in the early 1980s to permit thrifts to enter previously restricted areas of banking, allowing them to increase their share of commercial and industrial loans. The hope was that the new business would enable insolvent or nearly insolvent thrifts to "grow" out of their problem.

Under these circumstances, many thrift managers took large risks with their institutions' funds. Moreover, managers of insolvent, but still open, thrifts often

acquired funds by offering interest rates well above the market rate. Such rates might normally provide a signal for prudent depositors that an institution is on the verge of insolvency. But, because the deposits were almost fully insured by the federal government, depositors had little incentive to monitor the riskiness of thrifts.

Once the extent of the industry's problems was evident, however, regulators became more stringent and no longer allowed troubled thrifts to offer rates above those paid by solvent institutions. More important, insolvent thrifts with little hope of recovering were identified and closed in a more timely fashion.

The substantial number of closures, some have argued, has also led to a drastic change in deposit pricing strategy for the entire deposit market.² As institutions paying above-market rates were eventually closed, competing depositories were able to lower their interest rates. When thrifts were closed and their assets sold to other financial institutions, many interest-rate contracts were nullified or renegotiated.

Thus, interest rates on money market deposit accounts and small time deposits have recently been lower than would have been expected prior to the thrift restructuring. With lower deposit rates and, consequently, higher opportunity costs of investing in thrift accounts, one would expect that M2 growth would be lower. Although M2 growth has recently trended down, a gap persists between our ability to predict M2 growth and its actual growth rate. This suggests that something is still missing from our understanding of recent M2 behavior.

■ The Thrift Hypothesis and Opportunity Cost

One possibility, and the one favored here, is that the changed pricing behavior after the thrift industry's restructuring is not adequately captured by the measured opportunity cost. The problem is with the measure of the interest rate associated with M2. This rate is computed as a weighted average of the reported deposit

FIGURE 1
CHANGE IN THRIFT DEPOSITS

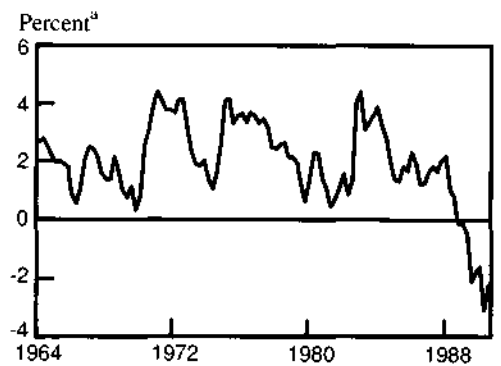


FIGURE 2
CONTRIBUTION OF TIME AND SAVINGS DEPOSITS TO M2 GROWTH^b

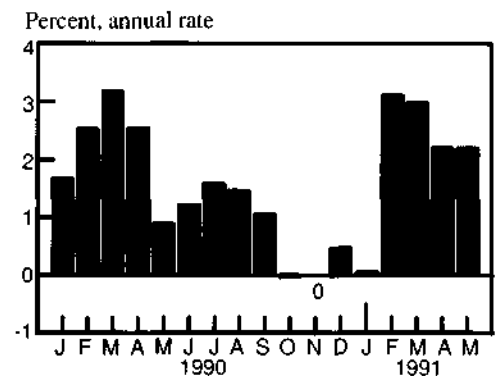
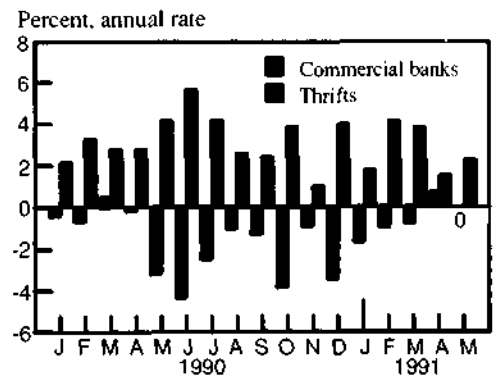


FIGURE 3
CONTRIBUTION OF TIME AND SAVINGS DEPOSITS FROM COMMERCIAL BANKS AND THRIFTS TO M2 GROWTH^b



a. Percent changes are expressed as annualized quarterly rates.
b. Including money market deposit accounts, savings deposits, and small time deposits.
SOURCES: DRI/McGraw Hill, Board of Governors of the Federal Reserve System, and authors' calculations.

FIGURE 4

SIMULATED AND ACTUAL M2 WITH THE THRIFT VARIABLE INCLUDED

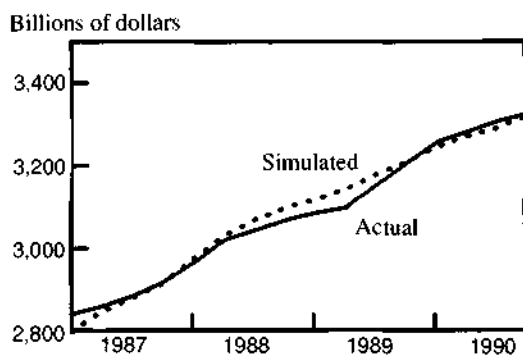


FIGURE 5

SIMULATED AND ACTUAL M2

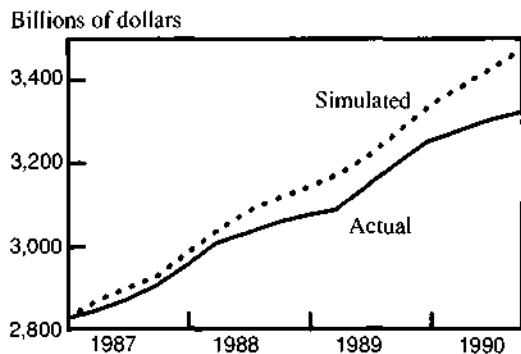
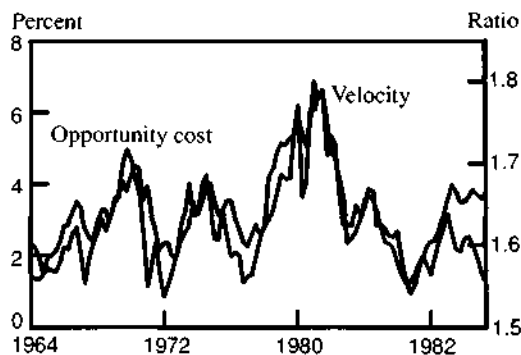


FIGURE 6

M2 VELOCITY AND OPPORTUNITY COST



SOURCES: Board of Governors of the Federal Reserve System, and authors' calculations.

rates paid on various components of M2, where the weights are equal to the relative share of each component. These rates originate from a survey conducted by the Federal Reserve and the Office of Thrift Supervision, in which depositories are asked to record the "most common rate paid" on each of several types of accounts.

However, the most common rate paid may not be the rate most responsible for the growth in M2. For example, depository institutions that are in need of funds are likely to pay rates on the high end of the interest-rate distribution, but the survey methodology may not incorporate this rate. In addition, aggregation of the rates paid on M2 deposits could mask those rates paid by banks or thrifts bidding aggressively for funds.

This aggregation is no problem if the distribution remains the same over time. However, regulatory changes in recent years are likely to have reduced the skewness of deposit rates, particularly on the high end of the distribution. Such an effect would not be revealed as a substantial decline in the measured rate paid on M2, but depositors holding funds at affected institutions would perceive the effects as substantial. Many of these depositors, attracted by above-market rates, could have shifted part of their funds to instruments not included in M2 when the high-end rates became more aligned with the average or measured rate.

To deal with the measurement problem, we explicitly considered the change in thrift deposits, in addition to the traditional variables of income and opportunity cost, in predicting M2 growth. Because deposit pricing has at times been more aggressive at thrifts than at banks, thrift deposit growth could incorporate information about the skewness in the distribution of deposit rates. The rates on the extreme end of the distribution might well account for a disproportionate share of the change in thrift deposits—for example, the attractive but unsustainable interest rates offered by some thrifts in the early to mid-1980s.

Figure 4 illustrates the predictions of a money growth model that includes the change in thrift deposits as an explanatory variable, while figure 5 shows the predictions of the same model when the thrift variable is not included.³ The statistical analysis suggests that thrift restructuring accounts for much of the recent unexplained weakness in M2.

M2 and the Economy

Implications of current money growth for the economy can be expressed in terms of velocity—the ratio of nominal gross national product (GNP) to the money stock. According to the quantity theory of money, the value of purchases must be equal to the amount of money in circulation and the number of times money changes hands—the velocity. Within this context, it is easy to see potential problems facing policymakers when M2 growth is different from anticipated patterns.

M2 growth targets are set to be consistent with policy objectives concerning inflation and output growth. These targets are predicated on an assumption about velocity, usually based on long-term trends. However, if velocity rises unexpectedly, achievement of the specified monetary target could lead to undesired policy outcomes such as higher inflation. The extent of this unintended stimulus to the economy depends on the relative changes in M2 growth (as a quantity of money) and in velocity (as affected by a change in M2), since they may be offsetting to some degree.

Over long periods, the velocity of M2 has not tended to show a specific trend, which suggests a constant long-run relationship between the quantity of money and economic activity. In the short run, however, M2 velocity has generally moved systematically with interest rates and opportunity cost.

Declining market interest rates tend to reduce M2 velocity. As these rates fall, opportunity cost drops temporarily, because changes in bank deposit rates typically lag changes in market rates. With a decline in bank opportunity cost, deposit holders tend to increase

M2 balances relative to spending and income; hence, M2 velocity falls. However, as figure 6 illustrates, M2 velocity has not declined as sharply as its historical relationship with opportunity cost would suggest. This is consistent with our hypothesis that changes in measured opportunity cost have not adequately captured the deposit pricing effects related to thrift restructuring.

An important issue is whether the impact of thrift restructuring has had a permanent effect on M2 velocity. Our model suggests that the effects of thrift restructuring are largely transitory, but it does not provide much power to test for permanent effects. Generally, such a test is possible only after obtaining evidence of a sustained deviation from the historical relationship between restructuring and M2 velocity.

■ Conclusion

The recent downsizing of the entire thrift industry has been the preeminent development in the financial industry in recent years. It seems likely that such a large structural change would affect the behavior of the monetary aggregates. Our research shows that the change in thrift deposits accounts for much of the unanticipated weakness in M2 growth during 1989 and 1990.

Even though the FOMC has recently eased monetary policy, partially in response to M2's unexpected shortfall, the accelerated growth of this aggregate has been slower than one might expect given the historical relationships among M2, output, and opportunity cost. Consequently, M2 velocity has been higher than expected.

If M2 velocity persists at this level, more rapid growth of this aggregate will be associated with more rapid growth in income. Determining whether or not M2 growth is consistent with intended policy directives depends on a solid understanding of the many factors related to M2 demand. Our research suggests that the effect of the thrift restructuring on M2 helps to explain much of the recent shortfall in this aggregate.

■ Footnotes

1. See the *Federal Reserve Bulletin*, any recent issue, for definitions of the monetary aggregates. Generally, M1 includes balances used in making transactions, while M2 includes M1 plus household savings assets. M3, the broadest measure, adds to M2 other liquid assets that are held mostly by large asset holders.

2. See Fred Furlong and Bharat Trehan, "Interpreting Recent Money Growth," Federal Reserve Bank of San Francisco, *FRBSF Weekly Letter*, September 28, 1990.

3. Specifically, we estimate a money demand function that includes the lagged change in thrift deposits as an explanatory variable. For the particular model, see John B. Carlson and Sharon E. Parrott, "The Demand for M2, Opportunity Cost, and Financial Change," Federal Reserve Bank of Cleveland, *Economic Review*, vol. 27, no. 2 (1991 Quarter 2), pp. 2-11.

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The views stated herein are those of the authors and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

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