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The M2 Slowdown and Depository Intermediation: Implications for Monetary Policy

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The roles of banks and thrifts have changed significantly over the past decade in response to evolving financial markets and regulatory structure. The resulting pressures have rechanneled credit flows away from depositories, a trend that has generated important implications for the interpretation of money growth.

Congress requires that the Chairman of the Board of Governors of the Federal Reserve report semiannually on the System's plans and objectives for monetary policy. Among its financial objectives, the Federal Reserve has placed the greatest emphasis on its target ranges for the M2 measure of money since around the mid-1980s. M2 comprises currency, checking and savings deposits, money market mutual funds (MMMFs), and certificates of deposit in denominations less than $100,000 (small CDs).

In February, the Fed's policymaking arm, the Federal Open Market Committee (FOMC), set an M2 growth range objective of 2½ to 6½ percent for 1992. But despite policy actions including a half-percentage-point reduction in the discount rate and a substantial decline in short-term interest rates this year, M2 now stands below the lower bound of its target range. In presenting the Federal Reserve's midyear report, Chairman Alan Greenspan noted, "The weakness of the broad monetary aggregates appears importantly to have reflected the variety of pressures that rechanneled credit flows away from depository institutions, lessening their need to issue monetary liabilities."[1]

A key issue is what the rechanneling of credit flows implies for the link between money and the economy. Does the recent M2 weakness portend an overall slowdown, as the historical relationship between M2 and economic activity would suggest? More fundamentally, what does this mean for monetary targeting in general? Is the M2 aggregate a suitable measure for money? This *Economic Commentary* seeks to address these questions and to analyze low M2 growth by looking at how the role of banks and thrifts has evolved in the changing financial environment of the past decade.

Money and Its Relationship to the Economy

The problem of interpreting disturbances in the relationship between money growth and the economy is nothing new for policymakers. The postwar period has been punctuated by several episodes when money growth has persistently been above or below the target ranges for reasons not well understood or anticipated. For example, in the mid-1970s, policymakers were puzzled by slackness in the M1 measure (essentially currency and checkable deposits), which received the primary policy focus at the time. Research later revealed that this weakness reflected, at least in part, financial innovation induced by regulatory restrictions in the face of high interest rates. The development of money-like instruments such as MMMFs and the adoption of cash-management techniques allowed total spending in the aggregate economy to grow more rapidly than expected relative to M1 balances.

A more permanent disruption in the link between M1 and spending occurred in the early 1980s. This time, M1 grew more rapidly than anticipated. Subsequent studies showed that this breakdown was largely in response to deregulation and disinflation. The more permanent nature of this shift is evident in the ratio of nominal GDP to M1—the velocity of M1, which experienced a clear break in its trend after 1980 (see figure 1). The attractiveness of M2 as an alternative policy guide at that time was evident in the relative stability of its velocity, which continued to revert to a constant average value, despite a rapidly changing financial world. Moreover, the M2 aggregate was redefined to include new instruments such as MMMFs, making it a more comprehensive measure of money.[2]

In a world of evolving financial markets, defining money is a perpetual

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FIGURE 1 MONEY VELOCITIES

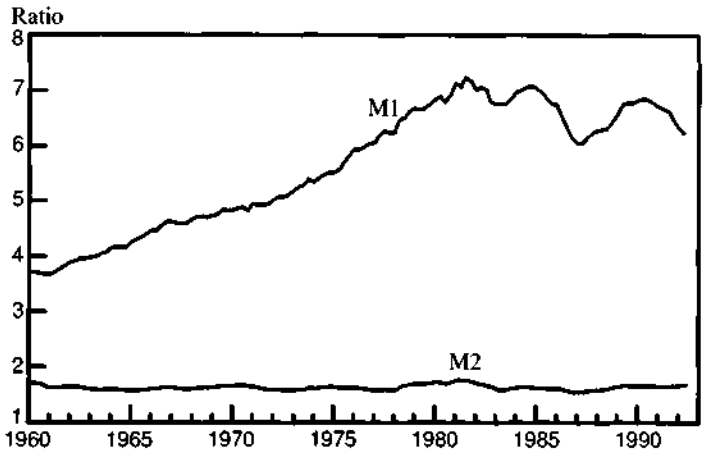
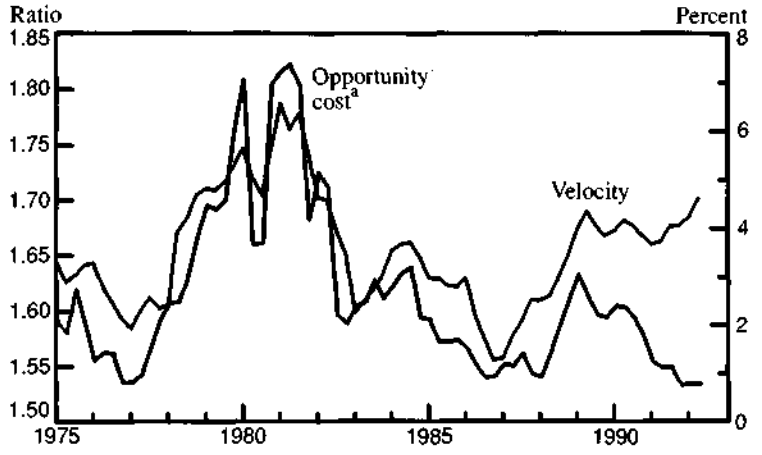


FIGURE 2 M2 VELOCITY AND OPPORTUNITY COST



a. Opportunity cost is defined as the difference between the three-month Treasury bill rate and the share-weighted average of M2's broad component yields.
SOURCES: Board of Governors of the Federal Reserve System; and U.S. Department of Commerce, Bureau of Economic Analysis.

issue. While a priori considerations often constrain the set of instruments identified as money, principles alone have not yet yielded a universally accepted definition. Monetary theorists have tended to stress either the "medium of exchange" function or the "liquidity" function. Obviously, money facilitates transactions and serves as a temporary abode of purchasing power. Such criteria, however, provide an uncertain guide to the classification of assets into those that serve as a medium of exchange and those that do not. The uncertainty associated with the liquidity criterion is even greater.

Recognizing such limitations, economists Milton Friedman and Anna J. Schwartz conclude, "... the definition of money is an issue to be decided, not on the grounds of principle as in the a priori approach, but on grounds of usefulness in organizing our knowledge of economic relationships." They argue that conditions affecting the demand for "money" are relatively stable, such that the quantities of real money balances can be explained by a few key variables. More precisely, "... the desideratum is a monetary total whose real value ... bears a relatively stable relation ... to a small number of variables that theoretical considerations lead us to believe affect the real quantity of money demanded ...."[3]

■ **Velocity and Money Demand**

Indeed, many economists believe that the mean-reverting behavior of M2 velocity is the consequence of a stable demand function. The demand for M2 balances in an individual's portfolio, as well as in the economy's, is assumed to be largely determined by nominal spending and by the *opportunity cost* of M2—that is, the interest forgone from holding M2 components as opposed to higher-yielding but nonmonetary instruments, such as stocks, bonds, and other assets not included in M2. Thus, the demand for M2 varies inversely with the spread between expected returns on nonmonetary instruments and deposit rates. Since these interest-rate differentials alter desired deposit holdings but do not affect spending, the velocity of M2 changes. For example, when market rates rise relative to deposit rates, less M2 is demanded relative to nominal GDP, and velocity increases.

Because M2 includes a number of different household assets, the responsiveness of the demand for this aggregate—its *interest sensitivity*—is related to a variety of interest rates across the maturity spectrum. Nonetheless, conventional models for M2 demand sometimes ignore the long-term nature of small time deposits (STDs) as a share of M2. Instead, they measure the opportunity cost of M2 as the difference between the three-month Treasury bill rate and the share-weighted average of the aggregate's broad component yields (see figure 2).[4] Such a measure presumes that all depository components are relatively close substitutes for three-month Treasury bills. This presumption seems to have worked well until 1988, as the systematic relationship between M2 velocity and opportunity cost would suggest.

Since then, however, M2 growth has been associated with a greater increase in nominal spending—that is, higher M2 velocity—than models using the conventional measure of opportunity

FIGURE 3 COMPONENTS OF M2

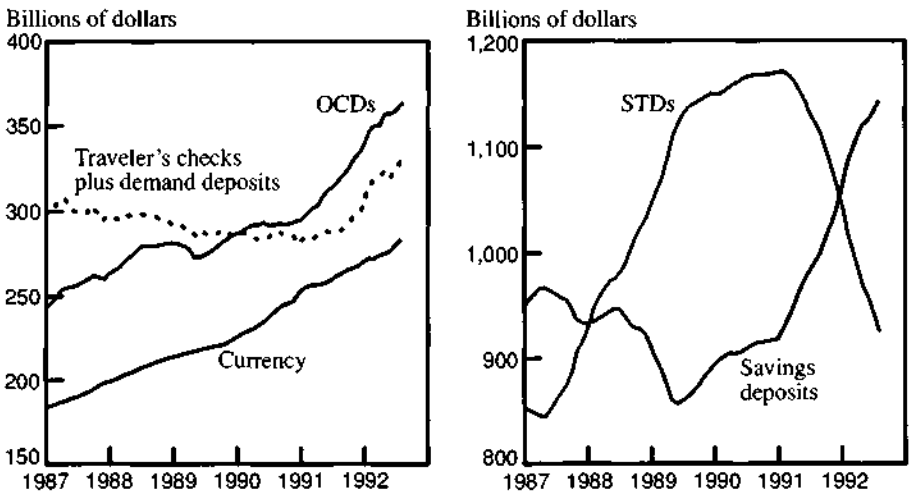
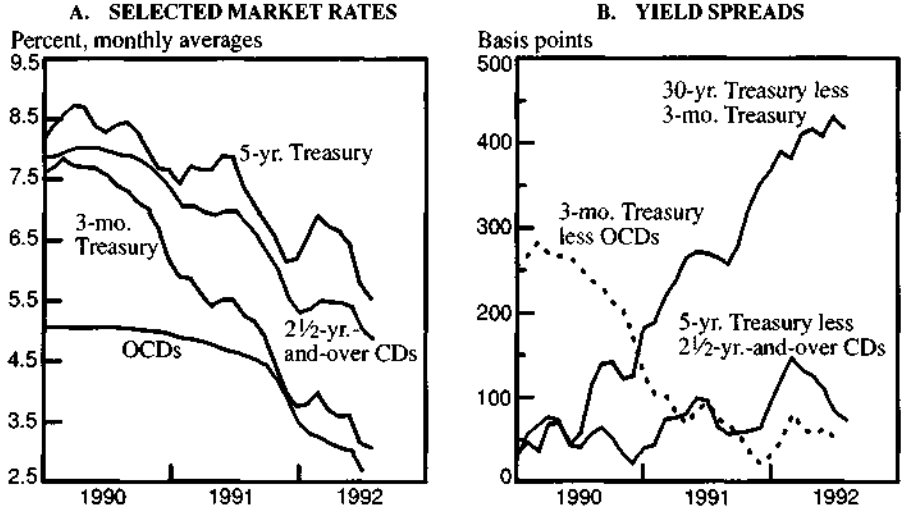


FIGURE 4 DEPOSIT YIELDS



SOURCE: Board of Governors of the Federal Reserve System.

cost would predict. A potential explanation for this breakdown is that these models may not have adequately accounted for the interest sensitivity of the demand for M2's various components. In other words, the conventional measure of opportunity cost may not be appropriate if the interest sensitivities of the components are dissimilar. This rationale is particularly appealing in light of the large differentials in yields currently available on longer-term versus shorter-term securities.

To investigate this hypothesis, it is useful to examine the recent behavior of M2 components separately. Not surprisingly, we find that M2's weakness is largely concentrated in STDs, a component for which opportunity cost has been rising, not falling. STD growth leveled out in 1989 and began to fall in 1991. This year, the disparity between the growth of STDs and other M2 components has been sharply magnified (see figure 3). Interestingly, the willingness of depositories to let STDs run off suggests that they have chosen not to compete for funds in the market for term instruments—a notion that we contend is supported by broader trends in financial intermediation.

A closer look at deposit yields confirms this suspicion. Offering rates on term deposits have fallen much more in response to declining market rates than have yields paid on nonterm deposits (see figure 4, panel A). This comparison is particularly striking between other checkable deposits (OCDs) and CDs with maturities greater than 2½ years. Bankers, fearing they might offend long-standing customers, may have been reluctant to lower offering rates on core deposits such as OCDs. Thus, the spread between the OCD rate and the three-month Treasury bill rate has narrowed sharply since 1990, as banks have responded sluggishly (see figure 4, panel B).

Offering rates on CDs of at least 2½ years' maturity, on the other hand, have led the market down, with the spread between these deposits and five-year Treasury notes actually widening since mid-1991. What this pattern suggests is that STDs may be closer substitutes for market instruments of intermediate maturities than previously thought. Thus, the recent plunge in these deposits could reflect a portfolio response to the widening spread between short-term and longer-term yields. The common opportunity cost measure does not include rates of longer-term components or of their close substitutes.[5]

Preliminary research indicates that even if the opportunity cost measure included a more detailed accounting of longer-term rates, the models would fail to explain the recent slowness in M2. This suggests that a composite measure of M2 opportunity cost may still not be adequate, particularly when the spread between yields on long-term and short-term instruments is at record levels, as is currently the case.

■ **Trends in Money versus Credit**

Indications that banks seem to be letting certain types of deposits run off are consistent with Chairman Greenspan's reference to pressures that have rechanneled credit flows away from depository institutions and into other vehicles, such as higher-yielding nonbank investments. This shift in the supply of credit has been dramatic. MMMFs, which invest mainly in short-term

credit market instruments, and bond and equity funds have grown considerably (see figure 5). Indeed, while the total amount of credit supplied by all private intermediaries continues to increase as a share of GDP, the ratio of funds supplied by depositories to GDP has been declining since late 1988 (see figure 6).[6]

As noted above, the decision to hold bank liabilities versus other financial claims is determined in part by relative yields. These yields, however, ultimately reflect the returns on the investments being funded by banks relative to those on nonbank alternatives. When the demand for the types of credit traditionally advanced by depositories is low compared to the demand for nonbank credit, banks have less incentive to compete for investors' funds. Alternatively, when the relative costs of supplying bank credit increase—for example, because of regulatory constraints—it also becomes less profitable for banks to attract deposits. In either case, as credit is channeled through nondepository financial intermediaries (whose liabilities are not included in M2) rather than through banks and thrifts, the growth of M2 may be low relative to that of broader credit-market aggregates and nominal spending.

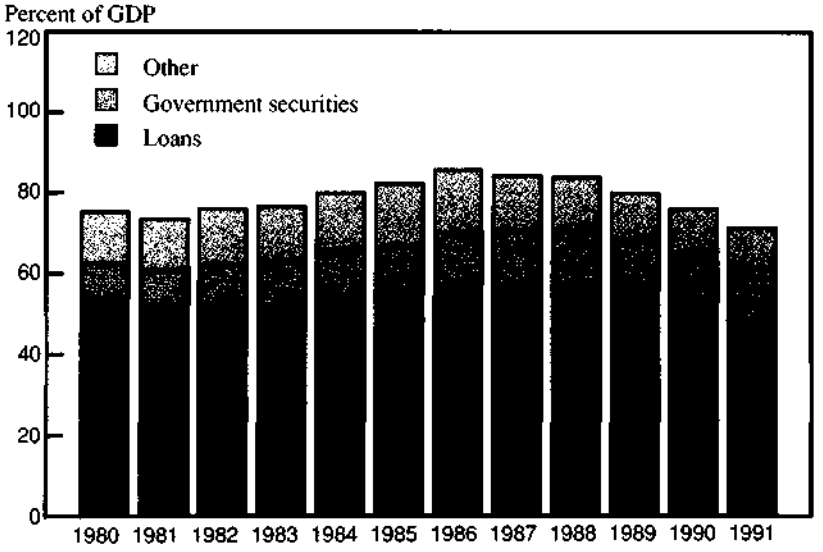
■ The Decline in Depository Intermediation

The shift in credit flows away from depositories has been exacerbated both by sluggish loan demand and by the continuing consolidation in the depository institution industry. It is not unusual for the share of credit flows advanced by depositories to decline in periods of slow economic growth as bank customers reduce their demand for credit along with their planned expenditures on capital goods, durables, and real estate. Moreover, in the current business cycle, the magnitude of the contraction in depository credit flows no doubt mirrors the boom and subsequent bust of the real estate market—especially on the commercial side.

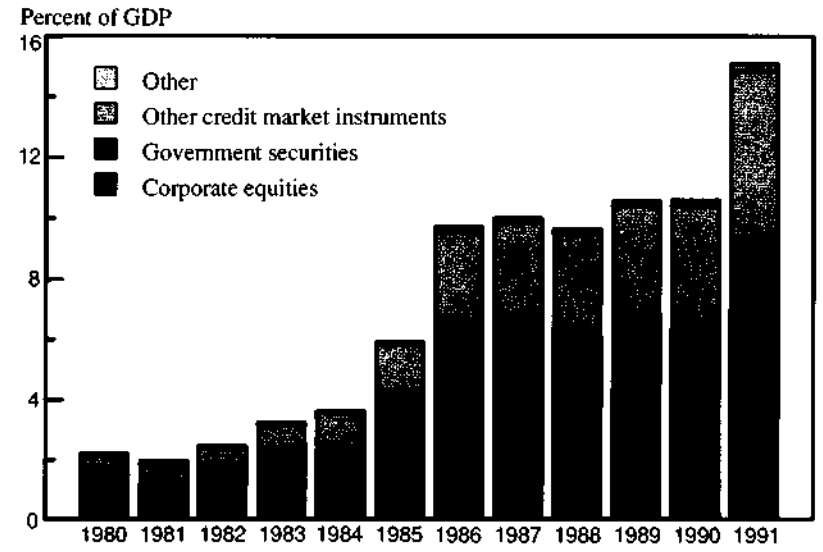
The potentially expansionary effects of declining short-term interest rates on the

FIGURE 5 FINANCIAL ASSETS AS A SHARE OF GDP—DEPOSITORIES VS. BOND AND EQUITY FUNDS

A. DEPOSITORY INSTITUTIONS

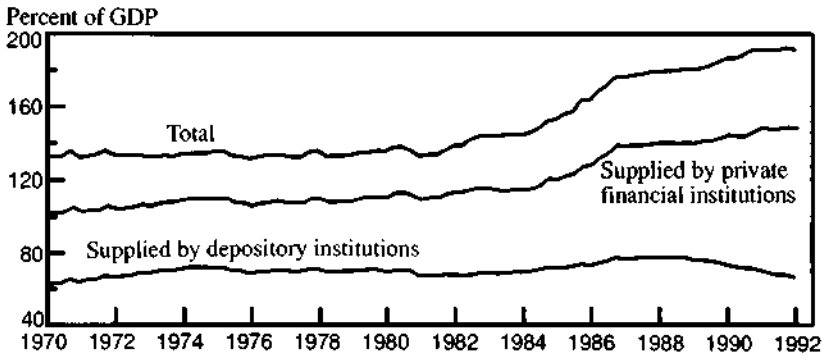


B. BOND AND EQUITY MUTUAL FUNDS



NOTE: All data are for the fourth quarter.

FIGURE 6 DOMESTIC NONFINANCIAL DEBT AS A SHARE OF GDP



SOURCES: Board of Governors of the Federal Reserve System; and U.S. Department of Commerce, Bureau of Economic Analysis.

economy have been blunted by structural problems confronting banks and thrifts. These institutions have been forced to make balance-sheet adjustments to deal with problems of asset quality, inadequate capital, and the rising costs associated with banking regulation, supervision, and deposit insurance.

The most explicit example of such structural adjustments is in the thrift industry, where insolvent institutions are being sold or assumed by the Resolution Trust Corporation (RTC). In turn, more than $90 billion in thrift assets are currently on the books of the RTC, where they are funded by the sale of government securities rather than by deposits. In cases where deposits of insolvent thrifts are sold, acquiring institutions are permitted to abrogate time deposit contracts and offer the currently low interest rates. Such is often the case for brokered deposits, which are typically held by interest-rate-sensitive investors who are likely to shift such holdings to higher-yielding instruments, such as bond funds.

The deterioration in asset quality extends beyond thrifts. In recent years, many banks have seen a sizable share of their loans turn sour, particularly those made to finance commercial real estate. With diminished capital, many banks have been led to cut dividends and to tighten lending terms. One consequence of the effort to rebuild capital has been a widening of the spread between lending rates and the cost of funds—largely determined by rates paid on M2 deposits. At the same time, investors have been raising risk premiums on depository debt and managed liabilities, increasing the cost of funds.

The costs of depository intermediation have been further augmented by rising insurance premiums and by more-stringent regulatory capital requirements. In the face of increasing intermediation costs, depositories have strong incentives to sell off some assets, a process known as securitization.[7] The net effect of these efforts has been to reduce the profitability of traditional bank funding, including the issuance of deposit liabilities included in M2.

■ Policy Implications

The evidence presented above suggests that M2's recent weakness reflects the joint response of individual portfolio holders and financial intermediaries to the relative yields and changing costs of depository intermediation. From this perspective, it is not so very puzzling that M2 velocity is above its long-run average value. Hence, because the level of economic activity associated with M2 growth is currently greater than historical relationships would indicate, it is appropriate for policymakers to respond cautiously to weakness in the aggregate.

A glimpse at the first half of 1992 reveals such behavior on the part of the FOMC. In February, the Committee projected that the monetary objective would be associated with a growth rate of nominal GDP of about 4½ to 5¾ percent for the year. Recent estimates of nominal GDP indicate growth of just under 5 percent in the first half of the year, roughly consistent with the FOMC's projections. M2, on the other hand, is currently below the lower bound of its 2½ to 6½ percent range, revealing an unanticipated increase in its velocity of more than 2 percent.

In light of the weakness of M2 and evidence of a sluggish economy, the FOMC has acted on three occasions this year, following a dramatic response in December. As a result, the federal funds rate has declined almost 2 percentage points since last November. The Board of Governors has acted twice over this period, reducing the discount rate by 1 percentage point in December and by ½ percentage point in April. M1 and the monetary base have responded; however, recent data indicate that M2 growth continues to lag. Consequently, the cautious approach of the FOMC seems to be justified as long as M2 velocity increases as projected and the economy continues to grow within the range of the Committee's projections.

An important issue for future policy is whether the velocity effects of reduced depository intermediation are permanent or transitory. Should depository credit demands pick up, one might expect more-aggressive deposit rate pricing. Thus, M2 could rebound substantially in the short run. On the other hand, banks have greatly increased their holdings of government securities, which could be sold to fund additional loan demand.

Some analysts have argued that the recent decline in depository intermediation is essentially the unwinding of an unsustainable process that emerged during the 1980s.[8] As figure 6 indicates, domestic nonfinancial sector debt supplied by depositories as a share of GDP was relatively stable throughout the decade. However, the share of total debt funded by depositories has been on the decline since 1975. The relative stability of M2 velocity in the past decade hence could have been an artifact of this trend in tandem with the debt buildup of the period.

The secular decline in the importance of banks and thrifts raises the possibility that the M2 velocity puzzle reflects more-fundamental changes in the financial sector. The shift away from depository intermediation suggests that velocity effects could be permanent as rising costs inhibit depositories from recapturing market share. Once structural adjustments take place, M2 velocity could restabilize, albeit at a permanently higher level.

Nevertheless, given that depository credit has been roughly proportionate to nominal GDP over the past two decades, one could contend that the factors contributing to the debt buildup are unrelated to the longer-run level of depository intermediation. Even if depository credit should decline relative to nominal spending in the future, however, banks could compensate by reducing managed liabilities not included in M2.

■ Concluding Remarks

Ideally, policymakers would like to supply just the right amount of money for ensuring price stability, the sine qua non for a healthy, growing economy. In practice, however, it is no simple matter to implement such a policy. Occasionally, economic relationships are stable enough for the Federal Reserve to achieve an objective for money growth with some confidence in the objective's consistency with its ultimate goal of price stability. The mid- to late 1980s seemed to be such a period.

From time to time, however, the FOMC confronts accumulating evidence that the relationships on which its policy decisions rely are breaking down. Sometimes the shifts are permanent, such as was the case with M1 in the early 1980s. Unfortunately, it takes time before the evidence is sufficient to warrant a corresponding change in focus to alternative financial objectives. Indeed, if the association between M2 and spending is permanently altered, it may take years before the new relationship is identified.

Experience over the past three decades has revealed that it is a mistake to implement policy on the pretext that money growth can be manipulated to achieve predictable, favorable effects on economic activity in the short run. There are times, however, when policymakers must make judgments about changes in the relationship between money and the economy. A recent example occurred in 1983, when persistent effects on M2 velocity had relevant implications for the appropriate M2 target. With hindsight, it is now obvious that the temporary surge in M2 growth in that year was not an indicator of excessive monetary expansion. Whether the current weakness in M2 indicates excessive tightness may not be determined for years.

■ Footnotes

1. See testimony by Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System, before the Committee on Banking, Housing, and Urban Affairs, U. S. Senate, July 21, 1992, p. 8.

2. M2, on the other hand, does not include bond mutual funds, which are easily convertible to cash balances, although at some risk of capital loss.

3. See Milton Friedman and Anna J. Schwartz, *Monetary Statistics of the United States: Estimates, Sources, Methods.* New York: National Bureau of Economic Research, pp. 104 and 139–40.

4. See George R. Moore, Richard D. Porter, and David H. Small, "Modeling the Disaggregated Demands for M2 and M1: The U.S. Experience in the 1980s," in Peter Hooper et al., eds., *Financial Sectors in Open Economies: Empirical Analysis and Policy Issues.* Washington, D.C.: Board of Governors of the Federal Reserve System, 1990, pp. 21–105.

5. A better measure might be a share-weighted average of the spreads between M2 components and substitute instruments of comparable maturities. A more extensive case for this approach is presented in 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.

6. These trends are also evident in data on the types of liabilities that financial institutions are issuing to finance their own portfolios. The share of domestic nonfinancial sector credit funded by nondeposit sources continues to climb dramatically. Moreover, data on total deposits as a source of funds overstate the share of these claims issued by banks and thrifts, because MMMF shares are included.

7. See Charles T. Carlstrom and Katherine A. Samolyk, "Securitization: More than Just a Regulatory Artifact," Federal Reserve Bank of Cleveland, *Economic Commentary,* May 15, 1992.

8. For a more complete description of this hypothesis, see John B. Carlson and Susan M. Byrne, "Recent Behavior of Velocity: Alternative Measures of Money," Federal Reserve Bank of Cleveland, *Economic Review,* vol. 28, no. 1 (1992 Quarter 1), pp. 7–8.

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