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Money, Credit, and M2

The Federal Reserve is required by law to establish target ranges for the "monetary and credit aggregates." However, in conducting policy it generally has eschewed credit in favor of monetary aggregates, on both theoretical and empirical grounds. Since about 1983 the Fed has placed greatest emphasis on a broad measure of money, M2, which includes currency, checkable deposits, liquid savings instruments and small time deposits at commercial banks and savings and loans. M2 was selected for an important role because over the past three decades its relationship with total spending on goods and services has been relatively stable and predictable. However, over the past three years, this relationship has deteriorated, casting doubt upon M2's usefulness as a monetary policy indicator. In this *Letter* we argue that these difficulties are the result of continuing financial innovation, in which M2 has been strongly affected by changes in the way that credit is channeled through the economy.

From M1 to M2

When the Fed began targeting money in the 1970s, it focused mainly on a narrow measure of money, M1, which includes only currency and (fully) checkable deposits. (For complete details on the composition of M1 and the other monetary aggregates, see any issue of the *Federal Reserve Bulletin*.) M1 predicted spending in a fairly reliable manner and performed well as an intermediate target for monetary policy because it had two important virtues. First, it had a stable money demand function—that is, a stable relationship with certain important macroeconomic variables. In particular, given a certain level of income, prices, and interest rates, M1 behavior was fairly predictable. Second, the supply of M1 was affected mainly by the monetary authority, and relatively little by commercial banks.

Both virtues essentially stemmed from the fact that banks were prohibited from paying explicit interest on the deposits in M1. Since consumers were not earning interest on these deposits, they tended to use them as transactions balances, keeping only as much in them as they needed for their transactions; therefore, these deposits were

closely linked with spending. Furthermore, banks could not affect the supply of M1 very much in the short run. Thus, the Fed's control of M1 was not compromised by bank behavior.

By contrast with M1, the broad aggregates, M2 and M3, contained time and savings deposits, which do earn interest, and therefore tended to be investment-oriented balances. Savings balances are affected by changes in investment incentives that may be hard to predict, like interest rate spreads and risk, so they are less reliably related to spending. In addition, while deposit accounts in the broad aggregates were subject to interest rate ceilings, banks had relatively more freedom to vary rates on these accounts than on checking accounts.

The deregulation of deposit interest rates in the early 1980s blurred the distinction between transactions and savings balances. Consumer checkable deposits (NOW accounts) were allowed to pay explicit interest nationwide in 1981, and the public began to leave some of its savings-type balances in M1. As a consequence, its relationship with nominal GDP began to deteriorate. These problems culminated in 1983 with the Fed's de-emphasis of M1 in favor of M2. The rationale was that M2 was broad enough to internalize many of the portfolio substitutions that had disrupted M1; for example, when interest rates on small time deposits rose, consumers would substitute from checking to time deposits, which would cause M1 to decline, but not affect M2.

Another factor in favor of M2 was that it appeared to have a stable long-term relationship with GDP since the early 1960s. But this evidence may have been a statistical artifact. The current definition of M2 came into existence only in 1980, when the Fed redefined all of its aggregates. In the process of determining how to group various accounts into different aggregates, researchers looked at the stability of the money demand function of each potential aggregate. Thus, the stable relationship between M2 and GDP in the years prior to 1980 should not be

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considered independent verification of M2's desirability as an intermediate target. For independent verification we need to look at the period since the aggregate was defined.

Unfortunately, we find that over the past three years, M2 has fallen well below expected levels given current levels of income, prices, and interest rates; in other words, the public has chosen to hold less M2 than it did previously. This has been a principal reason that in 1990, 1991, and so far in 1992, M2 has come in near the bottom, or even below, the target ranges established by the Fed.

Increased substitutability and M2

The problem with M2 seems to have arisen from the same deregulation and financial innovation that made movements in M1 so difficult to predict, and it reflects behavior changes both by the public, in its demand to hold M2, and by banks, in their supply of M2 deposits.

On the demand side, the growth of alternative assets, such as bond mutual funds, as well as reductions in the costs of moving from one asset to another, have made people more sensitive to changes in interest rates on assets both inside and outside M2—in other words, assets outside M2 have become closer substitutes for assets inside M2. For example, the recent sluggish growth in M2 has been accompanied by explosive growth in bond mutual funds. It appears that individuals have reacted to an unusually steep yield curve (the spread between long-term and short-term interest rates) by moving out of accounts held in M2 and into long-term assets. Statistical analysis supports the explanation of substitutability, because models that incorporate this behavior improve our ability to explain movements in M2.

Close substitutability on the demand side implies that developments on the supply side will have a greater effect on the quantity of M2. Because individual's demand for M2 has become more sensitive to changes in interest rates paid on M2 accounts, the quantity of M2 is more responsive to banks' behavior in supplying deposits. Interest rates paid on instruments that are substitutes for M2, like bond funds, have a larger effect as well. One reflection of the increased importance of supply factors is that M2 demand equations are now commonly specified in terms of the spreads between the interest rates banks pay on the myr-

iad components of M2 and rates available on open market instruments. Changes in these spreads will reflect developments in the banking sector, as well as other sectors that issue substitutes for M2 instruments.

For example, available evidence suggests that the slow growth in M2 is related to a decline in the volume of bank loans. For various reasons, banks are playing a smaller role in the process of channeling credit in the U.S. economy. With a smaller volume of loans to finance, banks have reduced deposit rates and issued fewer deposit liabilities, and this has depressed M2 growth. A rather spectacular case in point is provided by developments having to do with the Resolution Trust Corporation (RTC). Recent sluggish growth of M2 is at least partly due to the RTC's takeover and resolution of sick thrifts (Duca 1992). Thus the shrinkage of bank and thrift assets associated with the resolution of "bad" loans has led to a reduction in M2.

Other evidence of the behavior of M2 reflecting developments in credit markets is available as well. In the 1980s, small time deposits began to respond to (unexpected) changes in market interest rates more like the large time deposits in M3 (Judd and Trehan 1987). Large time deposits are widely regarded as credit market instruments rather than money. In fact, the Fed has traditionally shied away from M3 as a policy indicator in part because it was thought to be too much of a credit aggregate. Thus, banks' more active management of accounts in M2 is evidence that it may have some of the same problems thought to beset M3; in other words, this suggests that M2 will be significantly affected by developments on the asset side of banks' balance sheets.

Increased substitutability and monetary targeting

The evidence that M2 (and M3) are susceptible to variations in bank lending activity, as well as to how banks choose to fund these loans has important implications for monetary targeting. If these factors dominate the behavior of the broad aggregates, then controlling them may really amount to a roundabout way of controlling credit.

Is there any reason to believe that credit would be a useful variable for the Fed to focus on in conducting monetary policy? While an authoritative answer does not appear to be available in the economics literature, some observations can

be made. First, since credit is only one method of financing expenditures, the relationship between credit and economic activity is relatively loose. In addition, bank credit is only a fraction of total credit, and this fraction has varied widely over historical periods. In the last few years, it has declined rapidly.

Controlling the fraction of total credit that banks extend may be desirable if banks tend to have loan customers with few alternative sources of loans, as has often been argued. Proponents of this view argue that banks have an advantage in gathering information and monitoring the activities of borrowers, and thus tend to make loans to small firms that do not have access to national or secondary credit markets. A reduction in bank loans may thus have the effect of directly limiting spending by these small firms. However, the size of this effect in the national economy remains an open question.

Even if special attention in the conduct of monetary policy should be paid to lending by banks, is control of M2 the way to do it? Or should we be thinking of a broader monetary aggregate like M3, or even of bank loans themselves? In any event, the logic and evidence required to justify such a procedure are very different from those that are put forward to justify the use of money as an intermediate target.

In summary, when the Fed shifted its emphasis from M1 to M2, the hope was that we were getting a monetary aggregate that would internalize the portfolio shifts that had plagued M1. However, the passage of time and continuing financial innovation have revealed that M2 is susceptible to portfolio shifts resulting from a wide variety of sources. These developments have created a number of serious empirical challenges in trying to obtain useful information from movements in M2. Conceptually, these problems flow from the fact that targeting M2 has become more like targeting credit, rather than money.

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References

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MONETARY POLICY OBJECTIVES FOR 1992

On July 21, Federal Reserve Board Chairman Alan Greenspan presented a mid-year report to the Congress on the Federal Reserve's monetary policy objectives for the remainder of 1992. The report reviews economic and financial developments in 1992 and presents the economic outlook heading into 1993. For single or multiple copies of the report, write to the Public Information Department, Federal Reserve Bank of San Francisco, P.O. Box 7702, San Francisco, CA 94120, or phone (415) 974-2246.

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