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M2 Growth in 1995: A Return to Normalcy?

by John B. Carlson and Benjamin D. Keen

In years past, the growth rates of money measures such as M2 received considerable attention because evidence showed that there was a simple and stable long-run relationship between M2, nominal income, and inflation. Many analysts believed that abrupt changes in money growth induced swings in output, while changes in the trend rate of money growth led to changes in the underlying rate of inflation. Indeed, the view that M2 is an important monetary policy guide is reflected in the fact that the Federal Reserve is required by law to specify growth ranges for the monetary and credit aggregates.[1]

In recent years, however, the reliability of money measures as indicators of monetary policy has been called into question. Since 1990, the relationship between M2 and the variables mentioned above seems to have been permanently disturbed. As a result, policymakers' focus on money measures has diminished significantly. In July 1993, Federal Reserve Chairman Alan Greenspan reported that "... at least for the time being, M2 has been downgraded as a reliable indicator of financial conditions in the economy, and no single variable has yet been identified to take its place."[2]

The latest data, however, suggest that M2 may have begun to regain its value as a policy indicator. After decelerating for five successive years, the growth rate of

the aggregate has turned up substantially in 1995. Year to date, M2 has advanced at a 4.3 percent annual pace, approaching the upper end of its Humphrey–Hawkins specified growth range (see figure 1). This recent strength raises a number of questions. Can we infer that the relationship of M2, output, and inflation has stabilized again? Will M2 regain its lost status? This *Economic Commentary* discusses the breakdown and diminished role of M2, then looks at evidence suggesting that the relationship among these variables has indeed been restored.

■ The Demand for M2

The link between money and economic activity has long been succinctly represented in the quantity theory of money. In his influential restatement of this idea, Milton Friedman argues that "the quantity theory is in the first instance a theory of money demand."[3] Simply put, the notion is that over the long run, money-balance holders tend to demand a level of balances proportionate to their income. Providing a steady supply of money equal to that demanded should thereby foster noninflationary economic growth. It was largely on the belief that money demand is one of the most stable and reliable relationships in economics that money measures earned their status in the monetary policy process.

From the mid-1980s to the early 1990s, the demand for M2 was perceived to be reasonably stable and the most reliable of

In recent years, M2 growth has been unusually weak. This aberrant behavior led to its demise as the primary indicator of monetary policy. Although the aggregate has been behaving more normally over the past year or so, it seems unlikely that it will soon regain its earlier stature as a key policy guide.

the alternative money measures. M2 and nominal GDP had grown at approximately the same rate over the previous 30 years, suggesting a simple and enduring relationship that provided policymakers with a reliable and uncomplicated framework for setting monetary targets. This relationship is summarized by the trendless long-run average of M2 velocity, defined as the ratio of GDP to M2.

Although M2 velocity had been trendless in the long run, it exhibited considerable variation in the short run. Most of this variation, however, was associated with changes in the opportunity cost of holding M2 deposits, defined as the difference between short-term market interest rates and the rate of return on M2 deposits (see figure 2). Specifically, an increase in the opportunity cost of M2 encourages balance holders to shed M2 deposits in favor of higher-yielding alternatives. Hence, M2 deposits are pared down and velocity increases.

Before the 1990s, Federal Reserve Board estimates of the response of M2 demand to interest-rate changes were fairly good predictors of the observed variability of M2 velocity.

■ The Demise of M2

Beginning in 1990, however, M2 growth began to slow despite a considerable reduction in its opportunity cost. At the same time, M2 velocity remained unexpectedly high. Although part of the M2 slowdown reflected a weakened economy, the magnitude of the downturn could not be reconciled with the aggregate's demand framework or with the historical experience of its velocity. For the next three years, velocity began to drift upward, even though M2 opportunity cost fell. As this anomaly persisted, it became apparent that the estimated relationship linking M2, its opportunity cost, and nominal GDP had broken down. Most standard M2 demand models began to substantially overpredict M2 (see figure 3).

A fundamental factor underlying the aggregate's weakness relates to the credit-market restructuring that occurred in the late 1980s and early 1990s. Specifically, the troubles faced by many financial intermediaries—most notably savings and loans—placed them in a position where they could not assume any additional risk. Consequently, such depositories were forced to tighten their lending standards. Investors seeking financing for marginal business opportunities had to look elsewhere for funds or else abandon their projects. With limited loan expansion, depositories found little need for funds and hence did not price deposits attractively.

Another relevant factor was the steepening in the maturity structure of interest rates. A weakened economy and higher lending standards in the early 1990s ultimately led short-term interest rates to fall to levels not seen in years. This dramatic downturn was not accompanied by a one-to-one decline in long-term interest rates. As a result, long-term instruments were paying significantly more than short-term instruments.

FIGURE 1   THE M2 AGGREGATE
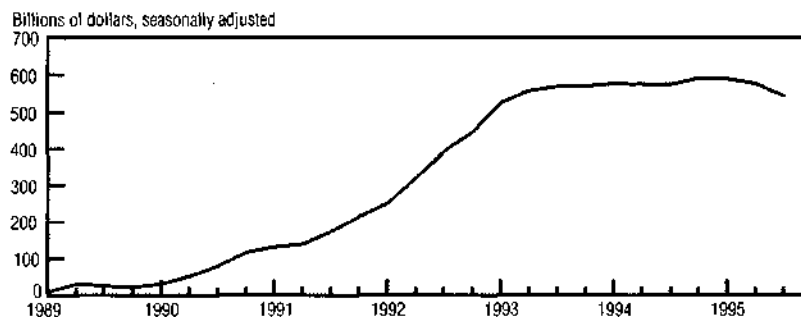
Billions of dollars, seasonally adjusted
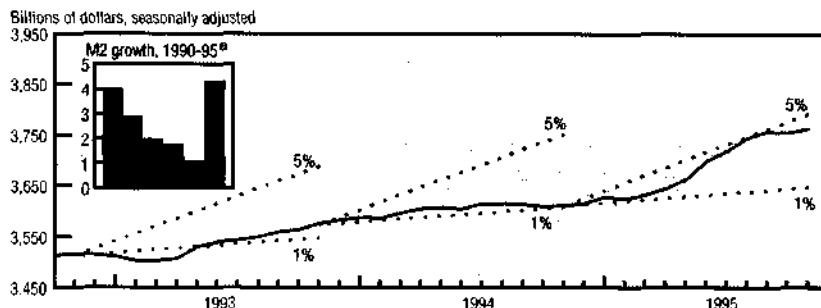
a. Growth rates are percentage rates calculated on a fourth-quarter over fourth-quarter basis. Annualized growth rate for 1995 is calculated on a November over 1994:IVQ basis.
NOTE: Last plot is for November 1995. Dotted lines represent M2 growth ranges and are for reference only.
SOURCE: Board of Governors of the Federal Reserve System.

FIGURE 2   M2 VELOCITY AND OPPORTUNITY COST
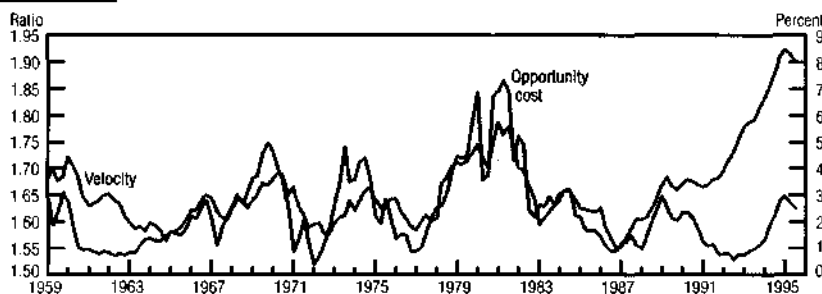
SOURCES: Board of Governors of the Federal Reserve System; and U.S. Department of Commerce, Bureau of Economic Analysis.

FIGURE 3   THE M2 FORECAST ERROR

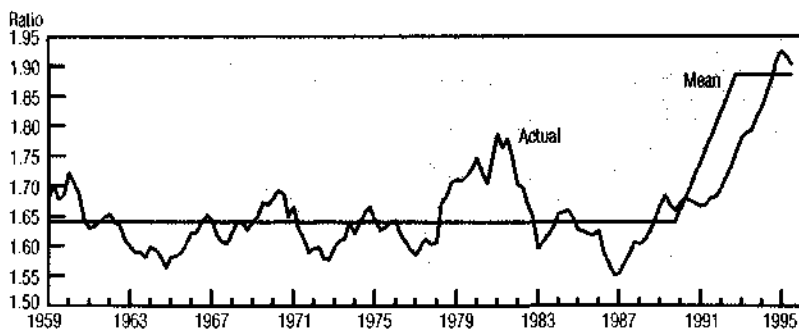Billions of dollars, seasonally adjusted

SOURCE: Federal Reserve Bank of Cleveland.

The wide divergence between long- and short-term yields acted as a catalyst for financial innovation. Chief among these innovations were instruments that reduced the transaction costs of bond mutual funds and increased their accessibility to households. This allowed individuals to buy into a diversified portfolio of long-term bonds with check-writing privileges that made the funds quite liquid.
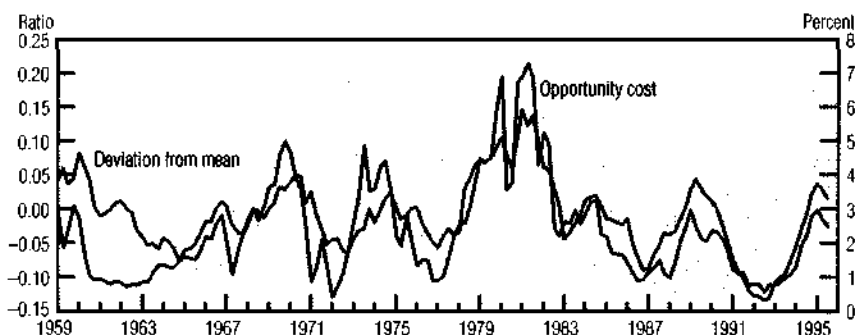
Bond mutual funds are subject to capital losses in the short run, but in the long run, they yield relatively higher rates than do deposit instruments. When short-term interest rates were falling in the early 1990s, marketing strategies encouraged households to learn about bond mutual funds, which were yielding significantly higher returns. As a result, many Americans chose, for the first time, to move some of their wealth from M2 deposits to bond funds. It now appears

FIGURE 4 M2 VELOCITY

Ratio

FIGURE 5 M2 VELOCITY'S DEVIATION FROM ITS MEAN AND OPPORTUNITY COST

Ratio   Percent

that for many of these people, bond funds have become a permanent and significant part of their portfolios, supplanting bank CDs (previously the only major form of financial wealth for most households).

■ Efforts to Salvage M2

The breakdown of the relationship between M2, nominal income, and opportunity cost provoked substantial research. One Federal Reserve Board study sought to correct the problem by improving the opportunity-cost measure.[4] Specifically, this approach accounted for a broader menu of alternative rates—including some longer-term interest rates—in an M2 demand model. Although the extended opportunity-cost model improved out-of-sample prediction performance, it started to overpredict money demand in mid-1993, when long-term interest rates fell dramatically.

Other researchers tried to redefine the M2 aggregate to include additional instruments such as bond mutual funds.[5]

Models using these broader measures were able to explain some of the M2 shortfall by internalizing part of the substitution between M2 balances and these funds. However, adding bond funds to M2 did not fully restore its relationship with nominal income and opportunity cost.[6]

Finally, with the abrupt turnaround in interest rates in 1994 and the flattening of the maturity structure, some analysts predicted that households might abandon bond funds as a form of wealth holding, especially as capital losses sharply reduced reported yields. Although the changing interest-rate structure stanched the flow of money into bond funds, there is no evidence of any significant net outflow. Hence, a large component of the shift in household funds from CDs to bond funds appears to be permanent. The question remains, however, whether household portfolio management has stabilized, and, if so, what that implies for the

future relationship between M2, inflation, and output.

■ Has M2 Stabilized?

Preliminary evidence suggests that the relationship between M2, inflation, and output may have stabilized. The prediction errors of the M2 demand model have essentially remained unchanged since 1992. This is consistent with a permanent one-time shift in the level of M2 relative to income. Such an outcome would be the case if the forces underlying the deceleration of M2—restructuring of the nation's credit markets and financial innovation—had worked themselves out, resulting in a one-time effect on M2 demand.

When the M2 model is reestimated to allow for such a change, we find that the historical relationship is largely restored.[7] One implication of this result is that M2 velocity has stabilized at a new level, and that its short-run relationship with M2 opportunity cost is essentially unchanged.[8] Based on our estimates, mean M2 velocity increased from around 1.64 before 1990 to near 1.89 after 1992 (see figure 4). Deviations of M2 velocity from its estimated mean are closely linked to changes in its opportunity cost (see figure 5).

We stress, however, that these estimates are based on a limited amount of data covering only part of a business cycle; hence, skepticism about their durability and precision is warranted. A convincing case might require the new estimates to hold up over a wide range of interest-rate environments, especially one similar to that which existed around 1990, when long rates greatly exceeded short rates. Nevertheless, it seems prudent to begin monitoring this relationship now.

■ Conclusion

Even if M2 continues on a trajectory consistent with the new, higher level of velocity, it seems unlikely that it will soon regain its lost status. One of the most attractive features of the M2 aggregate—the long-run stability of its velocity around a fixed value—has been spoiled. More than 30 years of experience supported the view that M2 velocity would ultimately return to its mean

value of around 1.64. The recent evidence that its velocity is higher is based, at most, on five years of experience. Clearly, it will take more time (perhaps another business cycle) to gain confidence that the new average level approximates a long-run equilibrium value.

Nevertheless, if the recent evidence continues to hold, then M2 will probably grow at about the same rate as nominal income, assuming that interest rates remain relatively unchanged. Thus, M2 velocity would remain around its current level. On the other hand, a sharp decline in interest rates, and hence in the opportunity cost of M2, could induce a substantial rise in M2 demand. The consequent reduction in the aggregate's velocity would be interest-rate induced and hence would be consistent with the new stabilized relationship. It seems highly doubtful, however, that M2 velocity will return to anywhere near its previous level.

■ Footnotes

1. In February and July of each year, the Federal Open Market Committee (the main policymaking arm of the Federal Reserve Board) sets annual growth ranges for the monetary and credit aggregates. The Federal Reserve Board chairman presents these ranges in testimony before Congress pursuant to the Humphrey–Hawkins Act of 1978.

2. See *1993 Monetary Policy Objectives: Summary Report of the Federal Reserve Board,* July 20, 1993, p. 8.

3. See Milton Friedman, "The Quantity Theory of Money — A Restatement," in Milton Friedman, ed., *Studies in the Quantity Theory of Money.* Chicago: University of Chicago Press, 1956, pp. 3–21.

4. See Joshua N. Feinman and Richard D. Porter, "The Continuing Weakness in M2," Board of Governors of the Federal Reserve System, Finance and Economics Discussion Series, No. 209, September 1992.

5. See Sean Collins and Cheryl L. Edwards, "An Alternative Monetary Aggregate: M2 Plus Household Holdings of Bond and Equity Mutual Funds," Federal Reserve Bank of St. Louis, *Review,* November/December 1994, pp. 7–29.

6. See John V. Duca, "Should Bond Funds Be Added to M2?" *Journal of Banking and Finance,* vol. 19, no. 1 (April 1995), pp. 131–52. See also Athanasios Orphanides, Brian Reid, and David H. Small, "The Empirical Properties of a Monetary Aggregate That Adds Bond and Stock Funds to M2," Federal Reserve Bank of St. Louis, *Review,* November/December 1994, pp. 31–51.

7. We estimate a one-time level shift in M2 demand of approximately $500 billion, occurring smoothly over the 1990:IQ to 1992:IVQ period.

8. Indeed, the goodness-of-fit over the whole sample is superior to that in the sample period leading up to the level shift.

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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.