ECONOMIC COMMENTARY

Monetarism and the M1 Target

by William T. Gavin

The Federal Reserve has once again decreased emphasis on the M1 target as a guide for short-run policy actions. In the first half of l986, M1 growth averaged 11.8 percent, while nominal gross national product (GNP) growth averaged only 4.6 percent and inflation continued to be lower than expected. Policymakers and economists, including leading monetarists, argue that M1 is no longer an appropriate short-run guide for monetary policy.[1]

This *Economic Commentary* discusses the apparent breakdown in the relationship between M1 and economic activity. The first part of this essay makes a claim that is quite simple, although perhaps controversial; namely, that the breakdown of the relationship between M1 and nominal GNP is only apparent. The illusion of stability between M1 and nominal GNP that prevailed after World War II resulted from the accelerating inflation and interest rate regulations that uniquely characterized that period. Such stability should not be considered to be the norm.

In fact, as the first part of this essay shows, the recent variability of M1 velocity, while large in comparison to our experience after World War II, is still small relative to our experience before that war. The monetarist call for a constant money growth rule followed an extensive study of this prewar experience, and was not based on the postwar stability of M1 velocity. The second part of this essay presents a monetarist critique of recent experience.
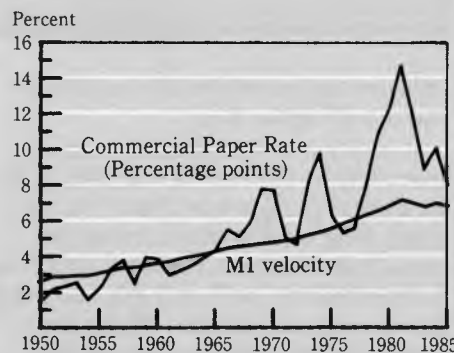
Historical Perspective
To understand the challenge for monetary policy, it helps to take a long historical perspective. We live in a unique time. For the four thousand years before

Chart 1 Velocity of M1 and the Commercial Paper Rate, 1950–1985

SOURCE: Board of Governors of the Federal Reserve System.

the 1900s, monetary systems were based on commodity standards, usually metals. There have been paper money systems in the past (the first recorded instance of state-issued paper money occurred in China in the ninth century), but they always degenerated with high inflation and consequently disappeared.[2] While metallic standards were often suspended during wars and national emergencies, they were usually reinstated soon after the emergency ended.

The United States adopted a modified gold standard in the Bretton Woods Agreement after World War II. The dollar remained tied to gold until the late 1960s or early 1970s. Officially, the dollar was freed from gold when President Nixon suspended convertibility for other central banks on August 15, 1971. But, effectively, the dollar had already been freed from a gold constraint in 1968 when Congress removed the "gold

cover" linking currency issue to the government's gold stock.

The problem for the Federal Reserve, both then and now, is how to maintain price stability in a monetary system with unbacked paper money; no society has ever succeeded in doing so. Contrary to the suggestions offered in textbooks and treatises by monetary reformers, experience shows that it is no easy matter to stabilize the price level with a paper money system.

The monetarist solution to this problem is to protect the value of money by limiting its quantity. The intellectual foundation for this solution is the Quantity Theory of Money. As reformulated by Milton Friedman *(Studies in the Quantity Theory of Money,* 1956), it is essentially a theory of money demand, that is, a theory about why people want to hold money balances.[3]

The most important factor determining the demand for M1 is the level of transactions. It is common practice to use nominal GNP as an approximate measure of transactions because aggregate transactions data are not available. Over a relatively short period (say three months to a year), quantity theorists expect the demand for money to rise or fall in a predictable fashion with a rise or fall in GNP. The ratio of nominal GNP to the amount of money is termed the *velocity* of money, in reference to the turnover per year, or the velocity of circulation, of money.

Of course, velocity is not a constant. There are seasonal and other variable factors affecting money demand and there is error in measuring income and money. Of the nonseasonal factors, the most important are probably interest rates and technological innovations affecting the efficiency of the payments system.

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1. One notable exception was the late Michael J. Hamburger *(Wall Street Journal,* July 8, 1986, p. 30) who argued that his money-demand equation, specified two decades ago, continued to explain the relationship between M1 and nominal GNP. Note, however, that he implicitly recommended a

procedure based on a constant growth rule for nominal GNP, not a constant growth rule for M1.

2. See Elgin Groseclose, *Money and Man,* Frederick Ungar Publishing Co., 1961, p. 118, or Rupert J. Ederer, *The Evolution of Money,* Public Affairs Press, 1964, p. 91.

When interest rates rise, people economize on non-interest-bearing currency and on checking balances, and then velocity rises. When interest rates fall, people are more willing to leave funds idle as cash balances, and velocity falls. Of course, interest rates change every day, but firms and households do not adjust their money balances to every short-run change in interest rates. It takes time and resources to rearrange our monetary affairs. Therefore, the adjustments will be made when it is convenient, or when there is a significant change in the level of interest rates *that people expect to be permanent.*

We have also seen a rise in velocity (decline in the demand for money) with the advance of technology and innovations in the banking industry. For example, households use credit cards for transactions, reducing average balances that are kept in checking accounts. Firms have developed a wide array of cash management techniques.[4] The technological innovations were partly spurred by rising interest rates; when interest rates fall, some of these cash management methods will become uneconomical, but others, with lower marginal costs, will remain.

The Velocity Breakdown in the 1980s

During the 1970s, many came to believe that these other factors (interest rates and innovations in cash management) didn't matter too much for the purpose of choosing the M1 target. While velocity growth was quite variable from quarter to quarter, these fluctuations were largely offsetting. Over periods of a year or two, M1 velocity usually seemed to grow at its trend rate of 3 percent, regardless of what happened in the short run to interest rates and advances in cash management. Indeed, one of the debates among economists was whether the Federal Reserve's monetary targets should take account of changes in interest rates and other factors affecting money demand. Monetarists said no, claiming that while interest rates mattered in theory, they did not seem to matter much in practice. A look at velocity and interest rates in the period from 1950 to

Chart 2 Velocity of M1 and the Commercial Paper Rate, 1895–1985

SOURCE: Federal Reserve Bank of Cleveland.

Chart 3 M1 Velocity Growth, 1895–1985
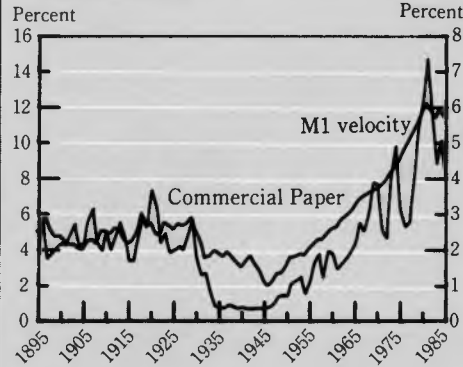
SOURCE: Federal Reserve Bank of Cleveland.

1980 seems to confirm the monetarist position (See chart 1).
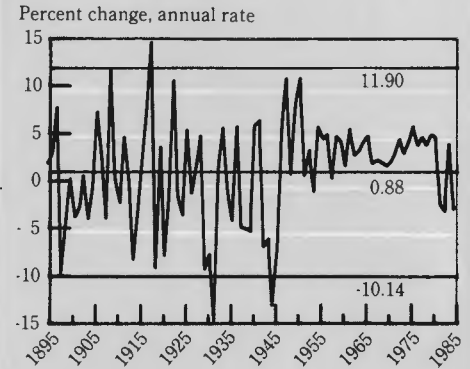
Velocity rose in a smooth fashion from 2.52 in 1950 to 7.11 in 1981. The interest rate shown in chart 1 is the short term (4-6 month) commercial paper rate. This interest rate rose from 1.45 in 1950 to 14.76 in 1981; however, its rise was not smooth. While the trends in both velocity and interest rates were rising, there does not appear to be much quarter-to-quarter or year-to-year co-movement between these variables. Consequently, there did not seem to be much reason to make the monetary targets conditional on the outcome for interest rates. Furthermore, given the relation between velocity and interest rates from 1950 to 1981, one would not have predicted an abrupt decline in velocity, even knowing the actual outcome for interest rates in the early 1980s.

The smooth rise in velocity occurred during a period with steadily rising trends in inflation and interest rates. Federal Reserve System Regulation Q prohibited banks from paying interest rates on checking deposits, and the rising interest rates on alternative assets reflected rising opportunity costs to depositors.

Had banks been allowed from the beginning to pay interest on checking deposits, we might not have seen such a runoff of deposits and such a rapid rise in velocity. But banks were not

allowed to pay interest on checking until 1981. The effective deregulation of interest-rate ceilings on demand deposits by regulatory approval of nationwide NOW and Super-NOW accounts was therefore an important factor in changing the velocity trend. The deregulation effect has worked to lower velocity, as has the perceived permanent decline in interest rates. Deregulation also has confounded attempts to quantify the effect that falling interest rates are having on the velocity trend.

This departure from the 3 percent growth trend, illustrated in chart 1, represents the apparent breakdown in M1 velocity that is the source of the current disaffection with the M1 target. As stated earlier, this appearance of breakdown results from a myopic view of history that includes only the period after World War II.

However, when we take a longer view, we see that this latest decline in velocity is not atypical; rather, it is consistent with a long-standing relationship between M1, GNP, and interest rates (See chart 2). While *transitory changes* in interest rates did not seem to be closely related to M1 velocity, it appears that *changes in the trend* of interest rates have been associated with changes in the trend of velocity.

When the trend in the interest rate was flat, from 1895 to 1929, the trend

3. See Milton Friedman, "The Quantity Theory of Money — A Restatement," in *Studies in the Quantity Theory of Money,* University of Chicago Press, 1956, pp. 3-21. While Friedman advocated alternative measures of money (M2 in his early work and, more recently, the monetary base), we

use the term money to refer to balances held primarily to conduct transactions. This corresponds to the definition of money known as M1. M1 includes currency, travelers' checks, demand deposits, and other checkable deposits such as NOW accounts and credit-union share drafts. For a more precise definition, see any recent issue of the *Federal Reserve Bulletin,* page A3.

4. For a detailed description, see John B. Carlson, "Methods of Cash Management," *Economic Commentary,* Federal Reserve Bank of Cleveland, April 5, 1982.

5. Friedman recommends a 4 percent constant money growth rule in Chapter 4 of Milton Fried-

in M1 velocity was flat. When interest rates fell, velocity fell. After World War II, rates began to rise — approximately doubling every decade to 1980 — and velocity also rose. If the decline in interest rates since 1982 is regarded as a permanent decline, then it should be associated with a decline in the velocity trend.

From this perspective, what seems unusual is not the experience of the 1980s, but rather the apparent stability of velocity from 1950 to 1980. It is likely that this relative stability was made possible by a combination of two atypical circumstances. The first was the accelerating inflation and rising interest rates of the period. The other was the prohibition against paying interest on deposits. These two circumstances, which combined to produce the steady rise in velocity, were both eliminated in the early 1980s.

Not only was there a change in the growth trend of M1 velocity in the 1980s, but there was also an increase in the variability as measured by changes in the level. This measure of the variability in M1 velocity is shown in chart 3, which illustrates annual percent changes in M1 velocity from 1895 to 1985. Once again, we see that the different pattern for M1 velocity in the 1980s is not so different if we take a longer historical perspective. The variability in recent years pales in comparison to the variability in the period before World War II.

It is likely that the data for this early period are of low quality. But these are data that Milton Friedman collected and studied as he developed the monetarist rule of constant money growth.[5] Using these data, Friedman concluded that the short-run (quarter-to-quarter or year-to-year) relationship between money and the economy was so unpredictable that monetary policy could not be used to fine-tune the path for nominal GNP. He also went to some lengths to argue that the major episodes of instability in velocity were due to a failure to maintain stable growth in the money supply.[6]

Friedman argued that the social costs of having the economy adjust to money demand disturbances would be less than the social costs of having the economy adjust to the uncertain environment as-

sociated with discretionary monetary policy. While one cannot prove or disprove the proposition that money demand would be stable if money supply were stable, the proposition is a fundamental assumption leading to the call for a constant money growth rule.

## A Monetarist Critique of Recent Experience

When we take the longer perspective, we see that it was a mistake to expect so much of M1 in the first place. The monetarist philosophy, which forms the intellectual basis for monetary targeting, was developed with this longer perspective in mind. The most basic tenet of the monetarist philosophy is that the economy will function most efficiently if government institutions and policies are structured to permit market forces to operate with as little day-to-day interference from government as possible.

Monetarists think that if monetary institutions are properly structured the economy is inherently stable, and will tend toward full employment even when buffeted by outside shocks such as weather and changes in population, technology, or tastes. Consequently, monetarists tend to attribute long periods of slow growth and periods of large economic fluctuations to inefficient government institutions or to inappropriate policy actions.

Given efficient and stabilizing institutions, monetarists conclude that the best that the monetary authority can do is to supply the monetary base at a constant growth rate. The monetary base is government-supplied money. This would be expected to lead to fairly stable and predictable growth rates for different types of bank deposits, for nominal GNP, and for the overall price level.

As a practical matter, our monetary control institutions are not well-suited for setting a constant growth rule for the supply of base money. For example, money demand is quite unpredictable in the very short run, say within the period of one month. Yet current rules require

Chart 4 Wholesale Price Index, 1895–1985
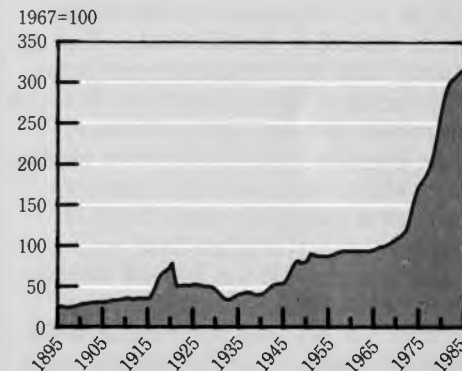
SOURCE: Federal Reserve Bank of Cleveland.

that banks adjust their portfolios to meet average reserve requirements every two weeks. This only makes sense if one wants to force the economy to adjust to a fixed path for M1, no matter what the cost. Such an arrangement is not likely to be optimal, however, if we view the money stock as a buffer to help lower transactions and other marketing costs associated with mismatched income and commodity flows.

Setting a constant growth rule for the monetary base under current regulations could lead to highly volatile interest rates. To avoid sharp swings in interest rates, the Federal Reserve would have to monitor constantly the demand for reserves and attempt to counter shifts in this demand with offsetting changes in the supply of reserves. The discount window provides another safety valve that supplies reserves whenever there is an unexpected increase in demand. Current reserve requirement regulations would have to be changed before the Federal Reserve could make operational a rule for the monetary base.[7]

When asked to make monetary policy recommendations based on our current regulations, monetarists have responded by recommending that the Federal Reserve adopt a constant

man, *A Program for Monetary Stability,* Fordham University Press, 1959.

6. See Milton Friedman and Anna J. Schwartz, *A Monetary History of the United States: 1867-1960,* Princeton University Press, 1963. For example, in

Chapter 7, Friedman and Schwartz attribute the steep decline in velocity to the severity of the depression which, they contend, was due to the 35 percent decline in the stock of money between August 1929 and April 1933.

7. There have been proposals for reserve requirement reforms that would make a monetary base target operational. For two examples, see the proposal for an expanded reserve carry-forward system in William Poole, "The Making of Monetary Policy: Description and Analysis,"

money growth rule for one or another of the monetary aggregates, with most choosing M1. The targeting of M1 is based on the constraint imposed by current regulations, as well as on theoretical and empirical considerations. M1 is defined to include assets that are mainly held for transaction purposes. The theory of the transactions demand for money is more highly developed than theories of the demand for money in its other uses, such as a store of value or a unit of account. Furthermore, empirical studies done both inside and outside the Federal Reserve prior to the 1980s showed that the demand for M1 was more predictably related to movements in interest rates and economic activity than were the broader aggregates. As shown above, these "predictable" relationships have not survived in the 1980s.

The monetarist policy prescription became more and more popular as inflation accelerated and as more experience suggested that M1 velocity was stable and predictable. Monetarism became associated with the notion that short-run changes in money were closely and systematically related to short-run changes in GNP and that velocity would continue to grow 3 percent a year, no matter what the Federal Reserve did.

When that short-run relationship disappeared, monetarism naturally lost popularity among economists and policymakers, who viewed monetarism as a justification for fine-tuning nominal

GNP growth. However, this emphasis on the short-run relationship between money and economic activity is not fundamental to the basic monetarist principles that bear on the efficient conduct of monetary policy.

While monetarism means different things to different people, most monetarists agree that the framework for monetary policy should be structured so as to create the optimal environment for economic growth and efficient allocation of resources.[8] Further, monetarists agree that, in such a framework, policy actions should be predictable and should be expected to produce a stable price environment. Monetarists think that attempts to use discretionary changes in the money growth rates in order to smooth the business cycle or to promote higher employment will either destabilize the economy or lead to inflation or both.

In the Full Employment Act of 1946, Congress gave the federal government (and indirectly, the Federal Reserve) the responsibility to "... use all practicable means ... to promote maximum employment, production, and purchasing power." While much of the willingness to tolerate accelerating inflation can be traced to legitimate concerns about production and employment, new advances in macroeconomic theory support the monetarist contention that there is no long-run tradeoff between inflation and these real variables.[9] In this regard, the monetarists have an important message for policymakers when they argue

that the way to provide the best environment for long-run economic growth is to provide a stable price level.

In retrospect, attempts to use active stabilization policy have been associated with accelerating inflation. Chart 4 shows the wholesale price index from 1895 to the present. The period from 1895 (actually, the same holds true from the end of the eighteenth century) to World War II was one of relative price stability. The price level rose and fell about at an average that was last seen approximately in 1940.

Conclusion
The recent instability of M1 velocity is due to forces that were set in motion by economic policies of the past. Attempts to change important monetary or bank regulatory policy are likely to lead to a temporary period of instability in velocity. Even when this period of transition is over, we should expect M1 velocity to be more variable in a regime of stable prices (or stable inflation) and deregulation of deposit interest rate ceilings than it was during the period of accelerating inflation. To conduct policy efficiently in such an environment, it is important to develop institutions that allow the Federal Reserve to commit to long-run price stability. At the same time it must retain the short-run flexibility to respond to technological advances and other shocks to the structure of financial markets.

New England Economic Review, March/April 1975, pp. 21-30, and the proposal to stagger reserve maintenance periods among groups of banks in Albert H. Cox, Jr. and Ralph F. Leach, "Defensive Open Market Operations and the

Reserve Settlement Periods of Member Banks," *Journal of Finance,* vol.19 (March 1964), pp.76-93.

8. For a discussion of what is meant by the term monetarism, see William Poole, *Money and the Economy: A Monetarist View,* Addison-Wesley Publishing Co., 1978, pp. 1-4, or Thomas Mayer,

The Structure of Monetarism, W. W. Norton & Co., 1978, pp. 1-46.

9. For a discussion of these issues see James G. Hoehn, "Monetary Policy Debates Reflect Theoretical Issues," *Economic Commentary,* Federal Reserve Bank of Cleveland, May 1, 1986.