4 percent. Barring a shift in the relationship between M2 and nominal GNP growth, a period of disinflation may lie ahead.

The current target range permits ample opportunity for the inflation rate to decline during the next few years. M2 growth would have to be maintained at 7 percent in the future, the upper limit of the range, just to maintain the current inflation trend. The pause in the gradual reduction of the target ranges for 1990 does not imply less commitment to price stability; rather, growth near the midpoint of the current 3 to 7 percent target range would be consistent with further declines in the rate of inflation to about 2 percent, or half of its recent trend.

The FOMC will reconsider its tentative 1990 target ranges at its February 1990 meeting. M2 growth has been averaging nearly 7 percent for the past few months and is expected to continue growing that rapidly. For the FOMC to maintain M2 growth along a disinflationary track, a tightening of monetary policy would be necessary to constrain M2 to its midpoint. Whether additional factors become relevant and compel the FOMC to override the signal from M2 remains to be seen.

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ECONOMIC COMMENTARY

Federal Reserve Bank of Cleveland

Monetary Policy and the M2 Target

by Susan A. Black and
William T. Gavin

Historically, the monetary targets have been used both as a way to signal intentions about long-term policy goals and as a guide for short-term policy actions.[1] The Federal Reserve has never relied solely on the monetary targets to guide policy in the near term, however. The amount of emphasis has varied, first rising as policymakers became more concerned about inflation and later falling as evidence mounted that money demand was becoming unpredictable.

From late 1984 until the summer of 1989, M2 was the Federal Reserve's primary monetary target, but apparently little attention was paid to it as a near-term guide for policy. M2 targets may still be important, however, as a signal of long-term policy intentions.

In 1985 and 1986, the Federal Reserve set a target range for M2 of 6 to 9 percent. The target range was lowered each succeeding year until July 1989, when the preliminary targets were chosen for 1990 (see table 1). Members of the Federal Open Market Committee (FOMC), the central bank's policymaking arm, have often referred to this deliberate lowering of the monetary target ranges as a signal of the Federal Reserve's long-term policy objective to gradually lower inflation.

This *Economic Commentary* reviews the use of the M2 target in recent years and discusses the long-term stance of monetary policy in 1989. We also explain why leaving the target for M2

unchanged for the coming year may still be consistent with continued disinflation.

■ **The M2 Target as a Short-Term Guide**
The short-term effect of monetary policy depends importantly on economic conditions. Because information about economic conditions, including the status of policy goal variables, typically arrives with a lag, policymakers use targets and indicators to help them adjust policy in the near term. In the early 1980s, the Federal Reserve relied heavily on monetary targets to guide policy.

Since 1984, the FOMC has not placed strong reliance on monetary targets as early warning signals about when to change its policy stance. In fact, the deviation of M2 from the midpoint of its target range has been a contrary indicator of policy actions for most of the last five years.

Figure 1 shows the monthly deviations of M2 from the midpoint of its target range, plotted with the monthly changes in the federal funds rate and the discount rate.[2] M2 grew very rapidly: 8.9 percent in 1985 and 9.4 percent in 1986. The aggregate was well above the midpoint of its target range throughout 1985 and 1986, yet the federal funds rate and the discount rate declined throughout the period.

In 1987 and 1988, the patterns were reversed. M2 growth slowed to 4.0 per-

As 1989 comes to an end, the levels of nominal GNP and the M2 aggregate seem to be in balance, as M2 growth has slowed to a 4 to 5 percent range in the past three years. The Federal Reserve's tentative target range for M2 growth in 1990 permits ample opportunity for the inflation rate to decline in the next few years.

cent in 1987 and grew 5.2 percent in 1988. M2 was below the midpoint of its target range in these years, yet the federal funds rate and the discount rate rose steadily.

Since 1982, the official target for open market operations has been the level of seasonal plus adjustment borrowing by banks at the discount window. At a given discount rate, the lower the borrowing target, the easier the monetary policy. Again, except for some technical adjustments in 1985, the relationship between changes in the borrowing target and deviations of M2 from its midpoint shows that the Federal Reserve did not base its policy actions solely on the M2 target. The borrowing target was generally lowered when M2 was indicating rapid monetary expansion, and it was raised when M2 was growing below the midpoint of its target range.

FIGURE 1

Percent of M2

M2 DEVIATION FROM MIDPOINT

(chart, years 1985–1989)

Average monthly change in basis points

FEDERAL FUNDS RATE

(chart, years 1985–1989)

Average monthly change in basis points

DISCOUNT RATE

(chart, years 1985–1989)
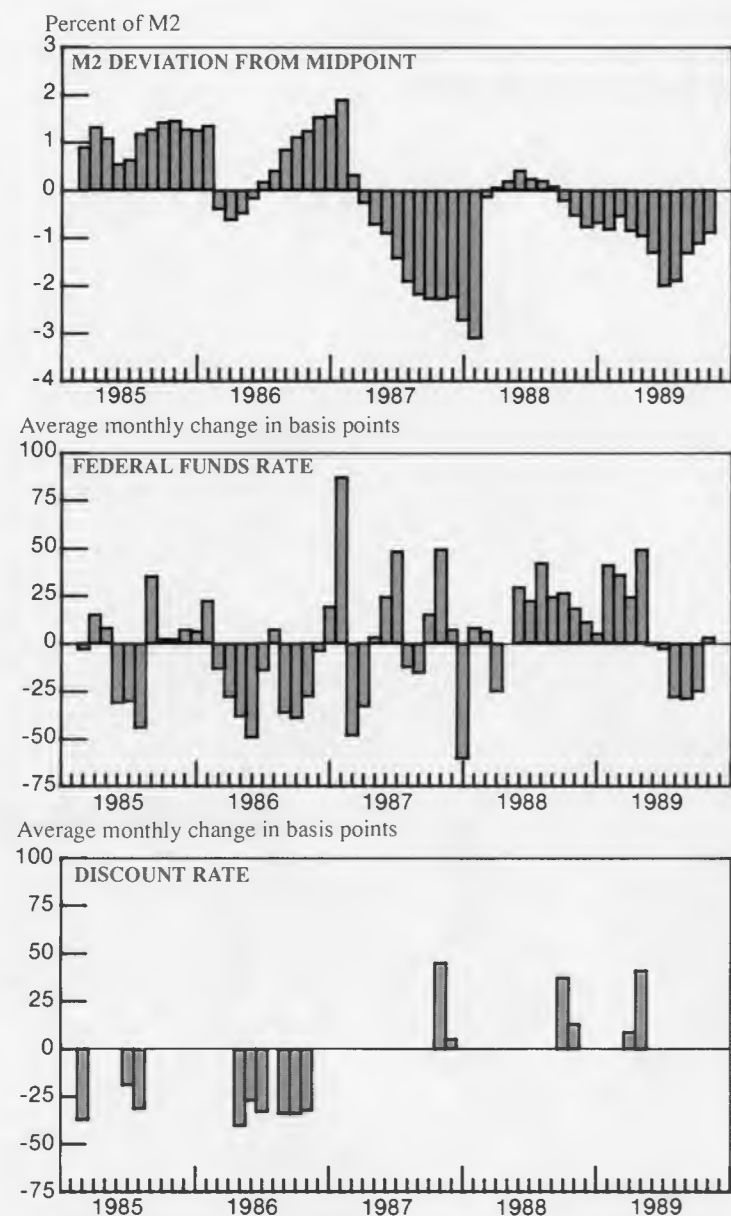
SOURCE: Board of Governors of the Federal Reserve System.

TABLE 1 M2 TARGETS AND GROWTH RATES (Percent)

Year	Target Range[a]	Actual Growth	Year	Target Range[a]	Actual Growth
1985	6 to 9	8.9	1988	4 to 8	5.2
1986	6 to 9	9.4	1989	3 to 7	4.0[b]
1987	5.5 to 8.5	4.0	1990[c]	3 to 7	—

a. Target ranges are specified for growth from the fourth-quarter average in the previous year to the fourth-quarter average in the target year.
b. Growth through September 1989 over 1988:Q4.
c. Tentative range specified in the July 1989 Humphrey-Hawkins testimony.
SOURCE: Board of Governors of the Federal Reserve System, *Monetary Policy Objectives*, various years.

In every instance between December 1984 and June 1989, the M2 aggregate was above the midpoint of its target range when the FOMC decided to ease policy and was below the midpoint when it decided to tighten the money supply. Clearly, M2 did not play an important role as a short-term guide for policy.

In a break with this pattern, the FOMC's easing in the summer of 1989 was attributed partly to the slow growth in the monetary aggregates. Federal Reserve Chairman Alan Greenspan stated, "While the monetary aggregates may not be preeminent on this list [of economic and financial indicators], they always receive careful consideration in our policy decisions. This is especially true when they exhibit unusual strength or weakness relative to past patterns and relative to our announced ranges. Thus, the very sluggish growth in M2 for the year to date was an important influence in the decision to ease policy in June and July."[3]

This statement suggests that money growth must show extreme behavior for an extended period before it becomes an overriding consideration for policy. However, the extremely high money growth rates in 1985 and 1986 did not induce the FOMC to tighten policy. Rather, as long as current data showed moderate inflation and spending, the FOMC allowed money growth to accelerate. When inflation began to rise in 1987, the rapid money growth was brought to an abrupt halt.

By the summer of 1989, monetary growth had been nearly flat for six months. Both inflation and aggregate spending had begun to slow. Even now, we do not know how important slow M2 growth per se was in the decision to ease policy at midyear. Was M2 used as an *explanation* for policy actions because it happened to move in tandem with the reports of weakening economic activity and peaking inflation, or as a *basis* for policy actions because of its long-term empirical links with inflation and income growth?

FIGURE 2 NOMINAL GNP AND THE MONETARY AGGREGATES

Natural log

(chart plotting M3, M2, GNP, Monetary base, M1 from 1959 to 1989)
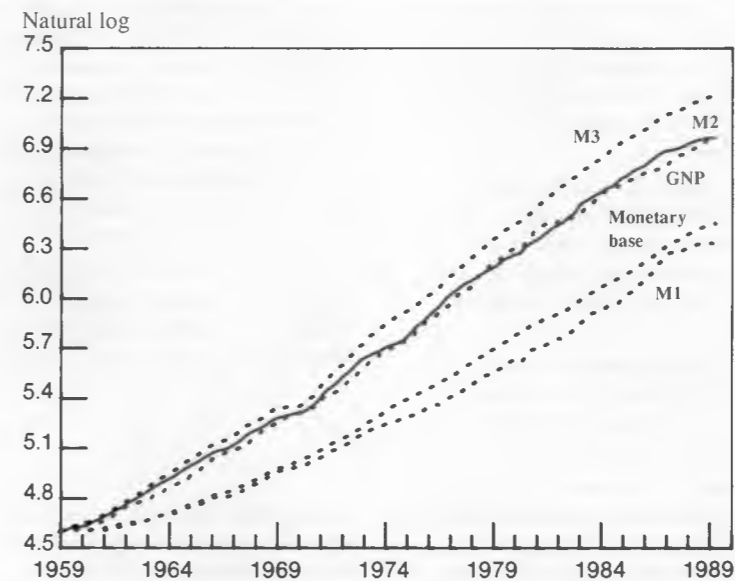
SOURCE: Board of Governors of the Federal Reserve System.

■ The M2 Target as a Long-Term Indicator

The quantity theory of money states that, over the long run, prices will rise in proportion with the rise in the money supply. According to this theory, the government's supply of money is the most important determinant of the price level. The theory does not deny that many other factors may shift the price level. It does say, however, that a doubling of the money stock should eventually lead to a doubling of the price level.

This one-for-one ratio assumes that output and technology in the payments system remain unchanged. If output is growing, then some monetary growth is needed just to keep the price level from falling. One way to take account of this real output growth is to examine the relationship between money and nominal GNP. In an economy such as ours, with growing output and a long-run income-elasticity of money equal to unity, the quantity theory predicts that nominal GNP will rise in proportion with the rise in the money supply.

Changes in monetary institutions can also affect this one-for-one ratio. As

people have developed ways to economize on cash balances, from credit cards for households to sophisticated cash managers for corporate treasuries, the ratio of transaction balances to nominal GNP has fallen. This falling trend was halted when banks and savings and loan associations began to pay interest on checking accounts.

Overall, changing monetary institutions have had more effects on some monetary aggregates than on others. A growing body of research suggests that M2, among the official monetary aggregates, is the measure of the money supply that most closely conforms to the predictions of the quantity theory.[4] Figure 2 illustrates that M2, alone among the aggregates, shares a common trend with nominal GNP. The various monetary aggregates are plotted with nominal GNP for the period 1959:Q1 to 1989:Q2. The series were normalized to 100 in 1959:Q1. The figure shows that both M1 and the monetary base grew well below the trend in GNP. M2 grew at the same average rate, crossing the GNP series several times. M3 grew above the trend in nominal GNP.

Although M2 and nominal GNP trends can diverge for a number of years, we expect the series to come together again eventually. Periods of very rapid M2 growth, such as in 1985 and 1986, can be followed by periods of very slow M2 growth without appearing to have much effect on nominal GNP growth. The quantity theory of money explains this common trend. It also implies that the Federal Reserve can control the trend in nominal GNP by controlling the trend in M2.

■ Policy Implications

The objective of monetary policy is to "...maximize sustainable economic growth, which in turn requires the achievement of price stability over time."[5] Economists do not have good models to predict how changes in monetary policy will affect real growth in the short run, but many think that the optimal level of growth is attained with price stability and that any long-term deviation from price stability will tend to depress output below its potential level. As a first approximation, we treat the output growth trend as if it is independent of policy and somewhere in the neighborhood of 2½ to 3 percent per year.

To achieve price stability, the Federal Reserve must reduce the trend in M2 so that it matches the trend growth in the real economy. By examining trends in M2 and nominal GNP, we can form an estimate of the current long-run policy stance or the implied inflation trend.

M2 grew by 4 percent in 1987 and by 5.2 percent in 1988. This year, growth will most likely be between 4 and 5 percent. This three-year growth pattern was needed to prevent an acceleration of inflation following the extremely rapid monetary growth in 1985 and 1986. The levels of nominal GNP and M2 seem to be in a kind of balance as 1989 comes to an end (see figure 2). Historical relationships would suggest that continued M2 growth in the 4 to 5 percent range (the midpoint of the target range for 1990) implies an inflation trend of about 1 to 2 percent. Actual inflation has been averaging about