

MONETARY POLICY IN THE EARLY 1980s

Robert L. Hetzel*

1. Introduction

On October 6, 1979, the Federal Reserve System changed its operating procedures in order to enhance its control of the money supply. The new procedures, which employed targets for nonborrowed reserves, remained in force until the fall of 1982. Though the Fed itself never characterized its policy as monetarist, it has been widely argued outside the Federal Reserve that the new procedures constituted a "monetarist" experiment. It has also been contended that the attempt by the Fed to control the money supply through reserve targeting was unsuccessful. For example, these views are expressed in the following excerpt from a newspaper article that recommended abandonment of the October 1979 operating procedures [Nordhaus (1982)]:

The first, step [of a new economic policy] would be to bring down the curtain on the disastrous monetarist experiment of the last two years. The Federal Reserve should be directed to cease and desist its mechanical monetary targeting and to set monetary policy with an eye to inflation and unemployment. . . . At the same time, the Fed should overhaul its operating procedures. The techniques of emphasizing supply of bank reserves rather than interest rates since October 1979 has produced greater volatility of both interest rates and the money supply.

In this article, a chronological review is provided of the formulation of monetary policy and of the implementation of the new operating procedures during this period. Many economists have characterized monetary policy in this period in the way described above because of the coincidence of Fed policy actions generally dominated by a desire to reduce the rate of inflation and of Fed adoption of reserve, as opposed to funds rate, targeting. The review provided here, however, stresses the considerable continuity in the formulation of monetary policy before and after October 1979, rather than the occurrence of an isolated "monetarist" experiment. This continuity was provided by the practice of relaxing implementation of the new procedures when the behavior of money did not accord with the Fed's perception of the behavior of the economy.

The post-October 1979 operating procedures provided an interesting experiment in monetary control.

They employed a combination of lagged reserve accounting and nonborrowed reserves targets. This combination requires that monetary control be effected through indirect control of the funds rate, rather than through a reserves-money multiplier relationship. In the review provided below, it is argued that this characteristic of indirect control of the funds rate at times contributed in practice to volatility in the money supply and in interest rates.

2. The Post-October 1979 Operating Procedures

Prior to October 1979, the Fed had specified "tolerance ranges" for intra-yearly growth of the money supply. These tolerance ranges, however, as emphasized at the time by the Fed, were more aptly described as benchmarks, rather than as targets. Deviations of projected money growth from these tolerance ranges triggered changes in the federal funds rate, but there was never any presumption that the resulting changes in the funds rate would be such as to bring actual money growth into line with the values specified in the tolerance range [Hetzel (1981)].¹ After October 1979, in contrast, there were intervals during which the funds rate was varied in a way intended to bring actual growth of the money supply into line with its intra-yearly targeted value.

This section presents an abbreviated overview of the operating procedures adopted on October 1979. It is assumed, however, that the reader is familiar with one of the more thorough descriptions available, for example, Hetzel (1982) or Goodfriend (1982).

* The views in this article are solely those of the author and, it should be emphasized, do not necessarily reflect the views of the Federal Reserve Bank of Richmond or the Federal Reserve System.

¹The FOMC emphasized that the tolerance ranges were not considered as targets for the money supply. "It was noted that, perhaps because of the manner in which the directive was worded, the 2-month ranges of tolerance for M1 and M2 were subject to misinterpretation as embodying the Committee's short-run targets for these aggregates, intended to be achieved by appropriate changes in the funds rate . . ." [Board of Governors (1978), FOMC meeting of June 20, 1978, p. 189]. The purpose of the 2-month ranges was to provide the Manager with an indicator for determining when changes in the funds rate were appropriate.

Because of lagged reserve accounting, the banking system's demand for reserves was essentially predetermined in a given reserve accounting period. Of this predetermined reserve demand, whatever the Desk did not supply through open market operations had to be borrowed by the banking system from the Fed. Given the pressure on commercial banks to find alternative sources of reserves exerted through the administration of the discount window, higher levels of borrowed reserves increased the excess of the funds rate over the discount rate. The funds rate, consequently, was determined as the sum of the discount rate plus an amount that varied positively with the level of borrowed reserves. (The relationship between the discount rate and the funds rate is shown in Figure 1. The relationship between borrowed reserves and the differential between the funds rate and the discount rate is shown in Figure 2). Ultimately, then, the new procedures worked through a leverage over the federal funds rate. The funds rate, which determined the cost of funds to banks, influenced bank portfolio adjustments and, as a by-product, bank liabilities and the money supply.

At Federal Open Market Committee meetings, the Fed specified an initial value for borrowed reserves (termed the initial borrowed reserves assumption). Given the intra-yearly target for M1 and, consequently, an implied path for total reserves, this initial

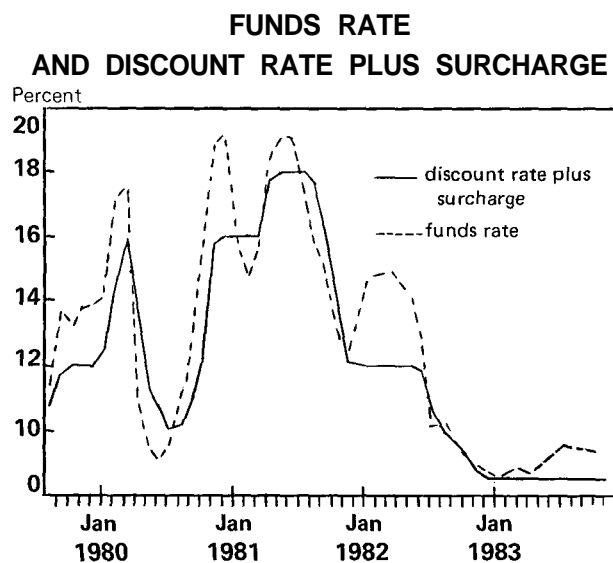
value for borrowed reserves determined the target for nonborrowed reserves. Given the nonborrowed reserves target, the movement of total reserves associated with a miss of the M1 target produced a change in the level of borrowed reserves and in the funds rate. The change in the funds rate acted to offset misses of M1 from target. In addition to this kind of "automatic" change in the funds rate, the Desk could also effect "discretionary" changes by varying the nonborrowed reserves target.

The remainder of this article presents a chronological review, from 1979 through 1982, of the implementation of this procedure. The purpose of this review is to attempt to elucidate the way in which the new procedures worked in practice.

3. The October 6, 1979 Actions

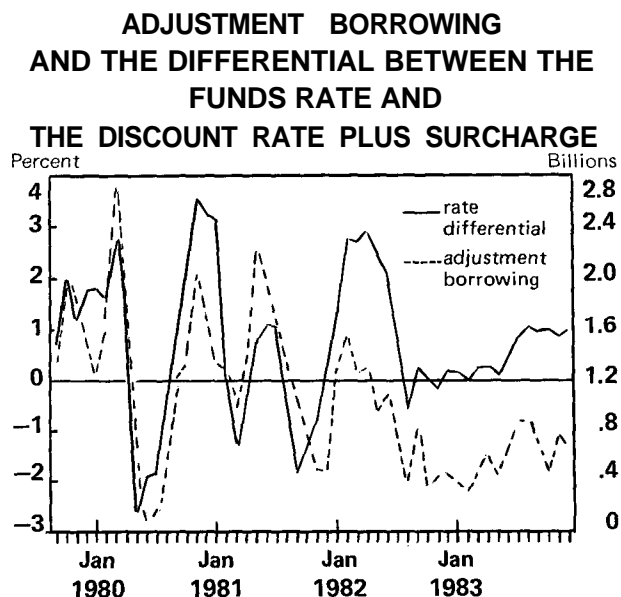
Starting in the spring of 1979, monetary policy became concerned with the threat of recession. "The Federal Open Market Committee received forecasts from its staff of a recession beginning July 1979 . . ." [Wallich (1980), p. 3]. Between February and July 1979, M1 grew at an annualized rate of 9.7 percent, but the funds rate was raised over this interval by only half a percentage point. By September, M1 and M2 were at the top of the intra-yearly ranges implied by their four-quarter target ranges.

Figure 1



Note: From March 1980 through November 1981, in addition to the basic discount rate, a variable surcharge was applied to frequent borrowing by large banks from the discount window.

Figure 2



Note: Adjustment borrowing is borrowing at the discount window minus seasonal borrowing and extended credit.

The anticipated recession did not materialize. By September, inflation and depreciation of the dollar emerged as the primary concerns.

From the perspective of the Fed in October 1979, the overriding imperative for monetary policy was to assuage the inflationary psychology of the public that manifested itself in speculative activity in commodity and foreign exchange markets and threatened to spread to wage setting behavior.

Inflation feeds in part on itself, so part of the job of returning to a more stable and more productive economy must be to break the grip of inflationary expectations. We have recently seen clear evidence of the pervasive influence of inflation and inflationary expectations on the orderly functioning of financial and commodity markets and on the value of the dollar internationally. . . . [Volcker (1979b), pp. 888-9]

. . . in the absence of firm action to deal with inflation and inflationary expectations, there was a clear risk that the runup in energy prices would work its way into wages and prices generally, thereby raising the nation's underlying inflation rate. [Volcker (1979c), p. 959]

The actions taken by the Fed on October 6, 1979, reflected its concern over inflationary psychology. The Fed felt it had to establish a credible anti-inflationary stance for monetary policy. New operating procedures that would allow the Fed to avoid overshooting its four-quarter target ranges for the monetary aggregates were considered a prerequisite for such a policy. “. . . it was clear by early fall that the growth in money and credit was threatening to exceed our own targets for the year and was nourishing inflationary expectations” [Volcker (1979c), p. 959].

In this situation, the Fed took actions to limit the extension of credit that, in its view, was financing speculative activity. Credit extension by banks was constrained by the imposition of marginal reserve requirements on their managed liabilities. “And we placed a special marginal reserve requirement of 8 percent on increases in managed liabilities of larger banks . . . because that source of funds . . . has financed much of the recent excessive buildup in bank credit” [Volcker (1979c), p. 960]. For the same reason, the increased variability of the funds rate under the new operating procedures was considered important. “. . . in the then existing market circumstances, perceptions (right or wrong) that changes in money market rates would be limited seemed to be encouraging banks and other lending institutions to aggressively market credit” [Volcker (1980b), p. 25]. Finally, the Fed urged banks not to extend credit for speculative purposes. “The Board of Gov-

ernors has particularly stressed its own concern that, in a time of limited resources, banks should take care to avoid financing essentially speculative activity in commodity, gold and foreign exchange markets” [Volcker (1979a), p. 4].

On the basis of interviews with four governors and with Board staff, Woolley (1984, chap. 5) observes that, in fall 1979, effective money supply targeting appeared to offer solutions to the Fed's immediate problems. First, it was recognized that a credible anti-inflationary stance would require a significant rise in interest rates, but there was uncertainty over the magnitude of the rise required. A way of resolving this problem was to allow the funds rate to rise by whatever amount was necessary to prevent an overshoot of the four-quarter target range for M1. Second, the new procedures allowed full use of the language of monetary control in communicating to the public the need to raise rates. This latter point is made in the following quotations from Fed economists:

By clearly communicating to the public the Federal Reserve's objectives for monetary policy, a monetary aggregates targeting procedure enables private decision-makers to better plan their activities and to make price decisions that are more harmonious with noninflationary growth in money and credit. [Axilrod (1981) p. 16]

. . . the use of money stock targets in the context of winding down excessive monetary growth over time provides a means of communicating the objectives of policy with the rest of the government and with the public. . . . It should be noted that the possibility of defining an anti-inflationary strategy in terms of a long-term path for intermediate money growth rate targets, with its attendant advantages for internal and external communication, apparently has no analog in interest rate targets. There is seemingly no satisfactory way to state a long-term anti-inflation strategy in terms of nominal or real interest rates as can be done in the case of money growth targets. [Davis (1981), pp. 19-20]

In these circumstances, for the first time, the Fed began to give the Desk meaningful targets for the money supply. (Prior to October 1979, the FOMC specified “tolerance ranges,” rather than targets, for growth of the monetary aggregates. As discussed in Section 2, these tolerance ranges were not intended to be targets.) Beginning in October 1979, it replaced its tolerance ranges for money growth with actual intra-yearly targets derived from the four-quarter targets. It is also important to note that the Humphrey-Hawkins legislation, which took effect in 1979, required that the four-quarter target ranges for growth of money be applied solely to a fourth-quarter

base, rather than to a moving quarterly base as had been the prior practice. In this way, the phenomenon of base drift was eliminated over the calendar year. [Base drift seriously weakens the effectiveness of monetary targeting through the incorporation of misses of money from prior targets into new targets. See Broadus and Goodfriend (1984).]

Initially, the new procedures appeared to work. The first significant deviation of M1 from its intra-yearly target occurred toward the middle of February 1980 when it became clear that M1 was growing in excess of its target. (See Figure 3.) The Desk responded by lowering the target for nonborrowed reserves modestly in late February and significantly in early March. The Board raised the discount rate from 12 to 13 percent effective February 15. By the March 18 FOMC meeting, M1 was back on target. This experience was one of the two times in the post-October 1979 period when the Desk responded to a miss of the M1 target by altering its nonborrowed reserves target promptly upon appearance of the M1 target miss. (There were a number of occasions

when the target for nonborrowed reserves was changed, but only after it had become obvious that the change in borrowed reserves associated with the initial miss of the M1 target had failed to offset the miss.)²

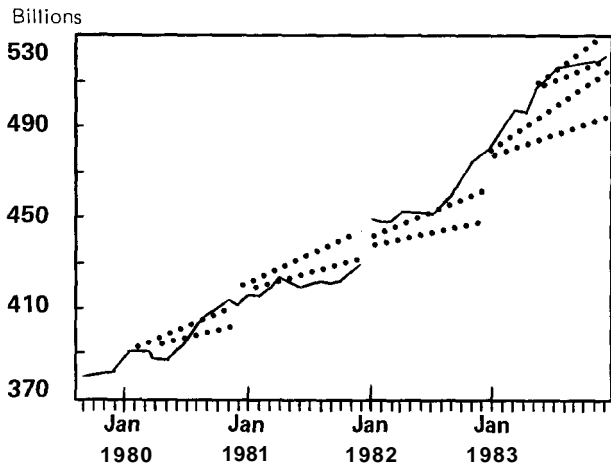
4. Credit Controls

The Special Credit Restraint Program (SCRP) was announced March 14, 1980. According to the Board press release, the SCRCP represented “further actions to reinforce the effectiveness of the measures announced in October of 1979” [Board 1980b]. The Fed valued the aspects of the SCRCP that allowed it to restrict bank lending with the intention of reducing speculative credit extension. “Some parts (of the SCRCP) were quite acceptable to us in terms of what we call voluntary restraints on banks” [Volcker (1983d), p. 48]. Specifically, banks were “informally” required to hold loan growth to within 6 to 9 percent. Also, for large banks, the reserve requirement imposed on managed liabilities exceeding a base level was increased to 10 percent. A surcharge on the discount rate of three percentage points was applied to borrowing by large banks. Extension of consumer credit was discouraged by a special deposit requirement of 15 percent on increases in covered types of credit, and increases in assets of money market mutual funds were subject to a reserve requirement of 15 percent.

As stated in the initial Board press release, the SCRCP was intended to prevent “use of available credit resources to support essentially speculative uses of funds.” The sharp effect of this program on curtailing credit extension by banks, however, frustrated the monetary control aspects of the Fed’s October 1979 actions [Hetzl (1982)]. Just prior to the introduction of the SCRCP, M1 was on target. The SCRCP severely crimped the extension of bank credit and, in the process, pushed M1 well below its target range (Figure 3). The strongly depressing effects of the SCRCP on credit extension were unforeseen, and it was undoubtedly not anticipated that the new operating procedures and the SCRCP would work at cross purposes. The new operating procedures caused the drop in M1 to produce a large reduction in the funds rate. This reduction mitigated the depressing effect of the SCRCP on the economy.

Figure 3

M1 AND FOUR-QUARTER TARGET RANGES



Note: In order to display the data available contemporaneously, M1 is taken from the first Board of Governors statistical release H.6 showing complete monthly figures for a given year. In 1980, M1-B is used. In 1981, shift-adjusted M1-B is used. This series adjusts other checkable deposits for shifts from nondemand deposit sources. The discontinuity after 1981 arises from the discontinuance of the shift adjustment. After October 1982, the target range for M1 was replaced by a “monitoring” range. The dual ranges for M1 in 1983 reflect the rebasing of the M1 monitoring range in July 1983.

²Discussion of changes in the target for nonborrowed reserves is contained in the annual “Monetary Policy and Open Market Operations” reports from the New York Desk that are published in the Federal Reserve Bank of New York *Quarterly Review*.

5. Money Supply Targeting in 1980

As suggested in the introduction, the new procedures were allowed to exert their full effect on the funds rate only when the Fed believed that the behavior of the money supply was reflecting the behavior of the economy. As shown in Figure 3, 1980 contained an incipient monetary acceleration that peaked in February and a more sustained acceleration that dominated the second half of the year. In the latter case, M1 exceeded its intra-yearly targets from the August 12 through the December 19 FOMC meetings. In the first instance, but not the second, the new procedures were applied rigorously from the very beginning of the monetary acceleration. Only in the first instance, did the Fed consider, at the start of the monetary acceleration, that the money supply was reflecting the behavior of the economy.

In the first quarter of 1980, incoming data indicated considerable strength in the real sector. This strength was reflected in the strength in M1; therefore, the Fed was willing to allow the strength in M1 to raise the funds rate. Incoming data in the second and third quarters indicated weakness in the economy, and it was generally accepted by midsummer that a major recession was under way. The strength of M1 in the summer did not accord with the current, widespread perception of weakness in the economy; therefore, the new procedures were not implemented in a way that would produce a significant rise in the funds rate. From the July through the October FOMC meeting, the intra-yearly target for M1 was raised from the bottom to the top of the four-quarter target range. The discount rate was raised a percentage point on September 26, but other increases in the discount rate and significant reductions in the target for nonborrowed reserves were postponed until November [Hetzl (1982), pp. 247-8]. As the fall progressed, it became clear that the recession of late spring and summer had only been a temporary reaction to the SCRP and that the economy was growing strongly. As it became clear that the strength in M1 reflected strength in the economy, the Fed became willing to allow the new procedures to increase the funds rate sharply.

6. The Working of the New Procedures

Before discussing the behavior of interest rates and money in the last half of 1980, it is necessary to explain several aspects of the October 1979 operating procedures and the environment in which they were employed. As noted in Section 2, the new procedures continued to effect monetary control through the

funds rate, rather than through a reserves-money multiplier relationship. The level of the funds rate emerged as the sum of the discount rate and a differential that varied positively with the level of borrowed reserves. Given the predetermined demand for reserves under lagged reserve accounting, borrowed reserves were determined as a consequence of the target for nonborrowed reserves.

Monetary control under the new procedures was rendered difficult through the lack of a reliable model for deriving the funds rate from the money supply target.³ There also was no reliable model for deriving the level of borrowed reserves that would produce the desired differential between the funds rate and the discount rate.⁴ Because the level of borrowed reserves determined the funds rate (given the discount rate), it was the key variable in the new monetary control procedure.

³ The difficulty of associating a value of the funds rate with the money supply target was clearly recognized at the time in relation to the former operating procedures.

... the operational guide for day-to-day open market operations before October [1979] had typically been the federal funds rate. However, the translation of money stock objectives into day-to-day management of this rate presupposes a stable and predictable relationship between the public's demand for cash balances and short-term market rates of interest. This relationship becomes particularly difficult to appraise in an environment of rapid price increases, changing inflationary expectations, and financial innovations. [Volcker (1980a), p. 139]

⁴ "... the federal funds rate, [which] the market focuses on as a policy indicator, can vary widely for a given level of borrowing. Changes in the federal funds rate appear to be strongly influenced not only by the borrowing level itself but also by past borrowing experience and by market expectations of future rate developments" [Levin and Meek, p. 28]. Goodfriend (1983) formalizes this statement. Prediction of the relationship between borrowed reserves and the differential between the discount rate and the funds rate was also rendered difficult by the periodic use of surcharges over the discount rate that were applied to borrowing by large banks.

The FOMC specified the value of borrowed reserves that would begin the interval between FOMC meetings (termed the initial assumption for borrowing). The **Record of Policy Actions** omits discussion of how this variable was set. According to the initial description by the Fed of the new procedures, however, a simple rule of thumb was employed. "The amount of nonborrowed reserves—that is total reserves less member bank borrowing—is obtained by initially assuming a level of borrowing near that prevailing in the most recent period" [Board (1980a)]. "Typically, the Committee has chosen levels [of initial borrowed reserves] close to the recently prevailing average . . ." ["Monetary Policy . . ." (1980), p. 60]. The annual "Monetary Policy and Open Market Operations" reviews published by the Desk in the *New York Quarterly Review* provide lists of the initial values of borrowed reserves set by the FOMC. Comparison of these values with values of borrowed reserves observed for the statement week in which FOMC meetings were held indicates that this rule of thumb continued to be employed. (The initial borrowed reserves assumption was adjusted for erratic movements in the relationship associating borrowed reserves with the differential be-

Experience has demonstrated that it is difficult to determine in advance the appropriate level of borrowing to be employed in constructing the nonborrowed reserve path consistent with the short-run money supply target. This level of borrowing would depend on a projection of market interest rates consistent with the money supply target path and knowledge of depository institutions' willingness to borrow, given the spread between market rates and the discount rate, and could differ significantly from borrowing levels based on or ranging around recent experience. . . . projections of borrowing demand from interest rate forecasts and past bank behavior are subject to a considerable degree of error. [Axilrod (1981), p. 24]

. . . along with the demand for money, the borrowings function remains one of the more troublesome specifications in the monthly model. [Tinsley et al (1982), p. 849]

In the absence of a model that could be employed to determine reliably the value of borrowed reserves (and the funds rate) that would produce the targeted value of the money supply, the level of borrowed reserves (and the funds rate) was set through the feedback induced by misses of the M1 target.

The character of the feedback mechanism running from a miss of the M1 target to changes in the funds rate was shaped to a significant degree by the behavior over time of the relation running from borrowed reserves to the differential between the funds rate and the discount rate. At the start of a monetary acceleration, bank use of the discount window is negligible. Banks are allowed to use the discount window without the administrative pressure that causes them to look to the funds market for reserves and thus force up the funds rate and other market rates. As a monetary acceleration persists, banks are forced to use the discount window over an extended period and become subject to administrative pressure. Consequently, the passage of time causes a given level of borrowed reserves to produce a higher differential between the funds rate and the discount rate.⁵

tween the funds rate and the discount rate. In particular, when this differential would change, for a given level of borrowed reserves, in a way unrelated to the current miss of the total reserves path, the initial assumption for borrowed reserves was adjusted in order to eliminate the corresponding erratic movement in the funds rate.)

⁵In discussing the monetary acceleration of the last half of 1980, Levin and Meek argue that the temporal pattern relating borrowed reserves to the funds rate just described was reinforced by the way in which the financial markets formed their expectations. In particular, a moderate initial rise in the funds rate in response to a money supply overshoot led to larger rises later on.

The third, and in some respects, most interesting episode began in August 1980, when a surge in money supply led to an immediate rise in discount window borrowing as the demand for total reserves exceeded the NBR path. However, since member banks had been essentially out of

It must also be noted that the new procedures altered the significance of discount rate changes for monetary control. Before October 1979, when the Desk targeted the funds rate directly, changes in the discount rate could not affect the level of the funds rate. After October 1979, the Desk targeted nonborrowed reserves, while the demand for total reserves was essentially predetermined because of lagged reserve accounting. Consequently, the amount of reserves the banking system had to borrow in a reserve accounting period was given. Changes in the discount rate altered the marginal cost of obtaining this given amount of reserves; therefore, changes in the discount rate were passed on directly to the funds rate (provided the funds rate was above the discount rate so that the procedures were operable).

After October 1979, the Fed continued to employ changes in the discount rate to communicate policy intentions to financial markets. During the 1970s, the discount rate served as a signal of Fed intentions with respect to the funds rate. A rise, say, in the funds rate preceded by a rise in the discount rate signaled to the market that the increase in the funds rate would be long lived. In the fall of 1980, as the differential between the funds rate and discount rate widened, the market interpreted the Fed's willingness to raise the discount rate as a test of Fed willingness to allow interest rates to rise to whatever level was necessary in order to achieve monetary control.⁶

the window for some months. upward pressure on the federal funds rate was modest. . . . Market participants took the moderate rise in the federal funds rate as an inadequate response to the continued rapid expansion of the money supply after August's 19.3 percent annual rate of growth in M-1A. . . . The market was disappointed that the federal funds rate did not rise more vigorously. Talk that the Federal Reserve was not following through on its monetary objectives probably contributed to the widespread resurgence of inflationary objectives. . . . The fact that rapid money growth threatened achievement of the FOMC's 1980 objectives fed expectations that rates would move higher. The markets quickly translated these expectations into higher rates in a self-reinforcing process. [Levin and Meek (1981), pp. 31-3]

⁶Levin and Meek commented:

Participants [in financial markets] repeatedly talked up the likelihood of discount rate increases as the federal funds rate rose further above the discount rate—apparently on the theory that catch-up increases were needed under the flexibility principle specified in the announcement of the new strategy in October 1979. This interpretation became a part of the market's assessment of Federal Reserve dedication to monetary restraint. The rise in the spread was taken as indicating a further need for discount rate change rather than a measure of the pressure of banks' efforts to avoid recourse to the window. [Levin and Meek (1981), pp. 33-4]

A final point, the significance of which is brought out in the following section, concerns the volatility of inflationary expectations in the financial markets during this period. This volatility, it is argued below, may have interacted with the implementation of the new procedures in a way that caused monetary accelerations and decelerations to possess some self-reinforcing dynamics [Hetzel (1982)]. The monetary acceleration in the last half of 1980 appeared to have produced uncertainty in the bond market over the course of long-term rates. Sellers and buyers of bonds left the long-term markets for short-term markets. The sellers increased their demand for bank credit. The buyers only partly turned to the market for the nonmonetary liabilities of banks. The increased demand for bank credit was, therefore, only partly matched by an increased demand for the nonmonetary liabilities of banks. The result was to increase demand deposits and M1 and to reinforce the monetary acceleration in progress. In addition, reintermediation on the asset side of bank balance sheets became important. Market rates rose as the monetary acceleration progressed in the last half of 1980. Inertia in the prime rate caused it to lag market rates. As the customary positive differential between the prime rate and the paper rate practically disappeared, businesses shifted out of the paper market into the market for bank credit. The increase in the demand for bank credit added to deposit creation and reinforced the existing monetary acceleration.

To summarize, to the usual difficulties of trying to effect monetary control through the funds rate, the new procedures added several additional uncertainties surrounding the relationship between the level of borrowing and the funds rate. Moreover, the discount rate assumed a new and more significant role under the new procedures. With the background in this section, it is now possible to discuss the monetary acceleration that occurred in the last half of 1980.

7. Monetary Acceleration in the Last Half of 1980

As shown in Figure 3, the monetary acceleration of the last half of 1980 carried M1 from well below the four-quarter target cone to somewhat above it by year-end. This monetary acceleration can be understood by putting together the separate pieces discussed above. In the late spring, the new operating procedures pushed the funds rate sharply lower in response to the monetary deceleration produced by the SCRP. The end of this program allowed the

economy to revive and caused a resurgence of credit demands. The funds rate was at too low a level to prevent a monetary acceleration. Borrowed reserves rose in response to the overshoot of the M1 target in August. Because banks had been out of the window, however, this increase in borrowed reserves initially produced only a small increase in the funds rate. In an environment of concern over the recession, however, the Fed did not make discretionary changes in its operating variables that would have raised the funds rate ["Monetary Policy . . ." (1981), p. 73 and Levin and Meek (1981), p. 35].

Given the persistence of the overshoot of the M1 target, the characteristics of the operating procedures described above acted to increase the funds rate. First, the target for borrowed reserves was raised by the M1 overshoot. Second, the administration of the discount window caused given levels of borrowed reserves to produce over time a higher differential between the funds rate and the discount rate. Third, as the monetary acceleration persisted, the Fed became concerned that the bond market would perceive monetary policy as having become inflationary. For this reason, as the differential between the funds rate and the discount rate widened, it raised the discount rate, even though the immediate effect of such an action was to raise the funds rate and to leave this differential unaffected. Finally, as the monetary acceleration persisted, the target for nonborrowed reserves was lowered.

All these factors combined to force a sharp increase in the funds rate toward year-end. The funds rate rose about three percentage points in each of the months November and December, reaching a peak of 20 percent early in January 1981. The new procedures raised the funds rate in light of the monetary overshoot. The subsequent monetary deceleration, however, indicates that this process was carried too far. An overshooting of the funds rate occurred and a monetary deceleration ensued. This conclusion could only be derived after the fact, however, in the absence of a reliable means of associating targets for the money supply with associated values of the funds rate.

8. Monetary Deceleration in 1981

As background, it should be noted that the transactions measure of the money supply targeted in 1981 was called shift-adjusted M1-B. M1 comprises all

checkable deposits. The introduction nationwide in 1981 of the new interest-bearing checkable deposits, NOW and ATS accounts, imparted a one-time fall to the income velocity of M1 to the extent that these new checkable deposits were drawn from nonmonetary sources. Institutional arrangements encouraged in particular the relabeling of savings accounts as NOWs due to the existence of the same Regulation Q ceiling on savings and NOW accounts, even though the latter offered transactions services not offered by the former. Shift-adjusted M1 represented an attempt to construct a money series comparable to the old M1 series by removing increments to NOW and ATS accounts originating from nonmonetary sources such as savings deposits. Considerable effort on the part of the Board staff went into the construction of the shift-adjusted M1 series [See Bennett (1982) and Simpson (1981)]. The shift-adjusted M1 series exhibited a sharp deceleration in 1981. Using fourth-quarter to fourth-quarter figures, M1 grew at about 8.3 percent in 1977 and 1978. In 1979 and 1980, M1 grew at 7.5 percent and 7.3 percent, respectively. In 1981, the growth rate of shift-adjusted M1 fell to only 2.3 percent.

The economic recovery begun in the second half of 1980 extended into 1981. Real GNP grew by 8.6 percent in 1981Q1. (Subsequently, the business cycle peak was dated as July 1981.) The irregular slowing of the rate of growth of various price indices provided mixed evidence on whether inflation was slowing. The implicit GNP deflator rose by 8.9 percent from 1980Q4 to 1981Q4, a slowing of only a percentage point from the previous year. The producer price index rose at a 12 percent rate through April, but rose more slowly thereafter. The rise in the CPI moderated in the first and second quarters, but rose more strongly in the third quarter. In this economic environment, the Fed continued to be concerned about displaying a firm anti-inflationary posture. It was hoped that such a posture would exercise a restraining effect on wage settlements in 1982.

The stubbornness of our inflation in large part reflects the adaptation of our economic and social institutions to persistently rising prices. The process is embedded in a whole pattern of economic, social, and political behavior that tends to sustain and intensify its own momentum. We see the process at work in contracts that extend over a period of time; in the pattern of three-year wage bargaining, building in past or anticipated rates of inflation into future cost. . . . The most critical area-inevitably, because it accounts for some two-thirds of all costs-is the trend of wages and salaries. [Volcker (1981b), pp, 10-11]

. . . a crucially important round of union wage bargaining begins next January, potentially setting a pattern for several years ahead. That is one reason why we need to be clear and convincing in specifying our monetary and fiscal policy intentions and their implications for the economic and inflation environment. [Volcker (1981a), p. 617]

The monetary deceleration that began toward the end of 1980 caused shift-adjusted M1 to remain below its four-quarter target cone in the first quarter of 1981 (Figure 3). As a consequence, the new operating procedures pushed the funds rate down to 14.7 percent in March. M1 grew strongly in April, but still remained only at the lower boundary of the four-quarter target cone (Figure 3). Nevertheless, in early May the Board raised the discount rate and the surcharge on the basic discount rate, placing the surcharge rate at 18 percent (Figure 1). The Desk also reduced "substantially" the target for nonborrowed reserves ["Monetary Policy . . ." (1982), p. 47]. By May, the funds rate had been pushed back up to 18.5 percent.

At the May 18 meeting, the FOMC emphasized its concern that monetary policy appear firmly anti-inflationary.

The indications of some slowing of the rise in the consumer price index did not appear to reflect as yet any clear relaxation of underlying inflationary pressures, and emphasis was placed on the importance of conveying a clear sense of restraint at a critical time with respect to inflation and inflationary expectations. [Board of Governors (1981), FOMC meeting held on May 18, 1981, p. 111]

In order to prevent weakness in M1 from lowering the funds rate, the FOMC adopted an open-ended directive with respect to the extent that growth in shift-adjusted M1 would decline. ". . . the Committee decided to seek behavior of reserve aggregates associated with growth of M1-B from April to June of 3 percent or lower. . . ." [Board of Governors (1981), FOMC meeting held on May 18, 1981, p. 112]. When M1 fell after the May FOMC meeting, the path for total reserves derived from the M1 target was reduced in line with reductions in actual total reserves in order to keep borrowed reserves and the funds rate from falling. In effect, the M1 target was lowered in line with the fall in actual M1.

Because of the wording of the directive specifying that M1 growth lower than 3 percent was acceptable, the decline of M1 in May and June was not allowed to affect the funds rate. The emphasis was placed on the behavior of M2, which was growing strongly. It was argued that the public's demand function for M1 had shifted leftward due to the growth of money

market funds that were serving as transactions balances and that are included in M2, but not M1.⁷ “You may recall that last year [1981] M1 grew slowly. . . . We believe that this was a reflection of financial innovations including prominently the rapid growth of money market funds, which to some limited extent serve the function of transactions balances” [Volcker (1982c), p. 10].

The Desk stopped the effective lowering of the M1 target in line with the actual value of M1 in the last part of June; therefore, the weakness in M1 caused borrowed reserves to fall in July. The normal effect of this fall in producing a lower funds rate was offset, however, probably due to the characteristic of discount window administration whereby extended periods of borrowing increase the pressure on banks to turn to the funds market. In June and July the funds rate was at 19 percent, and in August it was almost 18 percent. Only in September did the fall in borrowed reserves depress the funds rate significantly. By early October, the shortfall of total reserves from path had reached the unprecedented level of \$370 million [“Monetary Policy . . .” (1982), p. 51]. The first significant discretionary action taken in response to this shortfall was the one percentage point reduction in the discount rate effective November 2. Shift-adjusted M1 remained well below its four-quarter target cone throughout most of 1981. Throughout 1981, the implementation of the new procedures was influenced by the desire of the Fed to convey to the public its firm anti-inflationary resolve. “. . . a decline in short-term rates could exacerbate inflationary expectations and abort a desirable downtrend in bond yields and mortgage interest rates” [Board of Governors (1981), FOMC meeting held on November 17, 1981, p. 138].

9. Abandonment of the New Procedures

Early 1982 marks a transitional period during which the Fed became increasingly concerned with recession. Real GNP had remained essentially unchanged in the second and third quarters and fell in

⁷The Record of Policy Actions states:

It was also suggested that the weakness in growth of adjusted M-1B in the early months of the year might be a misleading indicator of the behavior of transaction balances, mainly because of the rapid growth of money market mutual funds; some part of the large flows into those funds might also be regarded as transaction balances. . . . In evaluating the behavior of the aggregates, it was agreed that greater weight than before would be given to the behavior of M-2. [Board of Governors (1981), FOMC Meeting of March 31, 1981, pp. 102-3]

the fourth quarter of 1981, while by year-end inflation had clearly moderated. Consequently, the perception of the economy’s most pressing problem began to change.

Now we can see clear signs of progress on the inflation front. . . . we are also seeing signs of potentially more lasting changes in attitudes of business and labor toward pricing, wage bargaining, and productivity. . . . I believe the pattern is likely to spread, “building in” lower rates of increase in nominal wages and prices over time. And as the inflationary and cost pressures ease, the economy can resume a healthy pattern of growth. . . . [Volcker (1982b), pp. 167-8]

The Fed also continued to be concerned in early 1982 about the bond market. In the last several months of 1981, the federal deficit projected for fiscal year 1982 had risen from about \$40 to \$110 billion. For fiscal year 1984, projections of a balanced budget had given way to projections of a deficit of \$150 billion. In this environment, the Fed remained concerned that any easing of monetary policy would exacerbate the inflationary anticipations of participants in the bond market.

The rate of growth of M1 rose in November and December of 1981 and surged in January 1982 to an annual rate of 21.5 percent. The January surge carried M1 above the level of the year-end lower boundary of the four-quarter target cone (Figure 3). The Fed reacted to this bulge in M1 in a way that reflected a compromise of conflicting concerns over recession and the inflationary expectations of financial markets. It retained the October 1979 operating procedures, but effectively raised the M1 target cone used for purposes of setting intra-yearly M1 targets. It retained the four-quarter M1 target cone for 1982 that employed as its base the realized 1981Q4 value of M1. It added, however, for purposes of policy discussions, a four-quarter M1 target cone for 1982 that employed as its base the 1981Q4 midpoint of the 1981 four-quarter target cone for M1 [Volcker (1982a), p. 17]. The result was a moderated increase in the funds rate. In 1981Q2, M1 had risen \$12 billion while the funds rate increased 550 basis points, and the surcharge-adjusted discount rate was raised 300 basis points. In 1982Q1, M1 rose \$10 billion while the funds rate increased 235 basis points, and the discount rate was not changed.

The primary concern of policy since October 1979 had been to convey a firm anti-inflationary stance in order to assuage the inflationary psychology of the public.

Progress toward disinflation at first was slow--almost invisible. . . . for a long while there was little room for modifying policy in response to domestic or international concerns. The danger was that the wrong "signals" would only increase the risk that the whole process of restoring stability--domestically or internationally--would be longer delayed or even aborted. [Volcker (1983c), p. 3]

In response to the moderation of inflation and the continuation of recession, economic recovery became a primary concern of monetary policy in 1982. A key assumption behind the design of the post-October 1979 operating procedures was the desirability of achieving intra-yearly M1 targets. In an environment in which a concern for inflation and the inflationary expectations of the public were no longer dominant and in which the predictability of the relationship between M1 and nominal GNP appeared to be diminishing, the desirability of attaining intra-yearly M1 targets was increasingly questioned.

. . . we need . . . to be conscious of the fact that the world as it is requires elements of judgment, interpretation, and flexibility in judging developments in money and credit and in setting appropriate targets. . . . we cannot always assume a rigid relationship between money and the economy that, may not exist over a cycle or over longer periods of time, especially when technology, interest rates, and expectations are changing. . . . we must . . . take into account a wide range of financial and nonfinancial information when assessing whether the growth of the aggregates is consistent with the policy intentions of the Federal Reserve. The hard truth is that there inevitably is a critical need for judgment in the conduct of monetary policy. [Volcker (1982d), pp. 406-7]

Early in July, the Fed was concerned about the liquidity of the CD market in the aftermath of the Penn Square Bank failure. With the benefit of hindsight, however, it now appears that, within the context of the general concern over the economy described above, the primary immediate catalyst to the phasing out of the post-October 1979 operating procedures may have been a concern over the international debt situation. The sharp appreciation of the dollar in 1982 as well as the continued high level of market rates precipitated the situation in which numerous countries neared default on their external debt. The *Record of Policy Actions* of the FOMC indicates that the Fed began negotiating with the Bank of Mexico in June to furnish reserves under the existing swap arrangement [Board (1982a), p. 120]. Apparently, such negotiations were accompanied by the fear that defaults by large debtor nations would threaten the world financial system.

. . . we have to evaluate the significance of developments abroad as well as at home, as reflected in trade accounts and the exchange rate, and of strains in the financial structure itself. [Volcker (1982f), p. 747]

. . . the potential for an international financial disturbance impairing the functioning of our domestic financial markets at a critical point in our recovery is real. [Volcker (1983b), p. 170]

Coping with the international debt situation appeared to require a substantial reduction in the level of interest rates in the United States for a variety of reasons. First, because much of the debt of third-world countries in particular was of short maturity, a lower interest rate would reduce the burden of interest payments as debt was rolled over. Second, because this debt was denominated in dollars, a lower rate of interest in the United States would facilitate repayment by limiting the contemporaneous appreciation of the dollar. Third, a lower rate of interest in the United States would spur the U. S. economy and in the process increase the exports of debtor nations and their supply of foreign exchange. Finally, a lower rate of interest in the United States would allow central banks of other industrialized countries to lower their bank rates. The resulting stimulus to their economies would increase their imports from debtor countries. ". . . an environment of sustained recovery and expansion in the industrialized world is critically important" [Volcker (1983a), p. 82].

The usefulness of the new procedures was seriously questioned beginning in July.

Moreover--and I would emphasize this--growth somewhat above the targeted ranges would be tolerated for a time in circumstances in which it appeared that precautionary or liquidity motivations, during a period of economic uncertainty and turbulence, were leading to stronger-than-anticipated demands for money. We will look to a variety of factors in reaching that judgment, including such technical factors as the behavior of different components in the money supply, the growth of credit, the behavior of banking and financial markets, and more broadly, the behavior of velocity and interest rates. I believe it is timely for me to add that, in these circumstances, the Federal Reserve should not be expected to respond, and does not plan to respond, strongly to various bulges--or for that matter "valleys"--in monetary growth that seem likely to be temporary. [Volcker (1982e), p. 491]

Beginning in the middle of July, the funds rate was lowered significantly through reductions in the discount rate and increases in the target for nonborrowed reserves. From the end of June to the end of August, the funds rate fell from about 15 percent to about 9 percent. (At the time, M1 was just within

the four-quarter target cone. M2 and M3 were both above their target ranges.) The October 1979 procedures were revived for the last time in September when the resurgence of M1 growth was allowed to increase the target for borrowed reserves and the funds rate rose a percentage point. The increase in the funds rate was brought to an end by a large increase in the target for nonborrowed reserves.⁸ At its meeting on October 5, the FOMC formally dropped M1 as a target of policy. It was argued that M1 for the time being was no longer a useful target because the maturing of All Savers Certificates in October and the introduction of money market deposit accounts in December would render its behavior difficult to interpret. Formally, M2 and M3 were retained as targets, but the *Record of Policy Actions* for the October 5 FOMC meeting indicates that continued growth above their target ranges would not affect the funds rate.

Higher rates of growth of M1 in the last half of 1982 could have been achieved through raising the M1 target and retaining the new operating procedures. Instead, the new procedures were phased out. The funds rate was lowered, primarily as a consequence of a series of reductions in the discount rate, and whatever increase occurred in the rate of growth of M1 was accepted. Initially, this reduction in the funds rate caused the bond market to rally. The market apparently viewed the reduction in the funds rate as a judgment by the Fed that the level of market rates necessary in order to control inflation had fallen. This judgment was apparently accepted by the market on the basis of the sustained reduction in inflation that had occurred and on the basis of the anti-inflationary credibility that the Fed had established in 1981. In retrospect, the process of lowering market rates ended in December when a reduction in

the discount rate of half a percentage point left intermediate-term and long-term rates unchanged. By December, investors had again become concerned over a resurgence of M1 growth.

10. Evaluating the October 1979 Operating Procedures

It is difficult to evaluate the post-October 1979 procedures. First, for a variety of reasons, they were not implemented consistently over the interval from October 1979 until their demise in 1982. In spring 1980, they were superseded by the SCRP, the objective of which was to control credit, not money. In early summer 1981, they were overridden. Second, the new procedures were extremely complicated from a technical standpoint. Monetary control was effected through the funds rate. The funds rate was determined indirectly by the level of borrowed reserves, which was in turn determined by the nonborrowed reserves target, given the predetermined demand for required reserves and the demand for excess reserves.

Despite the difficulty in evaluating the new procedures, there is reason to believe that they were not well designed for purposes of monetary control. [A similar conclusion is reached in McCallum (1985). Lindsey (1984) reaches a different conclusion.] Most important, they possessed the same basic defect as the pre-October 1979 operating procedures. The new procedures, like the old, effected monetary control through the funds rate. Neither before nor after October 1979 was there a reliable model that could determine the value of the funds rate that would produce the targeted value of the money supply. By default the new procedures, like the old, relied on a simple feedback mechanism whereby, as long as an overshoot of the money supply target existed, the funds rate would rise, and conversely. The presumption was that the old procedures of monetary control had failed not through inherent problems with using the funds rate to effect monetary control, but rather because of strict limitations in the allowable magnitude of changes in the funds rate. Similarly, it was assumed that the new procedures would work because of the virtual elimination of a constraint on the magnitude of changes in the funds rate.

The simple feedback mechanism of the new monetary control procedures for determining borrowed reserves and the funds rate, taken in combination with the lags inherent in monetary control, appear in retrospect to have produced an overshooting and undershooting of the funds rate necessary in order to

⁸The following discussion is contained in the annual report of open market operations for 1982 by the New York Desk:

. . . it was clear that mechanical adherence to reserve path procedures would result in a borrowing gap in the final two weeks of around \$900 million (even before any allowance for special situation borrowing), implying considerable upward interest rate pressure. The Committee reviewed recent developments at a conference call on September 24. It was the Committee consensus that some accommodation of the more rapid growth of money was consistent with the directive adopted at the August meeting in view of the strength in NOW accounts, the overall weakness in the economy, and **the fragility of worldwide financial conditions**. Hence, the non-borrowed reserve path was adjusted to limit implied borrowing to the \$500 million to \$550 million area. [italics added] ["Monetary Policy . . ." (1983), p. 53]

achieve the M1 target.⁹ Judged by the experience in the last half of 1980 in particular, a money supply and funds rate cycle would begin with a funds rate too low to prevent a monetary acceleration. Initially, the monetary acceleration would proceed while the funds rate would be little changed, but later the funds rate would rise sharply.¹⁰ This behavior of the funds rate may have been produced by the administration of the discount window. When banks had been out of the discount window, a rise in borrowed reserves would initially have little impact on the funds rate. After banks had been in the window for some time, however, the new, higher level of borrowed reserves would produce a sharp rise in the funds rate. The sharp rise in the funds rate in time would produce a monetary deceleration and an eventual sharp drop in the funds rate.¹¹

11. Summary

In the preceding paragraphs, a chronological account was offered of the formulation and implementation of monetary policy in the early 1980s. The character of monetary policy during this period was

shaped by a concern over the high rate of inflation. It is, nevertheless, misleading to speak of a monetarist experiment. Policy actions were not guided by a rule.

The post-October 1979 operating procedures incorporated significant concessions to monetary control. Short-term targets for M1 were derived from annual targets and significant movement in the funds rate was permitted. The new procedures adopted nonborrowed reserves targeting. Given lagged reserve accounting, however, nonborrowed reserves targeting resulted in a monetary control procedure that worked through the funds rate. The new procedures, then, possessed the same problem as the old procedures, namely, the absence of an analytical model that could be relied upon in practice to determine the value of the Desk's operating variable from the money supply target. Consequently, changes in the funds rate had to be determined by a rule of thumb. It was argued that the new procedures contributed to unnecessary movements in the money supply and interest rates.

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⁹Goodfriend et al (1986) address the issue of whether the new procedures induced cyclical movements in the funds rate and, by implication, the money supply. According to their analysis, the resolution of this issue depends upon whether the level of borrowed reserves was set using the rule of thumb outlined in the initial descriptions of the new procedures or whether it was set on the basis of an analytical model capturing the relationship, running through the funds rate, between borrowed reserves and M1. Which assumption is a more appropriate description of the post-October 1979 operating procedures is an empirical issue not dealt with in their paper.

¹⁰Examination of the annual reviews of open market operations published in the Federal Reserve Bank of New York *Quarterly Review* reveals that only twice was the target for nonborrowed reserves chanced promptly upon the first appearance of a miss of the M1 target (March 1980 and May 1981). (The nonborrowed reserves target was changed on other occasions in response to a persistent miss of the M1 target.) Prompt alterations of the nonborrowed reserves target after an M1 target miss would have evened out this temporal pattern of the funds rate.

¹¹Furthermore, the inflationary environment of the early 1980s and the rise in the magnitude of the government deficit seemed to produce a belief among participants in the bond market that the level of interest rates would have to rise in order to contain inflation. There was, however, great uncertainty over what rise in interest rates would be required. In this uncertain financial environment, participants in the bond market watched the funds rate closely for information as to the Fed's judgment of what rate of interest would provide for monetary control. Consequently, changes in the funds rate were passed on to the entire maturity spectrum of interest rates.

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