Monetary Policy and Open Market Operations in 1980

The Federal Reserve faced a turbulent year in the economy and in financial markets in 1980 as it sought to dampen inflationary pressures by restraining money and credit growth. The economy was buffeted by a number of shocks, including sharp hikes in energy prices, heightened tensions in the Middle East, and rapidly shifting inflationary expectations. The special credit restraint program announced on March 14—and its subsequent removal—had a larger than expected impact and combined with other developments to produce dramatic changes in economic activity, interest rates, and financial flows. The economy plunged into a steep recession in the second quarter and then, much to the surprise of almost all analysts, recovered over the balance of the year—making the recession one of the shortest on record. Interest rates soared to unprecedented levels early in the year, dropped dramatically in the spring, only to rise sharply again, in some cases to new highs, by late autumn. The recession and the Reserve System's firm policy stance helped dampen inflationary expectations temporarily, but the quick turnaround in the economy and concern over the prospects for the Federal deficit renewed public anxiety over the price outlook. By the year-end, inflationary psychology still seemed firmly embedded in the economy, although the speculative fever evident earlier in the year in the commodities markets and the sense of rapidly accelerating inflation had not returned.

The wide swings in economic activity in 1980, in turn, led to marked changes in the public's needs for cash balances, testing the System's new reserve-oriented strategy for monetary control adopted in October 1979. That strategy—which involves placing more emphasis on managing the supply of reserves, while allowing much greater scope for movements in the Federal funds rate—provided an automatic market adjustment of short-term rates when monetary shortfalls and overruns occurred. When growth of the monetary aggregates, and hence the demand for reserves, fell below the objectives of the Federal Open Market Committee (FOMC) in the spring as the economy weakened, the Domestic Open Market Desk's provision of nonborrowed reserves in line with those objectives led to sharp declines in short-term rates as banks cut back their borrowing from the discount window. By late summer, and more intensively through the autumn, with money growth strengthening along with the economy, short-term rates began to climb as the Desk's restraint on the supply of nonborrowed

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Chart 1

Targeted and Actual Growth of M-1A

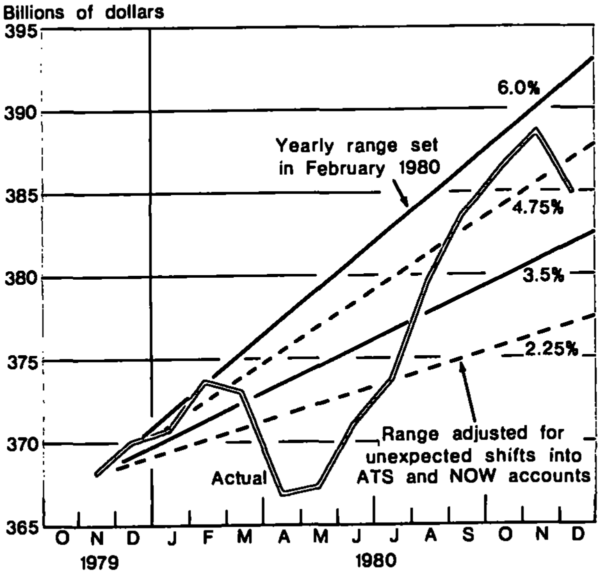


Chart 2

Targeted and Actual Growth of M-1B

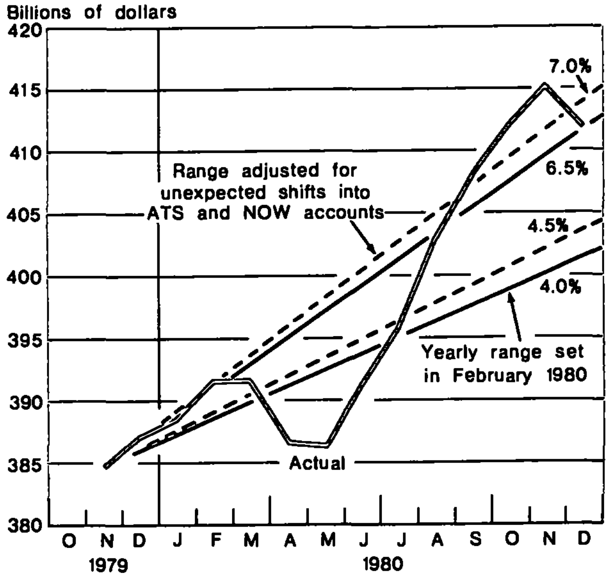


Chart 3

Targeted and Actual Growth of M-2

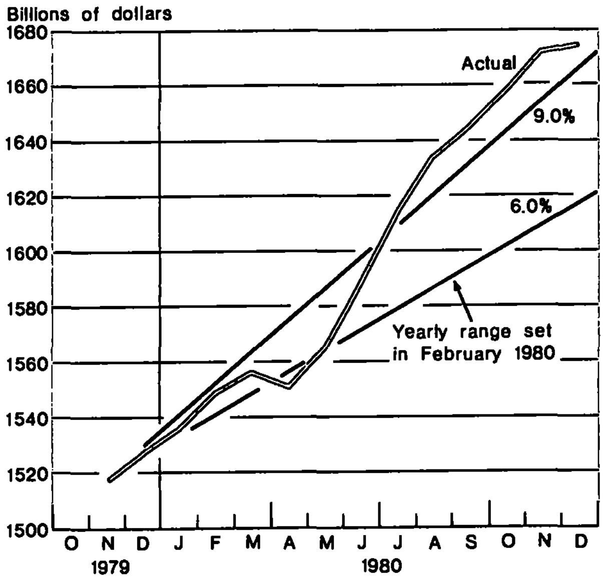
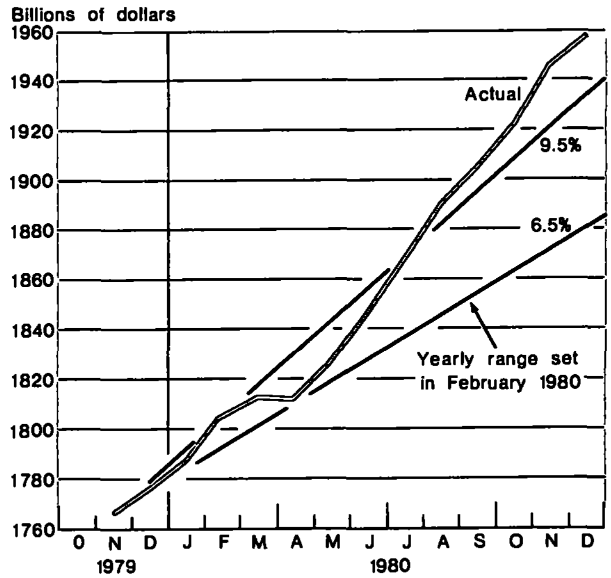


Chart 4

Targeted and Actual Growth of M-3



reserves relative to reserve demands forced banks to borrow heavily from the window to meet their reserve requirements. On several occasions, the nonborrowed reserve path was modified to speed up the adjustment process. The path was raised to reduce the need for borrowing when the aggregates were growing substantially below the Committee's objectives, and lowered to force even higher borrowing when the aggregates were growing substantially above the objectives. Increases in the discount rate and the imposition of the discount rate surcharge on frequent borrowing by large banks were even more important at times in speeding the response to monetary overshoots. In this way, the new strategy worked to encourage banks and the public to make portfolio changes that in time helped bring money growth back in line with the Committee's objectives.

For the year as a whole, growth of the monetary aggregates was near the upper ends of the Committee's targeted ranges. Measured from the fourth-quarter average of 1979 to the fourth-quarter average of 1980, M-1A and M-1B rose by 5.0 percent and 7.3 percent, respectively,[1] slightly above the upper ends of the Committee's corresponding growth ranges of 2¼ to 4¾ percent and 4½ to 7 percent after appropriate adjustment.[2] Both aggregates weakened substantially toward the year-end, and by December their growth was within the Committee's (adjusted) path ranges (Charts 1 and 2). Growth of the broader aggregates, on a quarterly average basis, also exceeded somewhat the Committee's expectations. M-2 rose over the four quarters of 1980 by 9.8 percent, compared with its 6 to 9 percent range, while M-3 increased by 9.9 percent as against its range of 6½ to 9½ percent (Charts 3 and 4). The expansion of the broader aggregates was spurred on, in part, by the rapid advance of money market mutual fund shares which, not only drew funds from other components of M-2, but also diverted flows that otherwise would have gone directly into money market instruments not contained in the aggregate measures, such as Treasury bills and commercial paper. The volume of money market mutual fund shares outstanding nearly doubled over the first eight months to about $80 billion before edging downward over the balance of the year. Bank credit grew 7.9 percent over the four quarters of 1980, within the 6 to 9 percent range that had been associated with the Committee's aggregate ranges.

The remainder of this report focuses special attention on the System's experience with the reserve strategy for monetary control in 1980 from the vantage point of the Desk. After highlighting economic and financial developments over the year and discussing the FOMC's choices of yearly monetary ranges and short-term objectives, it describes how the Desk worked to achieve intermeeting reserve paths corresponding to these objectives through day-to-day open market operations.

The Economy and Financial Markets

After more than four years of expansion, the economy experienced a short but dramatic recession during the first half of 1980. The contraction was followed by moderate growth in the second half of the year that did not quite recover the earlier decline. The unemployment rate jumped up by more than 1½ percentage points in the spring and, after falling slightly in subsequent months, leveled off at 7½ percent. Inflation, as measured by the gross national product (GNP) price deflator, increased to nearly 10 percent over the four quarters ended in the final quarter of 1980 from about 8 percent in the previous year. The sharp swings in economic activity and consequent shifts in inflationary expectations and credit demand over the year led to unprecedented movements in interest rates.

As the year began, there were few, if any, signs of the long-expected recession. Increases in the consumer price index accelerated to an annual rate of over 18 percent, reflecting in part sharp hikes in oil prices and mortgage interest rates. The Carter administration's new budget was generally viewed in the markets as overly expansive, while expectations mounted that the Russian involvement in Afghanistan would lead to stepped-up United States defense spending. Renewed speculation in precious metals underscored doubts about the prospects for dampening inflationary pressures. Inflationary expectations thus worsened, precipitating rapid increases in interest rates including an unprecedented jump in long-term rates. The bond markets were in a state of shock, and bond prices plummeted as investors sought refuge in short-term assets.

[1] Figures in the body of the report reflect data available as of March 6, 1981. The chronological sections make use of data published at the time, since Federal Reserve decisions were based on them.

[2] These reflect adjustments to the original ranges of 3½ to 6 percent and 4 to 6½ percent for the impact of actual shifts of funds into automatic transfer service (ATS) accounts and negotiable order of withdrawal (NOW) accounts during the year. The Committee's 1980 growth ranges for M-1A and M-1B, first set in February and then reaffirmed in July, allowed for a ½ percentage point difference between the two, but the difference turned out to be about 2¼ percentage points. The Board of Governors staff estimates that about two thirds of the increase in ATS and NOW accounts reflected shifts of funds from demand deposits, with the rest coming out of savings accounts and other components of M-2. On this basis, the M-1A range was revised downward and the M-1B range revised upward.

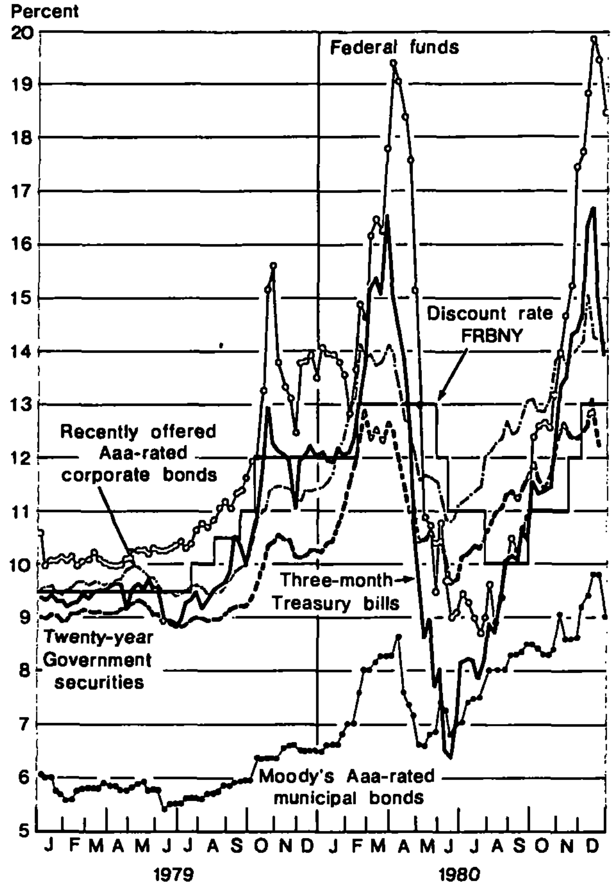
In this atmosphere, President Carter announced in mid-March a broad program intended to stem inflationary forces. As part of this effort, the Federal Reserve undertook a set of measures aimed at restraining the growth of credit. These included (1) a voluntary program to restrain the growth of domestic lending by leading financial institutions, (2) a special 15 percent deposit requirement on increases in unsecured consumer credit and assets of money market mutual funds, (3) an increase in the marginal reserve requirement on banks' managed liabilities, and (4) the imposition of a 3 percentage point surcharge on discount window borrowing by frequent large bank borrowers.

During late March and early April, evidence began to mount that the economic expansion had come to an end. Consumer spending, which had been important in sustaining the expansion, began to fall late in the first quarter and then dropped sharply in the second quarter as the March 14 credit control program took hold. The personal savings rate, at a relatively low level of 4.9 percent in the first quarter, increased to 6.2 percent in the second quarter. Mortgage rates, freed from state usury ceilings, reached levels at which housing demand, and thus new construction, declined dramatically. The auto industry, which had curtailed its production in the last months of 1979, cut back still further in the spring of 1980 as consumer demand slackened. In all, real GNP (after adjusting for the effects of inflation) grew at a modest rate in the first quarter and then declined at a record annual rate of nearly 10 percent in the second quarter.

Interest rates continued to climb for a brief period after the economic downturn began. By early April, yields on virtually all fixed-rate financial assets attained record levels, though some of these records were eclipsed later in the year. The average effective Federal funds rate reached a high of 19.39 percent for the week of April 2 (Chart 5), and at the same time the prime rate charged by commercial banks hit 20 percent. Three-month Treasury bill rates in regular weekly auctions registered a high of 16.53 percent in March, while long-term Treasury bonds yielded 12.85 percent at their peak in February. Then, as the sharp downturn in the economy led to a substantial drop in the demand for credit and a moderation of inflationary expectations, interest rates declined precipitously. In early May, the Federal Reserve began to phase out its credit restraint measures by eliminating the surcharge on discount window borrowing. Later in the month, the special deposit requirements and marginal reserve requirements were cut in half. On July 3, with the economy looking quite weak and growth of the various monetary aggregates well within or below their individual target ranges, the Federal Reserve announced

Chart 5

Selected Interest Rates



that the remaining provisions of the program would be phased out by the end of the month. The weekly average effective Federal funds rate fell to as low as 8.68 percent near the end of July, while the prime rate at most major banks stood at 11 percent. Three-month Treasury bill rates reached a low of 6.37 percent, and long-term Treasury bond yields fell to 9.49 percent in mid-June.

Notwithstanding the consensus forecast of further economic contraction in the third quarter, the economy then began to show signs of renewed strength. As the economy turned the corner, growth of the monetary aggregates accelerated sharply and the demand for credit rebounded from its depressed second-quarter rate. Though demand from the private sector was still somewhat below normal levels, government financing needs increased to a historically high level. As the third quarter unfolded, interest rates turned up. Inflationary expectations worsened, as the strength of the economy became apparent in data released late in the quarter.

The momentum of the economic rebound continued into the final quarter of the year as did the heavy Treasury financing needs. Increases in consumer prices, which were relatively moderate during the summer months, began to accelerate. The Federal Reserve's restrictive approach to the supply of reserves in the face of continued strong money growth was associated with strong upward pressure on short-term market interest rates. On November 17, the Federal Reserve raised the basic discount rate 1 percentage point to 12 percent and established a 2 percentage point surcharge on frequent borrowing by large banks. On December 5, the basic rate was raised again to 13 percent and the surcharge was boosted to 3 percent. Yields on all fixed-rate assets increased sharply over the last few months of the year, surpassing the previous record highs set in early spring for many maturity areas and types of issues. The weekly average effective Federal funds rate hit 19.83 percent in December, at the same time that the prime rate reached 21½ percent. Three-month Treasury bill rates peaked at 16.67 percent and long-term Treasury bonds yielded 13.17 percent in December.

Patterns of finance

The patterns of government and private finance were influenced in varying degrees by the dramatic oscillations in the economy and interest rates in 1980. The recession added substantially to the Federal deficit, which in turn contributed to a more than doubling of net Treasury borrowing from the public. The net rise in marketable Treasury debt held outside Federal Reserve and Government accounts was $90 billion in 1980, compared with $37 billion in 1979. As the growth of income tax receipts dropped off and income maintenance expenditures expanded, Treasury borrowing surged. In each of the last two quarters of 1980, the Treasury raised about $28 billion in new cash and thus added to the upward pressure on interest rates during the period. For the year as a whole, outstanding publicly held coupon issues increased by $45.3 billion, including $1.2 billion equivalent of German mark-denominated notes sold to German residents in January. Treasury bills held by the public increased by $44.8 billion.

Federally sponsored agencies and corporations raised $26.7 billion in net funds from the public over the year, up from $25.6 billion in 1979. The three major borrowers were the Farm Credit Administration, the Federal Home Loan Banks, and the Federal National Mortgage Association.

State and local governments issued a gross volume of $46.3 billion of long-term bonds in 1980, compared with $42.3 billion in 1979. Tax-exempt borrowers subject to legal rate ceilings were effectively excluded from the bond market during the periods of high interest rates. New issue activity in the tax-exempt bond market thus fell off during the first few months of 1980 and then rebounded during the spring and summer months. Toward the year-end, some issuers again were priced out of the market. At the same time, however, other state and local borrowers accelerated their schedules for issuing housing revenue bonds in anticipation of Federal legislation (signed into law December 5) that would soon limit the volume of tax-exempt mortgage bond financings. Consequently, the volume of new issues did not drop as much in the last quarter as it had in the first quarter of the year.

In the private sector, the demand for credit fluctuated in response to changes in the level of economic activity. Early in the year, nonfinancial corporations faced a large financing gap. With long-term interest rates high and rising, however, many corporations postponed planned bond offerings and increased their reliance on short-term borrowing (largely bank loans and commercial paper). Growth of short-term business credit was further bolstered by corporations who borrowed in anticipation of a possible move to credit controls by the Federal Reserve. Proceeds from such borrowing were not needed immediately but boosted corporate holdings of liquid assets. Consumer credit and mortgage debt continued to expand, albeit at a reduced pace, in the first quarter of the year.

After the implementation of credit controls in mid-March, bank loans to businesses and consumers dropped off sharply. While market interest rates fell rapidly in the spring, banks were slow in reducing their prime rates, thus increasing the spread between prime and commercial paper rates and diverting some corporate borrowers to the commercial paper market. In addition, many corporations met their financial needs in the second quarter by drawing down their liquid asset holdings and marketing the backlog of new bond issues delayed from earlier in the year. Consumer debt fell sharply in the spring and summer, reflecting both the decline in consumer spending and the impact of the credit control program. Banks increased the fees and the minimum monthly payments on instalment debt, making this sort of borrowing less attractive to the consumer, while many consumers apparently decided on their own to use credit cards and charge accounts more sparingly. Growth of mortgage debt was sharply curtailed in the second quarter.

Private-sector demand for credit rebounded somewhat in the second half of the year, as the economy resumed its expansionary course. As interest rates began to increase, the spread between prime and commercial paper rates declined to more normal levels. In addition, many banks moved to price short-term business loans more competitively. Consequently, bank loans rebounded while outstanding commercial paper contracted—but by less than the rise in bank credit. Corporate borrowing in the bond market continued at a healthy pace through most of the second and third quarters but then declined again as long-term interest rates approached, and then surpassed, the record levels achieved earlier in the year. Growth of mortgage debt increased in the third quarter but remained below normal levels for the remainder of the year. Consumer credit demand picked up late in the third quarter and continued to expand over the remainder of the year.

Over the year as a whole, new issues in the corporate bond market amounted to $52.8 billion, up from $40.1 billion in 1979. Commercial and industrial loans at commercial banks increased by about 11 percent to a level of $325.1 billion at the year-end. Outstanding nonfinancial commercial paper grew by $6.8 billion to $37.1 billion. Total consumer instalment credit remained virtually unchanged at $313.4 billion, while mortgage debt grew more slowly than in previous years.

Financial futures markets

During 1980, transactions in Treasury bill and bond futures contracts came to play an even more important role in the trading strategies of dealer firms and some other financial institutions. Activity in interest rate futures markets grew rapidly, not only in relation to previous experience, but also in comparison with trading in the underlying cash markets. Daily volume in three-month Treasury bill futures contracts on the International Monetary Market (IMM), by far the most active bill futures market, averaged slightly more than 13,000 contracts ($13 billion), an increase of nearly 75 percent over 1979. Trading in Treasury bond futures contracts more than tripled to nearly 26,000 contracts ($2.6 billion) per day on average. The increasing volume of arbitrage between the cash and futures markets continued to prompt concern among regulators that difficulties in the futures markets could spill over into the cash markets. Widespread pressure on the commodities futures markets in the spring (from the silver market) and in December (from the grain markets) exerted pressure on the financial futures markets and, in turn, on the cash markets. In addition, deliveries against futures contracts were heavy at times, reaching record high levels in bills and bonds in December.

Monetary Policy and Its Implementation

Long-term targets

In planning policy for 1980, the FOMC reaffirmed its goal of gradually lowering money and credit growth over a period of years to dampen inflationary expectations and to reduce inflation. The Committee's longer run objectives for money and credit growth continued to be formulated within the framework of the Full Employment and Balanced Growth ("Humphrey-Hawkins") Act of 1978. In accordance with the act, the Board of Governors reported to the Congress in February on the System's goals for money and credit expansion for the year ended in the fourth quarter of 1980 and related these goals to the objectives for the economy contained in the President's January Economic Report. Then, in July, the Board reported on the System's reassessment of the 1980 targets and its preliminary plans for 1981, relating these to the Administration's forecasts contained in its midyear budget review. The Committee's targets were set using new definitions of the money stock which take into account recent innovations and regulatory developments in the financial system, while arranging monetary assets according to their functional characteristics rather than the particular issuing institution.[3]

The Committee faced a number of uncertainties when it met in February to consider its objectives for money and credit expansion in 1980. Apart from uncertainties about the economy and the international situation (heightened by new tensions in the Middle East and Afghanistan), there were particular questions about likely monetary developments relevant to the target-setting procedures. The shift of funds into ATS accounts and NOW accounts in New York State that was evident in the previous year was expected to subside. However, legislation to extend NOW accounts nationwide was pending in the Congress. Passage of such legislation would be expected to depress M-1A growth as the public shifted funds into NOW accounts from demand deposits, while boosting M-1B growth as such shifts occurred from savings deposits and other assets. But the timing and extent of the shifts were in doubt.

[3] Two narrow transactions measures, M-1A and M-1B, replaced the old M-1 measure (currency plus demand deposits adjusted). M-1A is basically the same as M-1, except that it excludes demand deposits held by foreign commercial banks and official institutions. M-1B adds to M-1A three other checkable instruments at all depository institutions, namely, NOW accounts, ATS accounts, and credit union share draft balances. Among the broad money stock measures, the new M-2 adds to M-1B savings and small time deposits at all depository institutions, money market mutual fund shares, overnight repurchase agreements (RPs) issued by commercial banks, and certain overnight Eurodollars held by United States nonbank residents. M-3 includes also large time deposits at all depository institutions and term RPs issued by commercial banks and savings and loan associations.

While growth of the broader aggregates was not expected to be significantly affected by the introduction of nationwide NOW accounts, there were questions on the prospects for growth of some of the newer elements contained in these measures—particularly money market mutual fund shares.

Against this background, the Committee continued to formulate its yearly objectives for money and credit expansion in terms of ranges that were 2½ to 3 percentage points wide. In line with its general policy of seeking a gradual reduction of money and credit expansion over a period of years, the midpoints of the growth ranges for 1980 were moderately below actual money and credit growth in 1979, continuing the general trend toward lower money growth from the levels recorded in 1978 (Table 1).

By the time the Committee met in July to reconsider the 1980 ranges and to formulate tentative plans for 1981, the economy and the monetary aggregates had weakened considerably. The particularly marked weakness in the narrow aggregates suggested that the demand for money might have shifted downward, either because the rapid rise in interest rates in the winter encouraged the public to economize on its cash balances to an unusual extent or because the credit restraint program had led the public to pay down debt, in part, by drawing down money balances. Growth among the aggregates also varied from earlier expectations. Legislation authorizing continuation of ATS accounts and allowing NOW accounts nationwide effective December 31, 1980 was signed into law at the end of March. Commercial banks which already had the authority to issue ATS accounts began to promote them aggressively in anticipation of other institutions being able to offer NOW accounts shortly. As a result, while the Committee's yearly ranges had allowed for a ½ percentage point difference between the growth rates of M-1A and M-1B, the actual difference in the second quarter was on the order of 2 percentage points. In addition, growth of the broader monetary aggregates was being supported by the rapid advance of money market mutual fund shares. Hence, by June, although growth rates of the narrow monetary measures from the fourth quarter of 1979 were below the Committee's yearly ranges, growth rates of the broader measures were within their respective ranges.

Despite the shifting relationships among the aggregates, the Committee elected to retain its targets for the year. It noted, however, that growth of the narrow monetary aggregates might end the year toward the lower bounds of their respective ranges, while growth of the broader aggregates might be above their midpoints and, in the case of M-2, even toward the top end of its range.

Short-term objectives

At each meeting, as part of the new reserve approach, the Committee specified short-term objectives for growth of M-1A, M-1B, and M-2. These objectives, along with the Committee's initial assumption for borrowing at the discount window, were used by the staff to construct the reserve paths which, in turn, guided open market operations over intermeeting periods.

At the outset of the year, the Committee chose short-term objectives for the narrow aggregates that were a bit below the midpoints of their respective yearly ranges. Thus, at the February meeting, when the FOMC first began to use the new definitions of the money stock, its short-term objectives for the December-March period were annual growth rates of 4½ percent for

Table 1

Growth of Monetary and Credit Aggregates Relative to Targets of the Federal Open Market Committee

From fourth quarter of previous year to fourth quarter of year indicated; in percent

Aggregate	1978 actual	1979 actual	1980 original range	1980 adjusted range*	1980 actual
M-1A	7.4	5.0	3½ to 6	2¼ to 4¾	5.0
M-1B	8.2	7.7	4 to 6½	4½ to 7	7.3
M-2	8.4	9.0	6 to 9		9.8
M-3	11.3	9.8	6½ to 9½		9.9
Bank credit	13.5	12.3	6 to 9		7.9

* Reflects adjustments to original ranges for estimated impact of actual shifts of funds into ATS accounts and NOW accounts (see footnote 2 of text).

M-1A and 5 percent for M-1B. Consistent with this approach, M-2 was expected to grow at an annual rate of 6½ percent.

As the year unfolded and the aggregates strayed from path rates consistent with their yearly ranges, the Committee's general approach in setting its short-term monetary targets was to provide for returning money growth to path over a period of several months. Hence, when the aggregates were running below path rates consistent with their yearly ranges, the Committee tended to set relatively high short-term growth objectives—but not so high as to attempt to close the gap in a period as short as, say, one month. Similarly, when the aggregates were above path rates consistent with the yearly ranges, the Committee chose short-term objectives that were on the low side, again pointing the way back to path over several months. At the same time, the Committee tended to be relatively tolerant of overshoots in the short-term objectives when growth was low relative to the longer term goals, and tolerant of undershoots in the short-term objectives when growth was running high relative to the longer term goals. In taking this approach, the Committee was mindful of the volatile short-run behavior of the aggregates and, therefore, the difficulty of controlling or even interpreting movements over short periods. Moreover, it tried to take into account lags in the effects of changes in financial market conditions on money growth. A more aggressive approach to setting short-term monetary targets—say, one that attempted close month-to-month control—risked the possibility of whipsawing the markets and ultimately destabilizing money growth and interest rates over a longer period.

The Federal funds rate range

In addition to setting short-term objectives for the monetary aggregates at each meeting, the Committee also specified broad ranges for the Federal funds rate. The Committee's formal instructions to the Manager with respect to these ranges changed somewhat beginning with the directive issued at the December 1980 meeting. Earlier directives had called for the Desk to aim for reserve paths consistent with the Committee's aggregate objectives, provided that in the period before the next meeting the weekly average Federal funds rate remained within the specified range. If it appeared that the constraint on the Federal funds rate was inconsistent with the reserve objectives, the Manager was promptly to notify the Chairman who would then decide whether the situation called for supplementary instructions from the Committee. The December directive retained the notification requirement if it appeared that developments in the funds market, taken over a period of time, were inconsistent with the specified range. In the meantime, however, the Desk was to continue aiming for reserve objectives without the funds rate acting as a constraint in the absence of any further Committee instruction.

Even before this change, the Federal funds rate ranges, in fact, played only a temporary and rather modest role in guiding open market operations over the year. In the first place, over most of the year the ranges—which varied from 4 to 8½ percentage points in width—were sufficiently wide as to pose no constraint on the Desk's efforts to achieve the reserve paths. Second, when there was a potential conflict between the funds rate range and the reserve paths, the Committee was fairly quick to adjust the funds ranges to remove the conflict. Over the year, the Committee adjusted the formal ranges during intermeeting periods downward on one occasion and upward on three occasions, including once in early December when it temporarily suspended the upper bound of the range as aggregate growth continued to exceed its objectives. On one occasion, at the May 20 meeting, the Committee instructed the Manager to seek further consultation before letting the Federal funds rate fall significantly within the formal range of 8½ to 14 percent. Subsequently, in early June, the Committee allowed the Desk to use the full scope of the range.

Reserve paths and the adjustment process

Subsequent to each meeting, the staff constructed paths for total reserves and nonborrowed reserves consistent with the Committee's short-term aggregate objectives, following the procedures developed in October 1979. To arrive at a total reserve path, it first estimated the required reserves needed to support the deposits contained in the Committee's targets, taking into account the likely growth of currency, the composition of these deposits by type and maturity, and their distribution among banks by size and membership status. To this the staff added estimates of excess reserves and required reserves needed to support the growth expected in reservable liabilities not contained in the short-term aggregate targets, such as net interbank deposits and large time deposits. The nonborrowed reserve path was then derived by subtracting from the total reserve path the initial borrowing level agreed to by the Committee.

Each week (generally on Fridays), as new information on deposits and reserves became available, senior Board staff and the Account Manager reviewed the paths for their consistency with the Committee's monetary aggregate objectives. These reviews resulted in frequent adjustments to the paths for technical changes in the money-reserves relationship and, on a few occasions, for perceived changes in banks' demand for borrowed reserves. At the same time, consideration was also given to adjusting the nonborrowed reserve path relative to the total reserve path to speed up the response to overshoots or undershoots in money growth (discussed below).

Operations over intermeeting periods focused primarily on hitting the path for nonborrowed reserves, the measure subject to reasonably close short-run control. The Desk aimed to achieve the average nonborrowed reserve path for blocks of several weeks, either encompassing the full intermeeting period or two separate subperiods when the meetings were more than five weeks apart. Each week the Desk had a nonborrowed reserve objective, which was derived in the following way. First, the estimated and projected average demand for total reserves over the intermeeting period (or subperiod) was compared with the average nonborrowed reserve path to provide an estimate of average borrowing needed over the period as a whole if the average nonborrowed reserve path were to be achieved. Then, the average borrowing needed over the remaining weeks of the period was calculated, taking into account the actual borrowing in previous weeks. Finally, this level of borrowing was subtracted from weekly projections of total reserves over the remaining weeks to give a series of weekly nonborrowed reserve objectives.

As the Desk worked to achieve the average nonborrowed reserve path, borrowing at the discount window and money market rates tended to adjust whenever money growth deviated from the Committee's short-term aggregate objectives. When money growth was above these objectives, for example, as in the autumn of 1980, banks' demand for total reserves exceeded the nonborrowed reserve path by more than the initial borrowing assumption. Hence, with the Desk supplying nonborrowed reserves in line with the path, interest rates tended to move higher as banks were forced to seek greater access to the discount window to meet their reserve requirements. Similarly, when money growth was below the Committee's objectives, the demand for total reserves exceeded the nonborrowed reserve path by less than the initial borrowing assumption. In this case, the Desk's provision of nonborrowed reserves in line with the path meant that banks had less need to borrow from the discount window and rates tended to move lower. These resulting changes in money market rates under the reserve approach, in turn, worked to encourage banks and the public to make the portfolio changes needed to return money growth in time back in line with the Committee's objectives.

On occasion, as seemed appropriate, the nonborrowed reserve path was modified relative to the total reserve path in order to accelerate the adjustment process. These changes were intended to encourage an even sharper response in borrowing, and hence in reserve availability and interest rates, to monetary deviations so that the pressures for restoring money growth in line with the Committee's objectives were intensified. The nonborrowed reserve path was lowered in five of the thirteen reserve periods over the year by a total of about $750 million. Downward adjustments were concentrated near the start of the year and again in the autumn when the aggregates persisted in overshooting the Committee's objectives. Upward adjustments to the path occurred in only one reserve period, for a total of $100 million, in the spring when the aggregates fell well below Committee objectives.

A more important source, at times, of accelerating the adjustment of reserve availability and interest rates to monetary overshoots was the effect of increases in the discount rate and the imposition of a discount rate surcharge on frequent borrowing by large banks. When the discount rate was raised, banks tended to bid up the Federal funds rate to maintain the previously prevailing spread. Similarly, banks seemed reluctant to borrow at the surcharge rate, and thus the imposition of the surcharge appeared to boost the funds rate by nearly the same amount within a few weeks. In combination, these factors appeared to account for about half of the 10½ percentage point increase in the funds rate over the August-December period. The remaining increase reflected the automatic response of rates to monetary overshoots under the reserve approach and the downward adjustments made to the nonborrowed reserve path. Reductions of the discount rate and the lowering, and then subsequent removal, of the surcharge in the summer were made when funds were trading at levels below the discount rate and, hence, seemed to have had little impact on rates.

Day-to-day operations

Each day the Desk had before it projections, prepared independently by the Board and New York staffs, of the supply of nonborrowed reserves for several weeks, assuming that the Desk initiated no further action. These projections reflected the influence on reserves of market factors, such as float, Treasury balances, and currency in circulation. A comparison of these forecasts with the weekly average nonborrowed reserve objectives served as the principal guide to open market operations. Temporary needs to add or take out reserves to achieve the nonborrowed reserve objectives were met mainly through repurchase agreements (RPs) and matched sale-purchase transactions in the market. (On occasion, the Desk also provided reserves by passing through to the market a portion of the foreign temporary investment orders, although these were usually arranged internally with the System Account.) When the projected need to add reserves extended for several weeks, the Desk at times purchased securities on an outright basis in the market or from foreign accounts. Extended needs to take out reserves were met in part through sales in the market or to foreign accounts or by letting a portion of the System's holdings mature without replacement.

While comparisons of the projected supply of nonborrowed reserves with the objectives for nonborrowed reserves were the major influence on operations over the year, the Desk had to take into account other factors as well. For one thing, borrowing from the discount window early in a statement week sometimes ran significantly above or below the level assumed in constructing the nonborrowed reserve objective. When borrowing ran far enough above the assumed level early in the week, for example, mathematically there might have been no way to achieve the average level of borrowing anticipated at the start of the week. This presented the Desk with a dilemma. If the nonborrowed reserve objective were met in full, this would produce huge excess reserves and probably a sharp easing in the money market at the end of the week. Alternatively, if the Desk absorbed the excess arising from the higher borrowing, this would mean coming out below its nonborrowed reserve objective for the week. On the opposite side, when borrowing early in the week ran significantly below the level sought for the week, the Desk could either provide nonborrowed reserves according to the objective, causing a sharp jump in borrowing and the funds rate at the end of the week, or else provide reserves more abundantly and overshoot the nonborrowed reserve objective. Either a sharp tightening or easing of money market conditions at the end of a week risks generating bank responses predicated on a continuation of those tighter or easier conditions. Such occurrences can confuse the market about the System's basic policy stance and, thereby, undermine bank and public portfolio adjustments consistent with achieving the System's money growth objectives over a longer time span.

Another complicating factor for open market operations was that projections of reserve supplies continued to be subject to a wide margin of error. Over 1980, the average absolute forecast error of weekly average nonborrowed reserves from projections made at the beginning of statement weeks amounted to $750 million. (This was actually somewhat less than in the previous year, mainly reflecting a decline in the variability of float, the chief source of error.) The accuracy of projections improves during the week, as data become available each day on actual reserves of the previous day. Still, even on the last day of the statement week, the average absolute projection error of weekly average reserves was $163 million, and sometimes it was much larger.

Reserve projection errors were not a major source of deviation from the System's average nonborrowed reserve path for multiweek reserve periods as a whole, but they frequently led to sizable misses from the weekly nonborrowed reserve objective. Large projection errors, like overborrowing or underborrowing, may result in sharp changes in interest rates, which confuse the market on the System's policy intentions and thus impede monetary control.

Because the projections are subject to a large degree of error, the Desk also looked at other indicators of reserve supplies, such as the behavior of the Federal funds rate and the volume of dealer offerings at various rates when the Desk solicited propositions for RPs and matched sale-purchase transactions. Each week, the Desk had some rough idea of where funds might be expected to trade consistent with the mix of borrowed and nonborrowed reserves that it was seeking. If the funds rate moved significantly above or below this level, it suggested there might be an error in the projections. The Desk was aware that other factors could also influence funds rate behavior and, hence, it was cautious about using the funds rate as a guide to operations. Of the relatively few times that the behavior of the funds rate relative to expectations actually influenced operations since the October 6 program, the Desk found it a somewhat useful, although not wholly reliable, guide to reserve supplies.[4]

With the Desk aiming to achieve reserve objectives rather than a Federal funds rate target, both the timing and frequency of Desk operations have changed markedly under the new reserve approach. The most notable change has been in the timing within the day of Desk entries in the market to arrange RPs and matched sale-purchase transactions. Such actions are now largely initiated within the period from 11:30 a.m. to 12:15 p.m., following the regular morning conference call which reviews reserve projections and market developments. By operating chiefly within this period, the Desk has tended to reduce the significance that the market attaches to the Federal funds rate prevailing at the time of market entry. By comparison, under the Federal funds rate strategy, the Desk was prepared

[4] See "Implementing the New Operating Procedures: The View from the Trading Desk", part of the Federal Reserve Staff Review of Monetary Control Procedures (January 1981), pages 15-16. This study found that the Federal funds rate provided reasonably good guidance when reserve projections were well off the mark but was less reliable when there were small misses.

Table 2

Comparison of Actual Reserves to Path: Summary

Four weeks ended February 6, 1980 to four weeks ended January 14, 1981

Deviations from paths	Average deviation per reserve period (millions of dollars)	Average absolute deviation per reserve period (millions of dollars)	Average absolute deviation as percentage of reserve measure (percent)
Nonborrowed reserves:*			
Total	−144.3	170.9	0 41†
Accepted or intentional:			
Transition between reserve periods	− 55.5	55.5	0.13
Weekly deviation of borrowing	− 45.0	45.0	0.11
Special borrowing	− 3.8	3.8	—
Monetary aggregate growth	− 13.4	13.4	0.03
Federal funds rate constraint	− 1.4	1.4	—
Unintentional:			
Dealer propositions	+ 10.9	12.9	0.03
Projection errors‡	− 36.2	49.7	0.12
Total reserves:*			
Total	+ 68.7	326.1†	0.77†
Required	+108.7	338.4	0.79
Excess	− 40.0	72.6	0.17
Nonborrowed	−144.3	170.9	0.40
Borrowed	+212.9	382.2	0.90

* Computed from adjusted paths.

† Individual components do not sum to total because of interaction of components.

‡ Calculated as residual.

to intervene in the market well before 11:00 a.m. and after 1:00 p.m. if the funds rate deviated in either direction by ⅛ to ¼ percentage point or so from the System's objectives.

The frequency of Desk operations in the market also seems to have changed significantly under the new operating procedures. Over the first year under the reserve approach, for example, the number of Desk market entries to arrange RPs and matched sale-purchase transactions dropped by about one third from the level of the previous year. The largest percentage decline appeared to be in the number of entries to arrange a relatively small volume of transactions (less than $1 billion). Under the Federal funds rate strategy, such transactions were often used to signal the System's policy intentions, even when reserve projections suggested no need for action.[5]

[5] For a further discussion of the impact of the new procedures on the frequency and timing of Desk actions, *ibid.*, pages 17-19.

Experience in hitting reserve paths

Table 2 summarizes the System's record in achieving its path objectives for nonborrowed and total reserves in 1980. Specifically, the table shows average deviations from path, and the source of these deviations, for the thirteen reserve periods running from the four weeks ended February 6, 1980 to the four weeks ended January 14, 1981. Deviations are measured from adjusted (rather than original) path levels, since these were the objectives that the System sought to hit.

For nonborrowed reserves, deviations (ignoring sign) averaged about $170 million per reserve period, or 0.4 percent of the average level of nonborrowed reserves. Deviations were much larger for total reserves. They averaged about $325 million (again ignoring sign) or nearly 0.8 percent of total reserves. As explained below, there was a tendency for nonborrowed reserves to come in below path; over the year as a whole, nonborrowed reserves ran about $145 million on average below path values for the thirteen reserve periods. In contrast, total reserves were about $69 million above path, on average, reflecting the overshoot in required reserves associated with somewhat higher than targeted monetary aggregate growth over the year, offset in part by a shortfall in excess reserves.

Of the absolute deviations in nonborrowed reserves from path, about two thirds represented decisions to tolerate or even to aim for reserve supplies either above or below average path values. They arose from a variety of considerations but mainly reflected a desire to maintain continuity in the degree of adjustment pressure on the banks in the transition from one reserve period to the next around the time of the FOMC meetings and deviations from expectations for borrowing in the final week of a reserve period. Unintentional deviations resulted primarily from reserve projection errors and, to a lesser extent, from the inability of the Desk to arrange the volume of open market operations planned because of insufficient dealer propositions.

The tendency for nonborrowed reserves to come out below path largely reflected the behavior of borrowing over the year which more often ran above rather than below expectations, especially during periods of rising interest rates. Instead of allowing a huge excess at the end of statement weeks, the Desk at times deliberately chose to undershoot its weekly nonborrowed reserve objective. When this occurred in the final week of a reserve period, it meant that nonborrowed reserves would come out below the average path value for the period as a whole. Moreover, even if it occurred earlier in the period, it meant that there might be a large gap in nonborrowed reserves to fill in the final week, with the implication of a large drop in borrowing in that week, even when the FOMC's new instructions might involve a rise in the subsequent week. At such times, the Desk chose to avoid large changes in adjustment pressure in the final week, and thus would allow or even encourage nonborrowed reserves to come out below the path value.

Conducting Open Market Operations

January to April

Money growth in the aftermath of the October 6, 1979 policy changes was close to, or somewhat below, the Committee's objectives in late 1979 and in early 1980, but growth began to pick up and exceed the Committee's objectives as the first quarter unfolded. The System's new operating procedures automatically imposed resistance to the overrun; reductions of the nonborrowed reserve path and an increase in the discount rate reinforced the drag on money growth.

Very early in the year, however, the aggregates tended to fall short of the objectives set at the Committee's January meeting. These objectives specified growth over the December-to-March period at annual rates of 4 to 5 percent for M-1 and 7 percent for M-2, in each case using the definitions as they existed before the redefinition in February 1980 (Table 3). In consequence, total reserves fell below their path level in the interval following the January meeting, the four weeks ended February 6. The initial borrowing assumption used in constructing a path for nonborrowed reserves was \$1.0 billion, down from \$1.5 billion on average in December. However, over the first three weeks, borrowing consistently ran high, especially over the weekends. By the final week, because of the resultant overruns in borrowed reserves, the Desk confronted a situation in which achievement of the nonborrowed reserve path on average for the period implied that excess reserves would have to be quite high, even if borrowing fell to zero. Such a drastic easing in reserve availability seemed inappropriate and would have been highly confusing to the financial markets. The interim nonborrowed reserve objective for the final week was adjusted to imply a modest amount of borrowing for the week, but average borrowing of about \$1.25 billion for the entire four-week period. Nonborrowed reserves came out slightly above the intended level for the week, but averaged \$380 million below path for the period, and total reserves were \$125 million below path. Federal funds generally traded in the area of 13 to 14 percent over the period.

At the February meeting, the Committee indicated an initial borrowing level of \$1.25 billion for drawing the path, which was close to the actual level in the previous intermeeting period. It was anticipated that this would be associated with Federal funds trading in about the same range as in January. During February, projections of the aggregates soon pointed to greater than desired strength in M-1A, M-1B, and M-2, compared with the Committee's growth objectives. As projected demand for total reserves moved well above its path, a number of steps were taken. In mid-February the nonborrowed reserve path was lowered to promote a more rapid return of aggregate growth to desired levels; the reduction affected both subperiods in the interval following the February meeting, the three weeks ended February 27 and the three weeks ended March 19. The Federal Reserve Board also approved an increase in the discount rate of 1 percentage point to 13 percent to exert pressure in the same direction. The average Federal funds rate moved up by a bit more than 1 percentage point to about 14.90 percent for the week ended February 20. The Committee raised the top of the funds rate range from 15½ percent to 16½ percent late in the first subperiod, when it ap-

Table 3

Specifications from Directives of the Federal Open Market Committee

Date of meeting	Specified short-term annualized rates of growth for period mentioned (percent) M-1A	M-1B	M-2	Range for Federal funds rate (percent)	Initial assumption for borrowed reserves (millions of dollars)	Discount rate on day of meeting and subsequent changes (percent)	Notes
1/9/80........	December to March 4-5*		7*	11½-15½	1,000	12	The Committee's objectives were set in terms of M-1 and the old definitions of M-2 and M-3. In July 1979, the Committee had set growth of objectives for M-1, M-2, and M-3 from the fourth quarter of 1978 to the fourth quarter of 1979 of 3 to 6, 5 to 8, and 6 to 9 percent, respectively. (The M-1 objective incorporated later revisions in assumptions about the growth of NOW and ATS accounts.) The Committee anticipated growth in 1980 within those ranges.
2/5/80........	December to March 4½	5	6½	11½-15½	1,250	12 13 on 2/15 +3 percent surcharge on 3/17	FOMC indicated its objectives would be furthered by growth of M-1A, M-1B, M-2, and M-3 from the fourth quarter of 1979 to the fourth quarter of 1980 within ranges of 3½ to 6, 4 to 6½, 6 to 9, and 6½ to 9½ percent, respectively. The associated range for bank credit was 6 to 9 percent. On February 22, the upper limit of the range for Federal funds rate was raised to 16½ percent. On March 6, 1980 the upper limit of the range for Federal funds was raised to 17½ percent. The next day the Committee further modified the domestic policy directive to raise the upper limit of the range for Federal funds to 18 percent.
3/18/80.......	December to June 4½	5	7¾ (or somewhat slower)	13-20	2,750	13 + 3	
4/22/80.......	December to June 4½	5	6¾ (or somewhat slower)	13-19	1,375	13 + 3	On May 6 the lower limit of the range for Federal funds rate was reduced to 10½ percent. The 3 percent surcharge was removed effective May 7.

* Rates for M-1 and old definition for M-2.

Table 3 *(continued)*

Specifications from Directives of the Federal Open Market Committee

Date of meeting	Specified short-term annualized rates of growth for period mentioned (percent) M-1A	M-1B	M-2	Range for Federal funds rate (percent)	Initial assumption for borrowed reserves (millions of dollars)	Discount rate on day of meeting and subsequent changes (percent)	Notes
5/20/80.......	April to June						
	7-7½	7½-8	8 (or moderately faster)	8½-14	100	13 12 on 5/30 11 on 6/13	
7/9/80........	June to September						
	7	8	8	8½-14	75	11 10 on 7/28	Objectives for 1980 remained the same. In addition, on July 29 the Committee agreed that, for the period from the fourth quarter of 1980 to the fourth quarter of 1981, it looked for a reduction of the ranges for growth of ½ percentage point from the ranges adopted for 1980, abstracting from institutional influences affecting the behavior of the aggregates.
8/12/80.......	June to September						
	6½	9	12	8-14	75	10	
9/16/80.......	August to December						
	4	6½	8½	8-14	750	10 11 on 9/26	
10/21/80......	September to December						
	2½	5	7¼	9-15	1,300	11 12 + 2 on 11/17	
11/18/80......	September to December						
	2½	5	7¾ (or somewhat less)	13-17	1,500	12 + 2 13 + 3 on 12/5	On November 26 the Committee raised the upper limit of the range for the Federal funds rate to 18 percent. On December 5 the Committee modified the directive by providing leeway for pursuit of the Committee's short-run objectives for the behavior of reserve aggregates without operations being precisely constrained by the intermeeting range for the Federal funds rate for one week, and then extended it to the meeting on December 18-19, 1981.
12/19/80......	December to March						
	4¼	4¾	7 (or somewhat less)	15-20	1,500	13 + 3	The objectives abstracted from the effects of deposit shifts connected with the introduction of NOW accounts on a nationwide basis. It was recognized that the introduction of NOW accounts nationwide at the beginning of 1981 could widen the discrepancy between growth of M-1A and M-1B.

peared that achievement of the reserve objective would produce a firmer money market.

The level of borrowing implied by the nonborrowed reserve path rose to $2.1 billion during the week of February 27, the final week of the subperiod, as the demand for total reserves built up. In that week, the Desk was willing to accept some shortfall of nonborrowed reserves from the objective when data on the aggregates indicated additional strength. On average, total reserves were about $265 million above path for the first subperiod while nonborrowed reserves were about $250 million below path.

In the second subperiod, the nonborrowed reserve path was lowered again to slow the growth of reserves and the implied level of borrowing rose to about $2.25 billion. In this period, banks borrowed heavily early in the week as they began to anticipate another increase in the discount rate. At the same time the money market firmed substantially, with funds often trading above 16½ percent. The Committee again raised the top of its Federal funds rate range, boosting it first to 17½ percent and then to 18 percent. In the final week of the interval, a 3 percentage point surcharge above the discount rate was imposed on frequent borrowing by large banks as part of the credit restraint program inaugurated on March 14.

With borrowing running high early each week, the Desk risked overshooting on total reserves and providing substantially more excess reserves than the level incorporated in the path if it sought to meet the nonborrowed objective. Alternatively, it could come close to total reserves by allowing nonborrowed reserves to fall short of the weekly interim objective. The Desk chose the first alternative late in the first week, when it appeared that the demand for excess reserves would be high, compared with the level contained in the path, as banks moved to offset a deficit in the previous week. It chose the second alternative for the second week, when it appeared that total reserves would move even further above path, threatening massive and unwanted excesses. Borrowing thus rose to $2.5 billion and then to $3.4 billion, well above the levels implied by the path.

As a result of the high borrowing, in the last week borrowing consistent with hitting the nonborrowed reserve path was fairly low—about $1.2 billion. However, adding nonborrowed reserves to the degree consistent with such a decline in borrowing hardly seemed in keeping with the thrust of policy just emerging as part of the March 14 credit restraint program. Therefore, the nonborrowed reserve interim objective for the week kept the implied level of borrowing equal to the objective of the previous week, about $2.2 billion. As it turned out, borrowing again was very heavy over the weekend and, rather than press redundant reserves on the banking system, the Desk allowed nonborrowed reserves to fall below the objective while borrowing averaged about $3.0 billion. Consequently, the three-week average of nonborrowed reserves turned out $670 million below path, while total reserves were about $660 million above path.

The March Committee meeting followed by four days the announcement of the Carter administration's program of fiscal and monetary restraint. At that meeting, the FOMC placed the Federal funds range at 13 to 20 percent. The Committee agreed to an initial borrowing level of $2.75 billion for establishing the nonborrowed reserve path, while recognizing that the imposition of the 3 percentage point surcharge on frequent borrowing by large banks as part of the credit restraint program was introducing additional uncertainty about borrowing demands. On the one hand, it was felt that large banks might curtail their use of the window to avoid the surcharge and any stigma it might confer. On the other hand, some banks might misconstrue the new policy as allowing unfettered access if banks were willing to pay the surcharge. In the first two weeks of the interval, which covered the five weeks ended April 23, nonemergency borrowing[6] dropped back from the levels seen at the end of the previous interval. This occurred even as the Federal funds rate rose to the range of 18 to 20 percent, from the 16 to 16½ percent area prevailing in mid-March (Chart 6). In response to the apparent downward shift in borrowing, the nonborrowed reserve path was raised by $150 million in the second week.

By early April it was apparent that the aggregates were weakening. Automatically the level of borrowed reserves began to fall as the demand for total reserves decreased in relation to the path established for nonborrowed reserves. Operations maintained nonborrowed reserves close to, or slightly above, their path levels throughout most of the interval, while actual borrowing declined from the area of $2.7 billion in the first week to about $2.25 billion or a bit higher over the middle three weeks. In the last week, a large downward revision in the projected demand for total reserves indicated that borrowing would be likely to drop sharply if the nonborrowed reserve path were met. In view of the imminence of the Committee meeting, it was decided that the week's objective should not fully allow for such an abrupt shift in borrowing. However, during

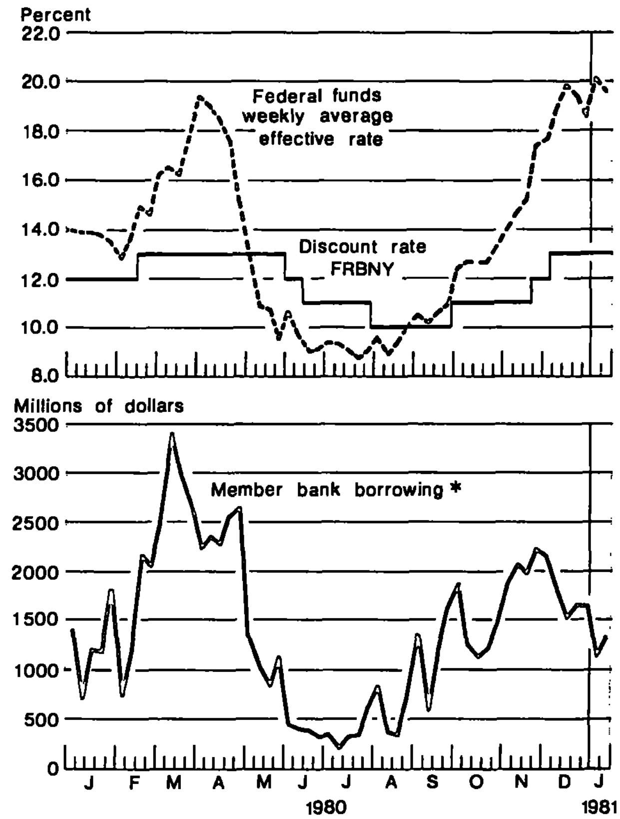
[6] Borrowing by one particular large regional bank, which was not strictly in the nature of short-term adjustment borrowing, was included in the borrowing data for the period. In subsequent periods, when that bank's borrowing became relatively high and was considered emergency borrowing, that borrowing was treated as nonborrowed reserves in calculating the paths.

that week borrowing swung back up, and by the week's end it appeared that borrowing would run well above the desired level. In these circumstances, the Desk allowed nonborrowed reserves to fall short of the interim objective. For the period, total reserves averaged about $485 million below path and nonborrowed reserves were about $310 million below path.

The money and bond markets reacted sharply to the System's moves in late winter. The spread between the Federal funds rate and the basic discount rate widened substantially in response to the rise in discount window borrowing and to the introduction of a surcharge on borrowing by large banks. While the credit restraint program led initially to higher prices on debt securities, the steep rise in the Federal funds rate was soon accompanied by pressures in the securities markets as well. Interest rates on many issues rose to record highs in late March.

Chart 6

Money Market Conditions and Borrowed Reserves



* Excludes emergency borrowing by one large regional bank.

April to August

The steep decline in economic activity during the spring was accompanied by considerable weakness in the aggregates. The weakness was especially pronounced in April; M-1A contracted at a record annual rate of nearly 20 percent. The aggregates then stabilized in May and rebounded in June and July, but the narrow aggregates still remained low as compared with the FOMC's longer run objectives. The System's procedures acted to keep nonborrowed reserves expanding so that banks repaid their discount window borrowing in April and May as the demand for total reserves fell. The Federal funds rate and other market rates dropped sharply, along with the weakening economy. Reserves then generally grew at a rate deemed consistent with the Committee's short-run goals through early summer.

At the April 22 meeting the Committee's initial borrowing assumption averaged about $1.4 billion,[7] down from $2.75 billion at the previous meeting. In the following four weeks the demand for total reserves fell considerably below path. In view of this shortfall, the nonborrowed reserve path was raised by $100 million relative to the total reserve path. As the period progressed, the level of borrowing implied by the paths fell to about $200 million in the second week of May. In the money market the funds rate fell from about 17½ percent during the week of the meeting to an average of about 13 percent in early May. On May 6, the Committee voted to lower the bottom end of its Federal funds range from 13 percent to 10½ percent given the low levels of borrowing expected. (Also on that day the Board eliminated the 3 percentage point surcharge.) By the last week of the period, the week ended May 21, the implied level of borrowed reserves was zero. On the last day of the week—the day after the May Committee meeting—the money market eased considerably in the morning, and sizable amounts of funds traded at 9¼ percent. At that meeting, the Committee had indicated that the Desk should not allow the funds rate to decline significantly within its new range of 8½ to 14 percent without being consulted. In these circumstances, the Desk drained a small amount of reserves even though projections indicated that nonborrowed reserves were close to the level desired. Despite this, nonborrowed reserves were only

[7] The paths actually incorporated assumed borrowing levels of $1.5 billion in the first two weeks followed by $1.25 billion in the last two weeks of the period.

$58 million below path for the four-week period, although total reserves were about $890 million below path.

By mid-spring it was evident that the aggregates had weakened dramatically along with the economy in the wake of the credit restraint program. At the time of the May meeting the narrow aggregates were well below the lower bound of their annual path rates (Charts 1 and 2). The steepness of the decline in economic activity argued for a rapid return in money growth back to path in order to cushion the recession. However, other considerations suggested a more gradual approach.

For one thing, the broad monetary aggregates were not nearly so weak as the narrow aggregates. By the May meeting, both M-2 and M-3 appeared to be slightly above or close to levels consistent with the lower bounds of their ranges. For another, the much sharper decline in the narrow aggregates from what would have been expected on the basis of past relationships between money, interest rates, and the economy raised the possibility of a downward shift in the demand for money.[8] Finally, short-term interest rates had already moved sharply lower, in part, because the new reserve approach provided for a generous supply of nonborrowed reserves relative to reserve demands as money weakened. A further drop in rates would risk exacerbating inflationary expectations, threatening the value of the dollar in exchange markets and ultimately requiring a sharp rise in rates later in the year as money growth responded with a lag to the low rates.

Given these considerations, the Committee chose short-term monetary objectives at the May meeting designed to return aggregates back to path over a period of months. The Committee indicated that it would accept moderately faster growth without automatically putting upward pressure on rates. Therefore, in the period between the May and July meetings, the reserve paths were adjusted flexibly so that faster growth of the aggregates would not result in increased borrowing. In effect, a minimum path was established based upon the Committee's acceptable growth rates over May and June: 7 to 7½ percent for M-1A, 7½ to 8 percent for M-1B, and 8 percent for M-2. When the projected demand for reserves exceeded the minimum total reserve path, the total reserve path for operational purposes was increased to make it equal to the projected demand. (Otherwise, an increase in the demand would have called for an increase in borrowing.) In all but one week of the May-June interval, the projected demand for total reserves did exceed its minimum path, and the average level of borrowing implied by the paths for the period as a whole remained generally at the frictional level of $100 million approved initially by the Committee.

Under this procedure, there was some uncertainty as to where Federal funds would trade given the frictional levels of borrowing implied by the paths. Federal funds were not expected to trade much above the discount rate, which was 13 percent at the beginning of the interval and was lowered in two steps to 11 percent by mid-June. On the other hand, the Committee had established a Federal funds range of 8½ to 14 percent. As implied borrowing moved down to frictional levels, the Desk began to encounter operational difficulties that recurred from time to time through July. If additional reserves were made available beyond those needed to meet requirements, they inevitably would push up excess reserves in the week. As banks attempted to get rid of the excesses, they would put downward pressure on the Federal funds rate. This process was limited in practice by Desk action to minimize substantial funds rate trading below the lower bound. Even in the face of this difficulty, nonborrowed reserves came out only $95 million below the upward revised path in the subperiod ended June 18 while total reserves were $65 million below their path level.

In the remaining three weeks of the intermeeting period, borrowing tended to average even less than the $100 million level incorporated in the paths for the second subperiod. It was decided to tolerate the lower borrowing because pushing it up to offset shortfalls did not seem in keeping with the spirit of previous Committee decisions. Nonborrowed reserves averaged about $100 million above path for the three-week interval, reflecting also a large excess which proved difficult to dislodge late in the last week. Total reserves were $80 million above path on average, again reflecting the high excesses.

In the period between the July and August meetings, the path-setting procedures were designed to resist weakening in the aggregates as in the previous period and to accommodate modest strengthening. Early in the period this accommodation was made. In addition, the Federal Reserve Board approved a decrease in the discount rate to 10 percent on July 28. However, later in the interval, growth of the aggregates proved faster than the Committee desired, and the Desk began to

[8] If such a shift had been permanent, resulting from the impact of record high interest rates in the winter, it would have implied that less money might be needed to support a given level of economic activity, suggesting that the appropriate policy might be to aim for growth of the narrow aggregates toward the lower bounds of their yearly ranges. Alternatively, if it had reflected the special impact of the credit restraint program, then money growth would be expected to rebound on its own, either as the effects of the program dissipated or as the program was lifted.

resist by holding back on the provision of nonborrowed reserves and inducing an increase in borrowing.

About the time that implied levels of borrowing began to rise (to about $235 million on average for the period), banks appeared to boost their demand for excess reserves temporarily, which meant that borrowing rose faster than intended. (Later it turned out that underestimation of required reserves after the termination of marginal reserve requirements meant that reserves were scarcer relative to demands than had been realized.) Nonborrowed reserves were virtually equal to the path for the period, while total reserves were $150 million above path (after revision for the impact of the marginal reserve requirement calculation).

Most interest rates bottomed out in June. Heavy issuance of long-term debt in the late spring, as corporations took advantage of the improved market climate, stemmed the decline in long-term rates. Projections of higher recession-induced Government deficits and the possibility of a tax cut also weighed on the markets, and rates inched upward in the early summer.

August to the year-end

The growth of the aggregates proved to be strong over the summer and through the autumn. Initially, growth of the narrow aggregates served to move these measures back into the Committee's preferred annual ranges. It was not until mid-autumn that their fast growth appeared sustained enough to raise fears of overshooting. Nevertheless, the reserve-targeting procedures automatically began to exert pressure on reserve growth by forcing banks into greater use of the discount window. Again this response was reinforced when large gaps developed between the demand for total reserves and the path levels consistent with the Committee's desired growth of the aggregates. The nonborrowed reserve paths were lowered relative to the total reserve paths, the discount rate was raised, and a surcharge was reimposed on frequent borrowing by large banks. Throughout much of the period, though, it proved difficult to gauge the relationship between borrowing and money market conditions.

These pressures produced a sharp rise in interest rates over the latter part of the year. The bounce back in money growth engendered concern about inflationary pressures. Rates increased as many businesses and consumers stepped up their demands on the credit markets when the economy rebounded after the steep drop in the second quarter. The end of the credit restraint program in the summer possibly contributed to the pickup in borrowing in the household sector. Long-term rates reached new record highs in early December and then backed off a bit. Short-term rates also moved up sharply and, in some cases, exceeded the records set in the spring.

Shortly after the August Committee meeting, the aggregates showed unexpected strength as only a part of the $10 billion bulge in the narrow aggregates for the week of August 6 washed out, and even that was soon regained. The aggregates generally continued to strengthen over the intermeeting period. As the demand for total reserves increased relative to the nonborrowed reserve path, implied borrowing rose to the area of $400-500 million and then to about $750 million in the week of the September meeting. (An initial borrowing level of $75 million was used in constructing the paths for the five weeks ended September 17.) The Desk's strategy over the interval was to encourage the firmer money market conditions that would be associated with the higher borrowing levels while seeking to avoid actions that might affect the markets too abruptly. The Desk took note of comments made during a telephone conference of the Committee on August 22, to the effect that care should be taken to avoid a market overreaction even at the risk of some possible delay in meeting reserve objectives.

Early in the interval the Desk grudgingly supplied reserves to fill projected needs, but the Federal funds rate generally remained below the 10 percent discount rate even though it might have been expected that the funds rate would be in the area of 10 percent or somewhat above. After a shortfall in borrowing from the expected level in the first week, the Desk was able to achieve average borrowing near its intended level in the second week only by allowing tight money market conditions to develop, resulting in heavy borrowing on the last day. This heavy borrowing then extended into the week that included the Labor Day holiday even though the Desk filled a projected reserve need early on. Even so, Federal funds generally traded at rates below those that normally would have been associated with the actual level of adjustment borrowing, about $1.2 billion. Federal funds averaged 10.47 percent for the week. By the last week of the interval, the expected level of borrowing was $750 million after allowing for a $150 million downward revision to the nonborrowed reserve path, but borrowing was much higher than that over the weekend. Rather than aim for the nonborrowed reserve objective and produce an overabundance of total reserves and easier money market conditions, the Account Management tolerated a shortfall in nonborrowed reserves for the week and also a $110 million shortfall for the intermeeting interval. Meanwhile, total reserves were $360 million above path on average, reflecting the rapid growth of the aggregates.

In the period following the September meeting, the strengthening in the demand for total reserves relative to the nonborrowed reserve path implied amounts of borrowing above the $750 million level approved by the Committee. As early as the second week it also seemed appropriate to consider lowering the nonborrowed reserve path. However, to assess the demand for reserves and borrowing in the wake of the discount rate increase to 11 percent announced early in the second week, a reduction of the nonborrowed reserve path was delayed until the third week, when it was lowered by $200 million.

The tendency of borrowing to run higher than expected early in the week persisted into the first few weeks of the interval following the September meeting. Again the Desk faced the dilemma of hitting the weekly nonborrowed reserve objective and producing a total reserve surfeit at the week's end or of tolerating a shortfall from the objective. The Account Management chose the latter alternative in the first two weeks as borrowing was in the area of $1.6 billion to $1.9 billion, well above the levels of $1.1 billion to $1.2 billion implied by the paths. Later in the period the Desk at times provided large amounts of reserves early in the week to forestall heavy borrowing over the weekend and to permit nonborrowed reserves to turn out closer to the weekly objectives. Nonborrowed reserves turned out $80 million below path on average for the period as a whole, and total reserves were $380 million above path.

During the intermeeting interval there was strong demand for reserves, reflecting the strong growth of the aggregates. The feeling developed that the building pressure might continue, and banks moved to a more cautious stance toward borrowing. This contrasted with the perceptions in September when banks had been willing to borrow at the discount window rather than bid up the funds rate because of their clear borrowing records over the summer. However, once borrowing levels mounted and the discount rate was raised, banks seemed less complacent about their potential future recourse to the window and more willing to pay higher rates in the money market to obtain funds. The cumulative evidence of rapid growth of the aggregates and a rebound in the economy probably played a role, too.

While the resurgence of money growth in the summer had not been a major cause of concern, because it had moved the aggregates back in line with the Committee's yearly ranges, concern mounted as the growth remained strong. By the October meeting, M-1A growth from the fourth quarter of 1979 was just about at the midpoint of its yearly range, while M-1B and M-2 were somewhat above the upper limits of their respective ranges. It was recognized at this meeting that ATS and NOW accounts were rising more rapidly than had been expected when the yearly ranges were set in February, depressing M-1A and boosting M-1B. After adjustment for this factor, both measures were near the upper ends of the Committee's ranges.

Against this background, the Committee favored a marked slowdown in money growth from the very rapid pace in August and September. However, there was concern that a harsh program of attempting to bring the aggregates back toward the midpoints of their ranges by the year-end would, given the lag in the impact from market conditions to money behavior, run the risk of engineering an undershoot in money growth going into 1981. Thus, the Committee chose short-run objectives for the September-December period that were more consistent with the upper ends of their yearly ranges but were designed to produce an appropriate policy over a longer period.

In the four-week period following the October meeting, the demand for total reserves exceeded the nonborrowed reserve path by a generally widening margin due to the rapid growth of the aggregates. Reflecting this and a downward adjustment of $150 million in the nonborrowed path, the implied level of borrowing over the interval rose to $1.5-1.6 billion, compared with the initial level of $1.3 billion incorporated in the paths. In practice, borrowing generally exceeded the implied levels, in part because the demand for excess reserves rose, especially after the initial phasing-in of the Monetary Control Act (MCA) starting in mid-November. Nonborrowed reserves were $40 million below the average path level for the period, largely as a result of a shortfall in market factors on the last day. Total reserves, on the other hand, were $350 million above path, reflecting the strength in the aggregates.

In this environment, the Federal funds rate moved up from about 13¼ percent in the first week to an average of around 15¼ percent in the last week. Higher borrowing levels were partly responsible, but perhaps even more important were the increase in the discount rate to 12 percent and the imposition of a 2 percentage point surcharge late in the interval.

The last week in the period was the first week that reserves were held under the provisions of the MCA. The implementation of the MCA resulted in a large decline in reserve requirements (about $2.9 billion net) at the same time that many financial institutions were required to hold reserves at Federal Reserve Banks for the first time. Excess reserves[9] turned out to be very high in that first week. In subsequent weeks

[9] Total reserves were defined as reserve balances with Federal Reserve Banks plus vault cash at institutions with required reserve balances plus vault cash equal to required reserves at other institutions. The effect was to remove from the definition of excess reserves the surplus vault cash at those institutions where vault cash exceeded their reserve requirements.

(through early 1981), excess reserves remained high by historical standards, a development that proved to be puzzling. They averaged about $580 million through mid-January, compared with about $360 million in the similar period a year earlier.

Following the November meeting, the estimated demand for total reserves over the five weeks ended December 24 was initially fairly strong, compared with the total reserve path. In view of this strength the nonborrowed reserve path was lowered by $170 million relative to the total reserve path. In addition, effective December 5, the basic discount rate was boosted by 1 percentage point to 13 percent and the surcharge was raised to 3 percentage points. The implied levels of borrowing for the early weeks of the period were about $1.8-2.0 billion, compared with the level of $1.5 billion initially specified.

The money market tightened considerably over the early part of the interval. Funds began trading above the upper end of the Committee's 13 to 17 percent range and, at the end of the first week, the FOMC raised the upper end of the range to 18 percent. Following the increase in the discount rate in early December and further firming in the funds rate above 18 percent, the FOMC voted to allow the Desk temporary leeway to exceed the 18 percent upper funds rate limit. In the following week, this authority was extended until the December meeting.

By mid-December the implied borrowing levels dropped a bit because borrowing in earlier weeks had run above the expected levels and because the gap between the demand for reserves and the path narrowed. The funds rate fell back slightly in the last week of the interval, the week ended December 24,[10] as the Desk was aiming at a level of nonborrowed reserves consistent with $1.5 billion of borrowing. As it turned out, reserves were much more plentiful than expected on the last day; nonborrowed reserves averaged $65 million above path as excess reserves amounted to about $800 million for the week. Total reserves were $320 million above path over the intermeeting interval.

The aggregates started to weaken early in December, with the narrow aggregates actually falling for the first time since the spring. The weakness was quickly reflected in borrowing levels as the projected demand for reserves fell in relation to the nonborrowed reserve path. By the final week of the four-week subperiod following the December meeting, the week ended January 14, the implied weekly borrowing had fallen to about $925 million, although this partly reflected the need to compensate for the higher borrowing early in the period. However, the Desk held back on reserve provision late in the last week, when reserves appeared to be more plentiful than they actually turned out to be. For the period as a whole, nonborrowed reserves averaged $40 million less than path, and total reserves were $110 million below path. Despite the reduction of pressures on reserve positions, the money market remained unusually firm. In part, this reflected the typical year-end pressures in the money markets, as many firms dressed up their balance sheets for statement-publishing-date purposes. While the average funds rate dipped at the year-end, it rose to a record high level of slightly over 20 percent during the first week in January, even though discount window borrowing was only about $1.1 billion that week.

The securities markets took encouragement from the weakness in the aggregates and rallied in the latter part of December. Many participants felt that the System might relax its policy stance and that the high interest rates which developed would probably restrain the economy in the coming year. The rally lost some of its steam in January 1981 when the economy continued to show underlying strength.

[10] For path-setting purposes, the December 24 week was also included in the first four-week subperiod following the December meeting. Since the paths implied a borrowing level of $1.5 billion for that interval, the nonborrowed reserve path for the five-week interval ended December 24 was altered to allow for borrowing at that level.