Monetary Policy and Open Market Operations in 1979

Efforts to dampen inflationary pressures dominated monetary policy in 1979, as prices of goods and services surged with an intensity not evident since 1974. In the first four months, the Federal Open Market Committee (FOMC) maintained its Federal funds rate objective at just over 10 percent, despite a further weakening in monetary growth from the already sluggish pace of the previous quarter and indications that the economy might be sliding into recession. In the spring, rapid monetary growth resumed, and sharp increases in imported oil prices boosted inflationary expectations. The dollar, after strengthening in response to the support initiatives taken the previous November, once again came under downward pressure against major currencies in the foreign exchange markets.

The FOMC responded by raising its Federal funds rate objective—gradually at first as economic activity faltered in the second quarter, and then more rapidly as evidence mounted of a strong rebound in the summer. By September, the Federal funds rate was at about 11½ percent, but the dollar was slipping badly in the exchange markets and a speculative run-up in gold prices was spilling over to other commodities prices and threatening to spread to the general economy. With money and credit expanding rapidly, the nation's resolve to fight inflation was widely questioned.

On Saturday, October 6, the Federal Reserve announced a comprehensive program for gaining better control of money and credit, curbing the speculative excesses in the foreign exchange and commodities markets and thereby helping counter inflationary forces over time and inflationary expectations more immediately. To slow monetary growth and contain it within the 1979 ranges previously adopted, the FOMC announced that open market operations would follow a supply-oriented approach to managing bank reserves, while allowing wider short-term fluctuations in the Federal funds rate. The Board of Governors of the Federal Reserve System unanimously approved a 1 percentage point increase in the discount rate to 12 percent and imposed an 8 percent marginal reserve requirement on the managed liabilities of member banks and certain other institutions to slow the growth of bank credit.

At its October 6 meeting the Committee established annual growth rates of 4½ percent for M_1 and 7½ percent for M_2 as its monetary objectives for the September-December interval, although it was willing to tolerate somewhat slower growth to offset the earlier excesses. To guide Trading Desk operations under the new procedures, the staff derived paths for total reserves and for the monetary base. In doing so, the staff

Adapted from a report submitted to the Federal Open Market Committee by Peter D Sternlight, Senior Vice President of the Bank and Manager for Domestic Operations of the System Open Market Account Fred J Levin, Manager, Securities Department, Ann-Marie Meulendyke, Chief, Securities Analysis Division, and Christopher J McCurdy, Senior Economist, Securities Department, were primarily responsible for preparation of this report, with the guidance of Paul Meek, Monetary Adviser Connie Raffaele, Robert Van Wicklen, and Diane Heidt, members of the Securities Analysis Division staff, participated extensively in preparing and checking information contained in the report had to estimate the growth of currency, the demand for excess reserves, and the growth of required reserves necessary to support the expansion of deposits in line with the Committee's objectives for the monetary aggregates. After constructing a path for total reserves, a path for nonborrowed reserves was derived by subtracting from total reserves the $1.5 billion initial level of member bank borrowings specified by the Committee. As new deposit data became available each week, a decision had to be made whether deposit flows were deviating significantly from earlier estimates, warranting a change in the paths.

In carrying out the new procedures, the Account Manager's immediate focus of attention shifted to managing the supply of nonborrowed reserves, the reserve measure over which the Trading Desk has the most control within a statement week. The Committee's instructions allowed Federal funds, on a weekly average basis, to vary within a range of 11½ to 15½ percent. The basic strategy called for the Desk to aim initially for weekly path levels of nonborrowed reserves, but with adjustments made to speed a return to the average path for total reserves. When monetary growth was running more rapidly than desired in October, for example, the demand for total reserves began to exceed its path. With the Desk providing only the nonborrowed reserves allowed by the path, member bank borrowings rose, money market conditions tightened, and banks were encouraged to restrain their investment and lending policies and to slow the growth of money and credit. In fact, the Desk aimed for nonborrowed reserves even below initial path levels, trying to slow monetary growth and to bring total reserves back to path levels more quickly. Although there were problems at times, the Desk was able to achieve nonborrowed reserve levels over the October-December period broadly consistent with the Committee's monetary aggregate objectives.

In the financial markets, the reaction to the Federal Reserve's October 6 announcement was dramatic. While market participants had anticipated a support program for the dollar, the move to a reserve targeting procedure was unexpected. In the days that followed, interest rates rose sharply across the maturity spectrum, stock prices tumbled, and the dollar improved considerably in the foreign exchange market without central bank support. Prices of debt securities became much more volatile, as dealers sought to minimize their risk exposure, so that even small changes in investor demand had large effects on prices. Later in October, yields soared to new record levels in most sectors, as participants responded to incoming data showing greater than expected economic strength and initial indications of continued rapid growth of the monetary aggregates. By the year-end, as monetary growth slowed and participants accumulated experience with the System's new approach to operations, yields had receded somewhat and the markets had regained considerable composure. Still, the markets were a good deal more sensitive than before October 6, with yields well above their earlier levels.

Growth of the monetary aggregates slowed significantly in the fourth quarter, although it was difficult to gauge how much of the moderation reflected the new reserve operating procedures, the general tightening in money market conditions, or other factors. After expanding at an annual rate of more than 10½ percent over the previous six months, M_1 rose at a 3.1 percent rate over the October-December interval,[1] somewhat below the 4½ percent rate set by the Committee but in line with its general objectives. Growth of the broader monetary aggregates moderated as well, with M_2 increasing at a 6.8 percent rate—down from about 12 percent in the previous two quarters.

For the year ended in the fourth quarter of 1979, the FOMC achieved most of its monetary obectives. M_1 advanced by 5.5 percent (Chart 1), within the Committee's range of 3 to 6 percent, which reflected adjustments for the effects of shifts out of demand deposits into automatic transfer (ATS) accounts and negotiable order of withdrawal (NOW) accounts in New York State. The sharp rise in market interest rates over the year led to withdrawals from time and savings deposits with fixed rate ceilings. However, banks and thrift institutions were able to offset the deposit losses by stepping up their issuance of money market certificates (MMCs) whose yields were tied to auction rates on six-month Treasury bills. Indeed, some of these high rate deposits came out of lower rate accounts at the same institutions. Commercial banks captured an increasing share of new certificates following the mid-March regulation change eliminating the ceiling rate advantage of ¼ percentage point on MMCs issued by thrift institutions (when the six-month bill rate was above 9 percent). Partly as a result, the growth in M_2 of 8.3 percent over the four quarters of 1979 was slightly above the top of the Committee's 5 to 8 percent range, while M_3 growth, at 8.1 percent, was within its corresponding 6 to 9 percent range. The growth of bank credit also slowed significantly in the fourth quarter, as the expansion of business loans moderated from the rapid pace shown earlier in the year. For the year as a whole, however, the 12.3 percent growth of bank credit far

[1] Money stock data in the body of the report include the effects of bench-mark revisions incorporated in January 1980, no further revisions to seasonal factors were made as the series were replaced by new money stock measures in February 1980. The chronological sections make use of data as published at the time, since Federal Reserve decisions were based on them.

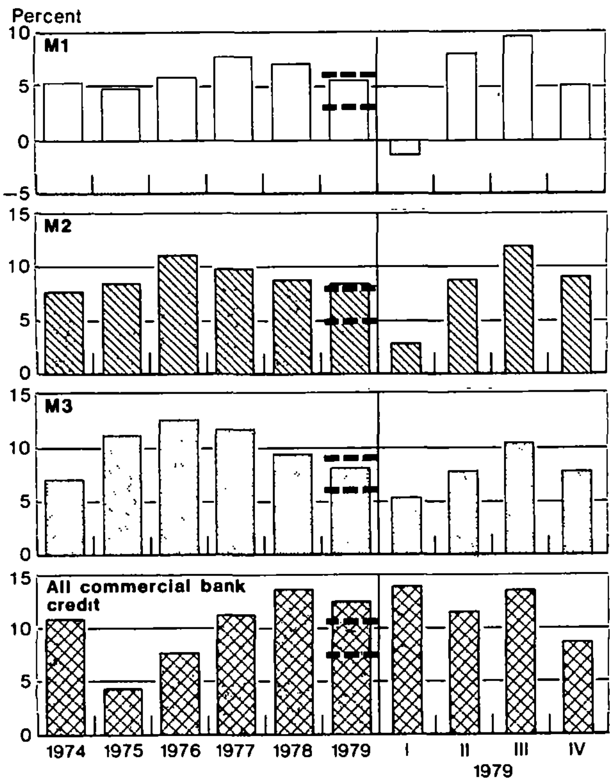
exceeded the range of 7½ to 10½ percent which had been associated with the Committee's monetary aggregate ranges

The remainder of this report devotes special attention to the Federal Reserve's new reserve targeting approach for conducting open market operations After highlighting economic and financial developments over the year and reviewing monetary policy over the first nine months, it turns to a more detailed discussion of how the reserve paths were formulated and how the Desk went about implementing the new procedures to achieve the paths

Chart 1

Growth of Money Supply Measures and Bank Credit

Seasonally adjusted annual rates



The bands reflect the FOMC's yearly objectives for money and credit growth for 1979 The annual target for M1 was originally set at 1½ to 4½ percent based on the assumption that growth of ATS and NOW accounts in New York State would reduce M1 growth by 3 percentage points Since the actual reduction was only about 1½ percentage points, the equivalent range for M1 is 3 to 6 percent

The economy

The economy continued to expand in 1979, but its performance was marred by a further acceleration in inflation. Prices, as measured by the GNP (gross national product) deflator, rose 9 percent during the year, up from 8 2 percent in the previous year and the highest level since 1974 Consumer prices rose more rapidly, although for technical reasons the 12 7 percent advance in the consumer price index probably overstated the increase in cost of living for most households The acceleration of inflation could be traced in part to sharply higher petroleum prices imposed by the Organization of Petroleum Exporting Countries (OPEC) after several years of stability But it also reflected continued strong demand pressures pushing against supply constraints that are typical of an economy already running at near-capacity levels

Despite widespread forecasts of impending recession, the economy proved surprisingly resilient After faltering briefly in the spring, amid a jump in fuel prices and sporadic gasoline shortages, economic activity rebounded strongly in the third quarter and continued to move ahead in the final months Over the four quarters as a whole, real GNP advanced by 1 percent, down substantially from the 1978 pace but in marked contrast to declines of ½ to 2 percent projected by most private and official forecasters at midyear Gains in employment about matched the continued substantial growth of the labor force, so that the unemployment rate remained in the range of 5 7 to 5 9 percent. Although this was high by historical standards, demographic and social changes, coupled with increased Government income maintenance programs, have served to raise the unemployment rate associated with any degree of labor tightness Significantly, the proportion of the work-age population employed continued to rise to new record levels, and there were widespread reports of labor shortages among many skilled worker categories during the year

The consumer sector provided the major thrust to the economy Even as inflation cut into their purchasing power, consumers stepped up spending, evidently on the view that prices would only be higher later on. Thus, the personal savings rate fell to its lowest level in thirty years The foreign sector also added to demand The volume of exports rose strongly, while imports in real terms leveled off, as the earlier depreciation of the dollar made United States goods more attractive relative to goods produced in foreign markets Although housing expenditures declined from the high levels reached in 1978, the drop was much less than experienced during previous periods when interest rates were rising sharply. The perception that the purchase of a house is a good hedge against inflation helped sustain demand Moreover, recent innovations in the financial markets—like the MMCs—coupled with the elimination or liberalization of usury ceiling limits on mortgage interest rates by many states facilitated the continued flow of funds to the housing sector.[2]

Financial developments

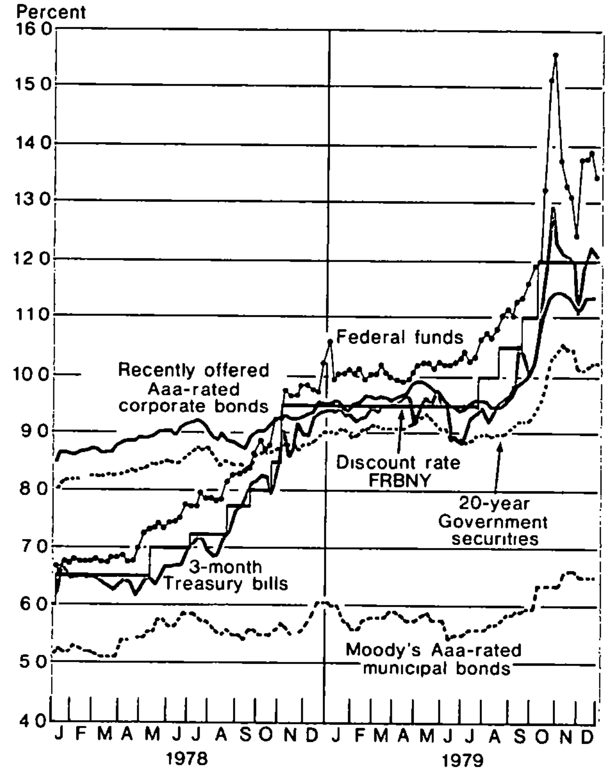
While the financial markets were relatively calm and steady early in 1979, conditions became increasingly turbulent as the year progressed Interest rates soared, amid rising inflationary expectations and continued strong credit demands At the same time, participants responded to wide swings in monetary growth and rapidly changing, and often conflicting, signals of the prospects for the economy and for inflation. As a result, market sentiment shifted repeatedly over the year, with participants alternating between the view that yields were at or close to peak levels and the feeling that they would go still higher In this environment, yields fluctuated over an unusually wide range, undergoing several major changes in direction (Chart 2).

The largest increases and most dramatic changes occurred in the fourth quarter The markets' adjustment to the Federal Reserve's policy actions announced on October 6 was complicated by unsettled conditions in the economy and sizable revisions to the weekly money stock statistics for October The sharp increase in yields that followed on the heels of the October 6 announcement partly reflected indications that the economy was stronger than expected and that the monetary aggregates were continuing to advance at a rapid pace When revised and subsequent data showed that monetary growth had actually slowed in October, yields retraced a portion of their earlier advances—although they were on the rise again at the year-end In November and December the markets were also weighed down by concern over the growing tensions in the Middle East Yields in almost all sectors of the debt markets reached record high levels in late October or early November (However, most of these were easily eclipsed in the early months of 1980) The weekly average effective Federal funds rate reached a peak of 15 61 percent in the week of October 31, up from its pre-1979 high of about 13½ percent in the summer of 1974 By the year-end, funds were trading mostly in a

[2] Mortgage rates began to bump against ceiling limitations in a number of states toward the year-end, as credit conditions tightened further On December 28, the President signed Public Law 96-161 that exempted from state usury limits rates on residential first mortgages by most types of lenders until March 31, 1980, unless revoked by state action The Depository Institutions Deregulation and Monetary Control Act of 1980, signed by the President on March 31, 1980, eliminated permanently state limits on rates on first mortgage residential loans, co-op loans, and residential mobile home loans, unless revoked by state action before April 1, 1983

Chart 2

Selected Interest Rates



range of 13½ to 14 percent, still about 3½ to 4 percentage points above the year-earlier level In the Government securities market, rates on three-month Treasury bills advanced by about 2¾ percentage points over the year. Yields on intermediate- and long-term Treasury coupon securities increased by 1 to 1½ percentage points.

Business demands for short-term credit were especially strong in 1979 Faced with the need to raise substantial funds, many corporations borrowed heavily at banks and in the commercial paper market rather than issue long-term debt at prevailing yield levels The volume of business loans at commercial banks over the first nine months of the year rose at an annual rate of more than 20 percent, up from the already rapid increase of 16 percent in all of 1978 In the fourth quarter, however, following the Federal Reserve's October 6 policy initiatives, business loan growth slowed to a 6 percent rate In contrast to the experience earlier in the economic recovery, much of the business borrowing over the year was concentrated at the major banks To meet the needs of their business and other customers, banks relied heavily on managed liabilities—large certificates of deposit (CDs), Eurodollar borrowings, securities repurchase agreements, and Federal funds borrowings from nonmember institutions. Indeed, the expansion of managed liabilities financed about one half of the increase in total bank credit in the third quarter. In the final quarter the growth of these liabilities slowed along with business loans. Banks' prime lending rates rose to a peak of 15¾ percent in November, before easing to 15¼ percent by the year-end. The volume of nonfinancial commercial paper outstanding rose by more than 50 percent over the year to nearly $31 billion.

Net Treasury borrowing, at $37.4 billion, fell below the $53.7 billion level of the previous year, although it remained substantial considering that 1979 was the fifth consecutive year of economic expansion. The Treasury added $29 billion to outstanding publicly held marketable coupon issues in the United States, while replacing $54.9 billion of publicly held maturing coupon securities. It also raised the equivalent of $3.7 billion in foreign markets through sales of two German mark-denominated and one Swiss franc-denominated issues. Treasury bills held outside the Federal Reserve and Government accounts increased by $8 billion. Additions to Treasury bill offerings were concentrated in the fourth quarter when the Treasury's new cash needs were large and there was a sizable volume of coupon issues maturing. In line with the Treasury's ongoing program of lengthening the debt, a long-term bond issue continued to be a standard feature of the quarterly refundings, the average maturity of interest-bearing marketable issues held by the public (*i.e.,* excluding the Federal Reserve and Government accounts) rose five months to three years nine months. Twice during the year—first in mid-March through early April and then more briefly in late September through early October—the Treasury was forced to postpone scheduled auctions because of Congressional delay in raising the national debt ceiling. In late March, the Treasury borrowed $2.6 billion from the System for several days through a special nonmarketable issue to help meet expenses until the debt ceiling legislation was passed by the Congress.[3]

[3] An amendment to the Federal Reserve Act, Public Law 96-18, signed by the President on June 8, 1979, extended for two years the System's authority for lending to the Treasury through direct purchase of securities, but under more restrictive conditions than formerly As an alternative, the System was also provided with the authority to lend securities to the Treasury for sale in the open market, subject to the approval and rules and regulations of the FOMC The total amount of securities loaned to and purchased directly from the Treasury at any one time may not exceed $5 billion, according to the new law At its regular meeting on August 14, the Committee set a limit on such purchases of $2 billion

The increase in Treasury debt securities outstanding was scattered among a number of sectors, including corporations, private pension funds, and individual accounts. The Federal Reserve System's outright Treasury holdings rose by about $10 billion (comprised of increases of $6¼ billion in bills and $3¾ billion in coupon issues), while commercial banks were net purchasers of a modest amount. In marked contrast to the previous year, foreign central bank demand was not a source of funds to the Treasury. Indeed, foreign official institutions ran down substantial amounts of both marketable and nonmarketable Treasury issues over the first five months of the year to finance the sale of dollars in foreign exchange markets as the value of the dollar was rising. Later, as the dollar came under renewed downward pressure in the summer and fall, they added to their Treasury securities, but their holdings again fell following the Federal Reserve's October 6 actions. By the year-end, total foreign official holdings at the Federal Reserve of marketable and nonmarketable Treasury securities amounted to $108.8 billion, down $22.1 billion over the year. (In 1978, they had risen by more than $31 billion, financing over one half of the Treasury's net borrowings.) State and local governments also reduced their holdings of Treasury securities in 1979. In 1978 many municipalities had taken advantage of lower yield levels to prefund substantial amounts of debt, investing the proceeds in special nonmarketable Treasury issues as allowed by the less restrictive Treasury rules governing these operations that prevailed at the time.

Markets for financial futures contracts, which call for future delivery of financial instruments, grew rapidly in 1979.[4] At times, they exerted substantial influence on the cash markets for the underlying securities. Trading of ninety-day Treasury bill contracts on the International Monetary Market (IMM) in Chicago expanded to 2½ times its 1978 pace during the year, averaging the equivalent of about $7½ billion of three-month bills per day. Trading in the most active Treasury bond contract nearly quadrupled while activity in the most active GNMA (Government National Mortgage Association) contract increased by one half The Commodity Futures Trading Commission also approved additional contracts, mainly more bill, bond, and GNMA contracts on new exchanges but also including new contracts for Treasury notes.

[4] For further information on the financial futures markets, see *Treasury/Federal Reserve Study of Treasury Futures Markets* (May 1979) See also Marcelle Arak and Christopher J McCurdy, "Interest Rate Futures", this *Review* (Winter 1979-80), pages 33-46

The futures market for bills strongly affected the cash market during some periods. In the spring, futures rates dropped dramatically as speculators bought contracts in the belief that interest rates had peaked. Some firms in the cash market, who had sold futures contracts short against long positions in cash bills, had to scramble to cover their positions in both markets and, in the process, caused disparate movements in the cash and futures markets—in turn, causing sizable losses to some participants who had considered themselves reasonably hedged.

Sizable open positions in bill futures contracts also exerted influence on the cash market, especially as those contracts neared expiration. Open interest was particularly large on the June and December contracts. The three-month bills deliverable against those contracts traded at slight premiums to bills with adjacent maturities. On those contracts deliveries were very heavy as well. In December they amounted to $1 billion, nearly half the available trading supplies of the deliverable bills—the total amount outstanding excluding holdings by the System and foreign accounts and awards to noncompetitive bidders.

Federally sponsored agencies raised $20.1 billion in net funds from the public over the year, up from $17.6 billion in 1978 and a new record. The Federal housing agencies—including the Federal National Mortgage Association and the Federal Home Loan Banks—borrowed heavily to provide direct and indirect support to the housing market. The farm credit agencies also stepped up their borrowing during the year.

The gross volume of domestic corporate offerings totaled $37.6 billion in 1979, up slightly from the previous year. Corporate bond yields rose about 1.6 percentage points, somewhat above the advances registered in the Treasury coupon sector as investors showed a greater preference for risk-free debt. Gross sales of state and local government long-term issues amounted to $42 3 billion, compared with the $46.2 billion sold in 1978 (which was inflated by the prerefunding issues). A sizable portion of total state and local government offerings in 1979 represented bonds issued to finance the purchase of single-family homes at subsidized mortgage rates. The sale of these issues dropped off following the introduction in April of legislation in the Congress that would remove their tax-exempt status, but resumed in the summer when there were indications that issues which had already been planned would be allowed to proceed. Yields on high-grade municipal securities rose about ½ percentage point over the year, however, they remained below the peak levels reached in 1975 in the wake of New York City's financial crisis.

Monetary Policy and Its Implementation

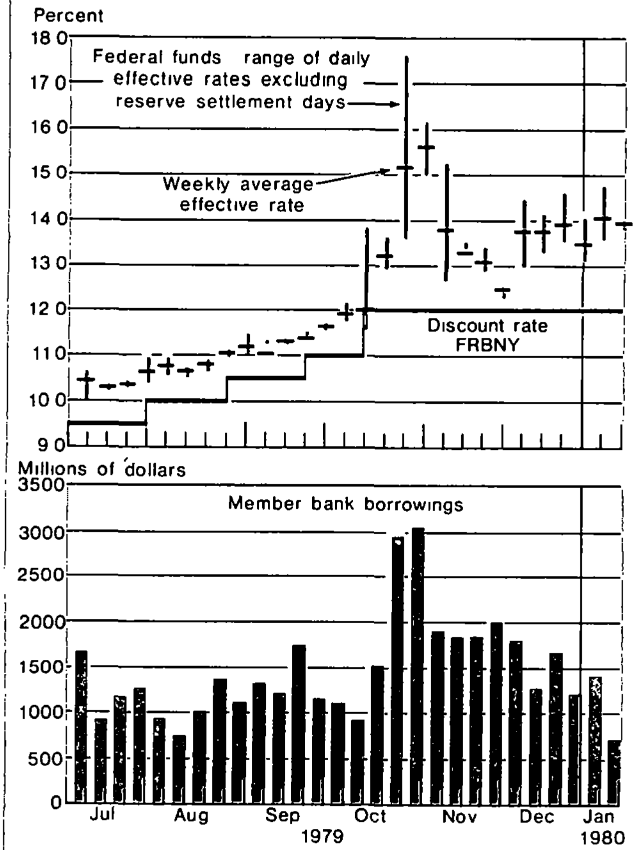
In formulating monetary policy for 1979, the FOMC retained its goal of gradually reducing growth of money and credit over a period of years to curb inflationary expectations and inflation. It was recognized that given the strong upward price momentum which had built up in the decade of the 1970s—and especially in light of the steep rise in energy prices in 1979—the economy faced a difficult period of adjustment as monetary growth slowed. In the interest of promoting an orderly adjustment, the Committee adopted ranges for growth of the monetary aggregates for 1979 that provided for a moderate slowdown from the pace of the previous two years.

Through midyear, expansion of the monetary aggregates ran close to the Committee's objectives, on balance, as the speedup in the spring about offset the sluggish behavior in the early months By the fall, however, after the aggregates had continued to advance rapidly despite repeated increases in the System's Federal funds rate objective, it was clear that a significant reduction of growth was necessary in the fourth quarter if the Committee were to achieve its monetary targets for the year as a whole. At the same time, the economy was showing surprising strength, the dollar was under substantial pressure in the foreign exchange markets, and inflationary psychology was building in response to the run-up in energy prices. Against this background, the Committee felt that a new approach to monetary control was needed.

Since the early 1970s, the FOMC had sought to exercise control over the monetary aggregates by targeting the Federal funds rate, generally permitting it to move up or down in response to deviations from desired monetary objectives. While the procedure had certain advantages, in recent years the Committee had repeatedly found monetary growth outpacing its objectives against a background of significant institutional and regulatory changes and high inflation rates. Moreover, the attention that came to be placed by the markets on the Federal funds rate seemed to inhibit the Committee from making significant changes in it over a short period. Typically, adjustments in the Federal funds rate objective were made in steps of ¼ percentage point or less from one statement week to the next, with changes only occasionally as large as 1 percentage point over a month. In this environment, it appeared that the Federal funds rate procedure itself could be contributing to excessive money and credit growth by fostering the view among banks and other market participants that credit would always be available at a price not much different from that prevailing at the time.

Chart 3

Money Market Conditions and Borrowed Reserves



The new reserve approach to policy, announced by the FOMC on October 6, provides for a potentially quicker response in money market conditions to deviations in monetary growth from the Committee's objectives. The Committee's directives to the Manager over the October-December period permitted variation in the Federal funds rate on a weekly average basis within an 11½ to 15½ percent range. As the Desk focused on achieving path levels for reserves consistent with the Committee's monetary objectives, the Federal funds rate rose by about 4 percentage points to around 15½ percent by the end of October, when the monetary aggregates appeared to be advancing rapidly. As it became clear that monetary growth had slowed, the Federal funds rate fell back and closed the year in a range of 13½ to 14 percent Day-to-day changes in the Federal funds rate also increased significantly Fluctuations were particularly sharp immediately after the October 6 announcement, but narrowed somewhat as the markets gained more experience with the new reserve approach (Chart 3) By focusing on reserve supplies, while permitting greater variation in the Federal funds rate, the Committee hoped to contain money and credit expansion within the 1979 ranges previously adopted

Long-term targets

The FOMC's formulation of objectives for money and credit growth in 1979 was undertaken for the first time within the framework of the Full Employment and Balanced Growth ("Humphrey-Hawkins") Act of 1978 The act requires the Board of Governors to report to the Congress by February 20 and July 20 of each year on the Federal Reserve's objectives for money and credit expansion for that calendar year; the July review is also to include preliminary plans for the following year In addition, these objectives are to be related to various short-term goals set forth in the most recent Economic Report of the President.

The key feature of the act with respect to the FOMC's monetary aggregate targeting procedures is the specification of growth rates for calendar years. Since 1975, the FOMC had set new yearly targets each quarter, using actual levels of the previous quarter as the starting point Under that procedure, any overshoots (shortfalls) in quarterly growth raised (lowered) the base level from which the next yearly objectives were specified Consequently, when persistent misses occurred in one direction, the procedure tended to cumulate the impact on monetary growth The new approach, by fixing the base period as the fourth quarter of the previous year, should reduce this problem of "base drift".

The Committee faced more than the usual uncertainties concerning the forces affecting the demand for money when it met in February to consider its 1979 money and credit objectives A staff analysis suggested that shifts in funds from demand deposit balances to ATS accounts and NOW accounts in New York State, first authorized in November 1978, were likely to reduce M_1 growth by about 3 percentage points over the year, but that projection was based on only limited experience Moreover, the rise in market yields that had occurred since the time the Committee last set yearly targets in October 1978 was expected to encourage the public to economize further in its cash balances relative to income, but the magnitude of the effect on M_1 was difficult to gauge While growth of the broader monetary aggregates was not expected to be significantly altered by ATS, there were doubts about the volume of funds that might be attracted to money market instruments from time and savings deposits with fixed rate ceilings.

To deal with these uncertainties, the Committee chose annual ranges for growth of the money stock measures for 1979 that were somewhat wider than usual (although, in the case of M_1, not so wide as the yearly range set in October immediately before ATS accounts were first instituted). In keeping with its longer run objective of moving gradually toward rates of monetary expansion consistent with general price stability, the growth ranges for all the money and credit aggregates were lowered somewhat from those established in October, with the midpoints of the ranges set below the growth actually experienced in 1978 (table).

By the time the Committee met in July to review the 1979 growth ranges and to set preliminary objectives for 1980, it was apparent that the flow of funds into ATS accounts was running below earlier projections. While data suggested that shifts of funds from demand deposit balances into ATS accounts and NOW accounts in New York State had reduced the annual rate of M_1 growth by nearly 3 percentage points in the first quarter, as had been expected, the impact in the second quarter was about half that amount. Meanwhile, in April the United States Court of Appeals had ruled that ATS and certain other payment services were inconsistent with current laws and would be prohibited as of January 1, 1980 unless the Congress explicitly enacted new legislation authorizing these services.[5] In the wake of that decision, banks and thrift institutions began promoting these services less aggressively than before. In view of the uncertainty over the form and timing that such legislation might take, the Committee decided to leave the 1979 growth range for M_1 unchanged, while also maintaining the same ranges set in February for growth of the broader money stock measures and bank credit. It was understood, however, that growth of M_1 would be expected to vary in relation to the range to the extent that the actual ATS/NOW impact deviated from the 3 percent figure projected earlier. By the fall it appeared that expansion of such accounts would reduce measured growth of M_1 over the year by 1½ percentage points, so that the effective range for M_1 growth was 3 to 6 percent.

For 1980, the Committee decided in July 1979 that it was appropriate, tentatively, to maintain the same ranges for money and credit expansion specified for 1979. In reaching that decision, the Committee noted that adjustments might be required because of possible Congressional legislation affecting interest-

[5] On December 28, 1979 the President signed legislation extending the authority for these accounts until March 31, 1980. The Depository Institutions Deregulation and Monetary Control Act of 1980, signed March 31, established permanent authority for ATS accounts at member banks and Federally insured commercial and savings banks, and for share drafts at Federal credit unions. NOW accounts, previously authorized for institutions in New York, New Jersey, and the New England states, are to be extended nationwide as of December 31, 1980.

Federal Open Market Committee's Annual Growth Ranges for Monetary and Credit Aggregates Set in 1978-79

Seasonally adjusted annual percentage rates

Period	Month established	M_1	Actual	M_2	Actual	M_3	Actual	Bank credit	Actual
1977-IV to 1978-IV	February 1978	4 to 6½	7.2	6½ to 9	8.7	7½ to 10	9.5	7 to 10	13.5
1978-I to 1979-I	April 1978	4 to 6½	5.1	6½ to 9	7.6	7½ to 10	8.7	7½ to 10½	14.1
1978-II to 1979-II	July 1978	4 to 6½	4.8	6½ to 9	7.7	7½ to 10	8.6	8½ to 11½	13.6
1978-III to 1979-III	October 1978	2 to 6	5.3	6½ to 9	8.2	7½ to 10	8.7	8½ to 11½	13.8
1978-IV to 1979-IV	February 1979	3 to 6*	5.5	5 to 8	8.3	6 to 9	8.1	7½ to 10½	12.3
1978-IV to 1979-IV	July 1979	3 to 6*	5.5	5 to 8	8.3	6 to 9	8.1	7½ to 10½	12.3
1979-IV to 1980-IV	July 1979	†		†		†		†	

* Originally, the Committee set a growth range for M_1 of 1½ to 4½ percent, with the expectation that the flow of funds from demand deposits to ATS accounts and NOW accounts in New York State would reduce the growth of M_1 by 3 percentage points over the year. Since the impact turned out to be about 1½ percentage points, the equivalent range is 3 to 6 percent.

† The Committee anticipated that growth might be within the same ranges adopted for 1979, depending upon emerging economic conditions and appropriate adjustments that might be required by legislative or judicial developments affecting interest-bearing transactions accounts.

bearing transaction accounts and, in any case, the objectives would be reconsidered in February in light of information on economic conditions prevailing at that time. Moreover, a reexamination of the definitions of the monetary aggregates in view of institutional changes in the payment system, was under way, which was expected to lead to new and improved measures of the money stock.[6]

Open Market Operations in 1979

January to early July

Open market operations, by outward appearances, held a relatively steady course over the first half of the year. The average Federal funds rate held around 10 percent through April. The funds target was then raised once to around 10¼ percent, but the discount rate remained at 9½ percent. This stability, however, belied both the conflicting array of influences the Committee faced and the shifting nature of the policy outlook. By recent standards the securities markets were also fairly steady during the interval (Chart 2), reacting only modestly to the System's one firming move.

Early in the year, the economy gave off signs that it was slowing and that the long expansion, which had begun about four years earlier, might reverse course during the year. Income, sales, and production were growing sluggishly. This picture was not fully reflected, however, in the labor sector as the unemployment rate continued to hover around 5¾ percent. The value of the dollar on foreign exchange markets generally held its ground or improved. M_1 declined in the first quarter and M_2 posted a very modest rate of growth. The Committee recognized that this might reflect the impact of ATS, NOW accounts, and money market mutual funds and felt there might be some downward shift in the demand for money in relation to income. Inflationary pressures remained a constant worry as the rate of price increases accelerated from its 1978 pace.

In view of these conflicting influences the Committee, at the first three meetings, chose not to alter its Federal funds rate objective from that prevailing as the year began—in the area of 10 percent or slightly higher. At the very end of 1978 the members had decided in a special wire vote not to lower the funds objective when projections of M_2 growth fell well below its specified range and M_1 was in the lower part of its range. (This stance was reaffirmed in a scheduled telephone conference on January 12) Following the February meeting, when M_1 appeared moderately below its range and M_2 just below, the Committee voted not to change the objective in light of the contradictory evidence on the economy. Subsequent to the March meeting, the aggregates again turned in a sluggish performance but the projections were not viewed as sufficiently weak to call for a change in the objective.

In contrast, the projections of the aggregates strengthened relative to their ranges following the April meeting. Late in the month, projections suggested that M_1 and M_2 would grow at rates that were close to, or above, the upper limits of their ranges. Following consultation with the Committee, the Account Management began aiming for Federal funds trading around 10¼ percent. Additional projections indicated further strength, but no change was made in the objective in view of the sensitive state of the financial markets, the uncertainties surrounding energy supplies, and the extent of the rapid monetary growth apparently due to transitory forces. The objective remained at 10¼ percent when projections showed the same outlook in mid-May as the Chairman reaffirmed this stance and a majority of the Committee, in a consultation, concurred.

The securities markets retreated a bit in the face of the upward shift in the Federal funds rate. The moderate overall reaction mirrored the modest size of the System's policy move. Short-term bill rates moved higher by about ¼ to ½ percentage point from mid-April through mid-May while longer term rates showed small mixed changes. By mid-April, short-term interest rates had been, if anything, slightly lower than at the beginning of the year. Most long-term interest rates, on the other hand, had worked a bit higher on balance through the first part of the year, probably reflecting advancing inflationary expectations.

At the May meeting, the Committee decided not to change its approach. The economy still appeared to be at or near a cyclical peak while the dollar had recently been doing better in foreign exchange markets. However, inflation remained the great concern, and there was a widespread feeling that, if it were not brought down, the next expansion would begin with a higher base rate of inflation than the current expansion. Monetary projections at the time of the meeting suggested that growth over the May-June interval would be slow. The rapid expansion in April was attributed to delays in processing income tax checks and the bunching of refunds. As it turned out, incom-

[6] New definitions of the money stock measures were announced by the Board on February 7, 1980 Among the most significant changes were the inclusion of NOW and ATS accounts in one of the narrow measures (M-1B) and the addition of money market mutual fund shares and repurchase agreements issued by commercial banks in the broader measures For more details, see "The Redefined Monetary Aggregates", *Federal Reserve Bulletin* (February 1980), pages 97-114

ing data on the aggregates after the May meeting indicated especially rapid growth, with growth projected above the specified ranges This behavior would normally have called for some firming in the funds rate However, the Committee voted on June 15 not to change the objective in view of the weakness of economic activity and the general uncertainty about the behavior of the aggregates, the difficulty in interpreting the data in those circumstances, and the condition of the financial markets

The securities markets rallied considerably in the late spring and early summer. From the higher rate levels reached in mid-May to the lows set at midyear, three-month bill rates fell about 1 percentage point and long-term bond yields fell about ½ percentage point. Prices advanced because many participants felt that the economy had reached a cyclical peak. This view stemmed from a wide array of weakening economic statistics, along with a steady System policy stance In this setting the markets seemed to give only passing notice to bearish developments.

Early July to early October

The economic situation appeared to deteriorate in the third quarter at the same time that the pace of inflation stepped up. There was widespread concern, at least initially, that a cyclical contraction might be getting under way. The foreign exchange value of the dollar sagged around midyear and again late in August. The growth of the monetary aggregates remained high. Against this background, the Committee adopted a stronger, but still cautious, approach to policy. Its instructions to the Manager leaned increasingly toward resisting monetary expansion over the third quarter. In turn the Desk sought progressively tighter conditions in the money market In addition, the Board of Governors approved increases in the discount rate in three ½ percentage point steps to 11 percent.

In late July, the funds rate objective was raised to 10½ percent, the top of the Committee's intermeeting range, following some strengthening in the aggregates and following Committee consultation. The members expressed a willingness to tolerate some trading on the high side of that rate in view of the unsettled conditions in the foreign exchange markets. A week later, after further indications of excessive monetary strength, the Committee voted to raise the upper end of the band to 10¾ percent and instructed the Manager to aim for a rate in a range of 10½ to 10¾ percent, depending on the subsequent behavior of the aggregates, conditions in foreign exchange markets, and the Treasury's quarterly financing. The Desk sought a funds rate objective of 10⅝ percent for the rest of the intermeeting interval.

In August the Committee decided at its meeting to raise its funds rate objective to 11 percent in a range of 10¾ to 11¼ percent. When growth of the aggregates turned out high, compared with their ranges, the Desk managed reserves so that the Federal funds rate moved toward the top of its range. In a telephone meeting at the end of August, the Committee raised the upper limit to 11½ percent but with the understanding that not all the additional leeway would be used immediately. That use would depend on the behavior of the aggregates and developments in foreign exchange markets. Open market operations fostered a rate of about 11⅜ percent. At the September meeting, the Committee raised its obective to 11½ percent. Following that meeting the objective was maintained at 11½ percent, although the rate was generally somewhat higher than that in the week preceding the special meeting on October 6.

Despite these actions, many participants in the securities markets came to feel over the third quarter that the United States was not dealing effectively with inflation. The nation's efforts to establish a comprehensive energy policy lagged, and increases in world oil prices continued to work their way into wages and prices generally. While the President's cabinet realignment generated considerable uncertainty, the markets took heart and rallied in late July when President Carter named Paul Volcker to be the new Chairman of the Board of Governors of the Federal Reserve System, anticipating a strengthened System effort to combat inflation.

For the most part, though, the markets were depressed by the System's inability to slow the rapid growth of money even as money market rates rose. Over the summer, prices in the domestic securities markets tumbled as expectations of recession gave way before the realities of economic strength and inflationary pressures. Rates on some Treasury bills and coupon securities reached new peaks (although these were to be eclipsed in October and again in early 1980).

In the late summer, speculative forces gathered strength in many markets as participants lost confidence in official efforts to deal with inflation. The dollar came under renewed attack in the foreign exchange market. The price of gold rose by nearly 50 percent to about $400 an ounce In the futures markets, prices of commodities advanced rapidly, for both agricultural products and industrial metals. The price increases reinforced fears that inventory building and consumer buying binges would set off a further round of escalating prices. Instability in the foreign exchange markets also threatened the efforts to achieve moderation in world oil prices. Moreover the weakening in the value of the dollar exacerbated domestic inflation by adding to the prices of imports in general.

New techniques for implementation of monetary policy

The FOMC's shift on October 6 to a supply-oriented strategy of managing bank reserves fundamentally changed the procedure for specifying the Desk's operational objectives. The new approach established various reserve measures as its primary short-run operating objectives, so long as the weekly average Federal funds rate remained within certain broad constraints—11½ to 15½ percent initially. Previously, the Desk had managed nonborrowed reserves as necessary to achieve the Committee's Federal funds rate objectives.[7] The Committee's dissatisfaction with the excessive growth of money in the second and third quarters provided much of the impetus for adopting a new approach.

Because the new approach differs significantly from earlier techniques, a systematic review will be presented of the procedures involved as they have evolved thus far: from the Committee's specification of objectives, through the Board staff's translation of those objectives into intermeeting operating paths, to Desk strategies for achieving these paths.

Formulation of operating paths and objectives

The Committee begins the process of establishing operating guides for the Desk by choosing objectives for the monetary aggregates. In October it chose growth rates for a calendar quarter that appeared consistent with achieving its annual growth objectives. At the November meeting, it specified growth rates for the remainder of the quarter that were generally consistent with the earlier objectives, although accepting some of the shortfall that had already occurred.

The Board staff uses these growth objectives as the basis for constructing paths for total reserves and the monetary base. The object is to derive paths that will provide the amount of reserves needed to support the desired money growth. This estimation process is rather involved because of the complex relationship between reserves and deposits in the United States banking system. Required reserve ratios vary with deposit size and the membership status of banks, as well as the maturity structure of deposits; reserves are also required on deposits that are not included within the aggregates for which the Committee has established objectives. While the reserve-deposit ratios have a reasonable degree of stability over extended periods of time, considerable variation is possible over a month, or a quarter. The Board staff has developed techniques that allow for the likelihood of such variation.[8] Initially, the staff must decide on how to divide the Committee's two- or three-month growth objectives into monthly increments. Other things equal, there is a preference for steady monthly growth rates, seasonally adjusted, within the quarter although some modifications normally will be made if there is substantial evidence that monthly behavior will be notably different. The monthly pattern for money growth is then translated into seasonally unadjusted weekly levels. The weekly patterns (based on time series models with judgmental adjustments) are constrained to average to the goal over the whole period. The weekly figures are, in turn, broken down into currency, demand deposits, other deposits and liabilities at member banks, and such deposits and liabilities at nonmember banks. Once this breakdown is achieved, required reserve ratios are applied to the member bank deposit components to derive the required reserves needed to support money growth. The total reserve and monetary base paths can then be completed by adding an estimate of excess reserves.[9]

From the total reserve path, the nonborrowed reserve path is derived by subtracting the level of member bank borrowings from the Federal Reserve indicated by the Committee at its meeting. Typically, the Committee has chosen levels close to the recently prevailing average—though the level chosen on October 6 was shaded higher to impose some additional initial restraint. Ideally, the assumed initial borrowing level should be such that the resultant mix of borrowed and nonborrowed reserves would tend to encourage bank behavior consistent with the emergence of desired required reserves, and hence of desired monetary growth. In practice, there seem to be significant short-term variations in the willingness or desire of banks to turn to the discount window. This adds to the difficulty of choosing an appropriate level for path construction purposes, and may necessitate adjust-

[7] See "The Implementation of Monetary Policy in 1976", this *Quarterly Review* (Spring 1977), pages 37-49, for a discussion of techniques of implementing policy under the previous operating approach

[8] See the statement by Chairman Volcker before the Joint Economic Committee on February 1, 1980, section entitled "The New Federal Reserve Technical Procedures for Controlling Money"

[9] It had been anticipated that excess reserves would continue to vary within a restricted band in most weeks, as they had before the change in procedures Beginning around the time of the introduction of reserve requirements on foreign, agency, and Edge Act subsidiaries at the start of November, however, preliminary figures on excess reserves seemed to become more volatile, and tended to be above previous levels by more than the amounts that would be expected to be held by the foreign-related institutions Subsequent revisions have reduced the volatility and lowered the average to a level more consistent with expectations

ments in a path in response to changes in bank attitudes toward the discount window.

Translating reserve paths into weekly objectives

Although the process described above produces weekly path levels, the Manager is more concerned with achieving reserve objectives for a period that averages several weeks—either an average over the intermeeting period or for two separate subperiods when the meetings are relatively far apart. Each week the Desk has an objective for nonborrowed reserves. In the initial week after a Committee meeting, the operating objective for nonborrowed reserves generally will be the same as the weekly path level. In subsequent weeks the reserve paths are reviewed by senior Committee staff and the Desk, as described below, typically each Friday morning, and a nonborrowed reserve objective is determined for that week with a view to achieving the average nonborrowed reserve path over the intermeeting period or relevant subperiod.

As part of the weekly review of paths, fresh estimates are made of the mix of currency and member and nonmember deposits and other liabilities If the distribution among these items has shifted, the appropriate level of required reserves may differ from that originally estimated as consistent with the Committee's chosen growth rates. The assumption for excess reserves may also be changed on the basis of recent experience If the aggregate adjustments from these sources is deemed significant, the practice has been to modify the path accordingly.

Once the average total reserve path for the interval has been reaffirmed or revised, it is compared with the projected demand for total reserves—*i e*, required reserves based on actual or estimated deposits plus excess reserves. This demand may be above or below path, generally depending on whether the chosen aggregates are running stronger or weaker than targeted by the Committee. If demand exceeds (falls below) the path, then hitting the nonborrowed reserve path would be expected to produce member bank borrowings at the discount window above (below) that initially assumed in building the path If the projected demand for total reserves is significantly above (below) the path, then after consultation with the Chairman the nonborrowed reserve path may be lowered (raised) to encourage a more rapid adjustment in bank behavior. If, for instance, total reserves are rising well above path, then lowering the nonborrowed reserve path will force increased borrowings at the discount window and tend to set in motion forces that restrain additional expansion of deposits and reserves.

Having determined the average path level for nonborrowed reserves for the period, and knowing the levels achieved so far, the levels to be achieved in the remaining weeks of the interval can be determined. This is done in a way that tends to even out the amount of borrowings expected in each week Also, with a fixed averaging period, deviations early in the period could call for a nonborrowed reserve objective consistent with a large change in borrowings in the final week, compared with what had been prevailing or what the Committee might choose at its next meeting Accordingly, some modification to the nonborrowed reserve objective might be made to avoid pursuing a nonborrowed reserve level that implies very sharp short-term changes in the level of borrowings.

Achieving weekly objectives

Given the week's nonborrowed reserve objective, along with an awareness of the excess and borrowed reserve assumptions, the Desk devises an operating strategy. Each day, the Desk receives projections of nonborrowed reserve supplies for the statement week based on the factors that influence the Federal Reserve balance sheet The projected supply is compared with the objective to see whether reserves will need to be added or absorbed. A few of the factors are hard to predict and are primarily responsible for large errors that occur in the forecasts The most volatile and difficult to forecast in 1979 was Federal Reserve float This factor, which results from credited but uncollected checks, is affected by weather-related and other transportation delays, the volume and distribution of checks presented for collection, and staffing levels. Over 1979 as a whole, the average revision to all operating factors between the estimate available at the beginning of the statement week and the final number was about $840 million (using Federal Reserve Bank of New York forecasts) The average errors decline as the week goes on, but even on the settlement day, the final day on which offsetting adjustments are possible, the average miss to the weekly average figure was about $150 million (equivalent to a projection miss on the final day's reserve level of about $1 0 billion).

The Desk also derives some information from the Federal funds market as to the accuracy of the reserve forecasts It had been hoped, once the Desk was not pegging the Federal funds rate, that movements in the rate would tend to signal more clearly the state of reserve availability and the accuracy of the forecasts In fact, the Federal funds rate has often failed to indicate excesses or deficiencies until rather late in the week unless the reserve "misses" are very large

The Desk is thus left with imperfect reserve projections and uncertain guidance from the money market.

Typically, if the projections suggest a need to supply or absorb reserves that is large relative to the average projection error, the Manager generally will get an early start on the task.[10] In such cases, the Federal funds market may well provide some confirmation in terms of the reported availability of funds in the market. The expected distribution of reserve excesses or deficiencies through the week may also affect the money market and pattern of Desk activity. If reserve availability is especially short or plentiful in the early part of the week, the Desk may time its operations so as to even out availability.

Market participants have sometimes misread the Desk's tendency to absorb reserves when the rate is falling or to inject reserves when the rate is rising as implying a return to a Federal funds rate target. In fact, though, the Desk would not be concerned with the rate level *per se* (unless it were threatening, on a weekly average basis, to breach the broad range selected by the Committee) but with whether its movements point to an abundance or shortage of nonborrowed reserves—thus confirming, or conflicting with, the projections. Moreover, the same factors that cause rate movements often also cause the Desk to take what appears to be offsetting open market operations. For instance, the funds rate would ordinarily be falling when there is a large "excess" supply of nonborrowed reserves relative to path, so that the Desk would be absorbing reserves at the time. Such operations would not be directed at maintaining a particular rate level, but rather at achieving the objective for nonborrowed reserves.

Early October to the year-end

The Desk began to implement the new procedures on October 9, focusing on the path levels for the first four weeks of the intermeeting period. Achieving the nonborrowed reserve path implied that borrowings would rise to an average of about $1.5 billion, a level that was expected to lead to Federal funds trading around 13 to 13½ percent, a greater spread over the new discount rate than had prevailed before October 6. Over the rest of the statement week that was under way—just two days—the Desk remained on the sidelines because reserves initially were estimated to be about in line with the weekly objective and because the securities markets were unsettled in the wake of the new program.

[10] The Desk may also take advantage of foreign account outright purchase or sell orders to move toward appropriate reserve availability, giving weight to the longer term as well as to the immediate outlook Calculations of reserve availability assume foreign repurchase orders will be arranged with the System If they are instead passed through to the market, this will raise the estimated supply.

The remaining three weeks of the first subperiod were complicated by continued sharp price swings in the securities markets and volatile changes in estimated monetary growth, partly reflecting large reporting errors. Early in each of the next two statement weeks, new data on money and reserves underwent successive upward revisions that lifted them first moderately above, and then far above, the objectives. Consistent with achieving desired nonborrowed reserves, it appeared that member bank borrowings would need to rise substantially—at first to $1.8 billion and then to the area of $2.5 billion to $2.9 billion.

Operations to restrain reserve availability tended to push up the Federal funds rate to around 13¼ to 13¾ percent, but borrowings at the discount window lagged behind expected levels for a time. At the start of the October 24 statement week, the Desk moved to achieve its reserve objectives through an outright sale of Treasury bills in the market. In response to this action, which was regarded as underscoring the System's intention to impose firm restraint, and the unexpectedly large increase in the preliminary money supply figures reported for the October 10 week, the market reaction intensified. The Federal funds rate moved up to and then briefly above the 15½ percent upper limit of its allowable range.

In these circumstances, the Committee in a telephone conference affirmed its willingness to see Federal funds trade in the upper part or even occasionally above the range. After a major downward revision to the money supply for the October 10 week and more modest reductions in surrounding weeks, the estimated values of the aggregates and reserves still appeared, for a time, to be stronger than desired. Pursuit of nonborrowed reserves close to the path level (or indeed a little below the initial path level in order to induce a speedier return to path for total reserves and monetary aggregates), continued to imply a high level of borrowings in the October 31 week. The Federal funds rate and borrowings both peaked in that week, with an effective Federal funds rate of 15.61 percent and average borrowings of $3,056 million. Figures available immediately following the interval suggested that, over the four weeks ended October 31, total reserves were $390 million above path, while borrowings averaged $2.1 billion and nonborrowed reserves were $230 million below path. (Final figures were essentially the same.)

When the second subperiod began in early November, sharp downward revisions brought the monetary growth rates down to, or below, rates in line with the three-month objectives. Accordingly, achievement of the reserve path levels for the three weeks ended November 21 implied a decline in discount window borrowings back to the $1.5 billion area, although subsequent revisions lifted the implied borrowings modestly. Borrowings did come down considerably, as the Desk provided reserves more generously than in earlier weeks, although they stayed slightly above anticipated levels. The Federal funds rate also eased off during the period, to an average effective rate of 13.10 percent in the final statement week. Total reserves again were well above path, this time by about $340 million on preliminary estimates, while nonborrowed reserves were about $40 million below path and borrowings close to $1.9 billion. (Final figures for total and nonborrowed reserves show, respectively, about a $270 million overshoot and a $115 million shortfall.)

The seven-week period between the November and January Committee meetings was also divided into two subperiods. In November the Committee voted for M_1 growth at a 5 percent annual rate over the two remaining months of the year and M_2 growth at an 8½ percent rate. In the initial subperiod, which covered the four weeks ended December 19, the Desk focused on total reserve paths consistent with the relatively slow growth of the monetary aggregates for November that had already emerged by the time of the November 20 meeting. Money growth was close to desired levels through most of the four-week period, although some weakness emerged toward the end of the interval. On balance, there was no reason for revising the paths, as the net revisions to technical factors were deemed modest. Total reserves came out about on path. By the final week of the subperiod, it appeared that achieving the nonborrowed reserves path would have called for a rise in borrowings to about $1.9 billion. However, preliminary figures for the second subperiod suggested that the monetary aggregates were running below the objective and that total reserves were likely to fall short of the path so that borrowings might be expected to drop off to around $1.5 billion. Rather than induce a one-week bulge in borrowings, the Desk aimed in the final week of the first subperiod for nonborrowed reserves consistent with borrowings of around $1.5 billion, thus anticipating that nonborrowed reserves for the four weeks ended December 19 would average about $100 million above path. This period ended with the reserve measures close to their path averages, with both total and nonborrowed reserves initially estimated to be around $50 million above path, while borrowings averaged close to $1.7 billion. (However, final data indicated overshoots of about $100 million for total reserves and $150 million for nonborrowed reserves.)

Moving into the second subperiod—the three weeks ended January 9—the impact on the paths of the weakness in the aggregates became more pronounced. The total reserves path was revised downward by $100 million to take account of a net shortfall in certain nonmoney items, which was only partially offset by estimates of increased demand for excess reserves. Even so, estimates suggested that total reserves were likely to fall short of the path by about $450 million on average. The extent of this shortfall was sufficiently large that the path for nonborrowed reserves was raised by $150 million to encourage an expansion in deposits and required reserves.[11] This adjustment, combined with the shortfall in required reserves, meant that the Desk initially aimed for nonborrowed reserves consistent with average borrowings of $1.1 billion. Additional upward revisions were made to the excess reserve assumption in the following two weeks, leading to further modest changes in the paths. Total reserves did not turn out to be so weak as initially thought, on average falling short of the revised path by around $200 million for the three-week subperiod. Hence, the implicit figure for borrowings edged back up, although it remained below that of the earlier period. As it turned out, nonborrowed reserves exceeded even the revised path, as the Desk accommodated to some extent the sharp temporary drop in demand for borrowings in the January 9 week. (Final figures show total reserves $265 million below path and nonborrowed reserves about $155 million above path.)

The behavior of the Federal funds rate during November and December was somewhat puzzling, as it often did not follow a usual relationship to the volume of discount window borrowings. The Federal funds rate did decline in early November, when borrowing dropped, but then continued to fall through the rest of the month, while borrowings stabilized around $1.8 billion to $1.9 billion (Chart 3). The average funds rate slipped as low as 12½ percent in the final week of the month, compared with about 13¾ percent at the start. However, in December, when borrowings declined further, though irregularly, ranging between $1.2 billion and $1.7 billion after the first week, the funds rate jumped back up to around 13¾ to 14 percent through December and into January.

Normally, one would not have anticipated a drop in the Federal funds rate in late November when borrowings were steady. Nor would one have expected the rate to rise and then stay up in December as borrowings resumed their decline. Part of the reason for the initial sharp decline may have been the emergence of

[11] It was recognized that, with a period as short as three weeks and with lagged reserve accounting predetermining requirements in two of them, little progress could be expected within the period toward achieving the path average for total reserves.

expectations during November that interest rates might be about to peak. This set off a rally in the securities markets, which became dramatic in the final week of the month. Some of the yield declines in other sectors may have spilled over to the Federal funds market. As mixed economic signals emerged in December, the anticipation that rates had peaked began to be held with less conviction, and uncertainty reemerged. Another factor that may have been lifting the funds rate in December was the fact that Federal funds purchased from member banks were free of marginal reserve requirements and at that point appeared to be a good substitute for CDs and other borrowing, especially if rates were likely to fall early in 1980. Finally, the very heavy borrowings in October and relatively high borrowings in November may have contributed to a reluctance to borrow late in the year, as a number of banks had been making fairly frequent use of the window, and they may have sought to reduce that reliance for a time.