

## Open Market Operations and the Monetary and Credit Aggregates—1971

*Editor's Note: The following is adapted from a report submitted to the Federal Open Market Committee by Alan R. Holmes, Senior Vice President of the Federal Reserve Bank of New York and Manager of the System Open Market Account. Paul Meek, Assistant Vice President, Open Market Operations and Treasury Issues Junction, was primarily responsible for preparation of the report. Mrs. Sheila Tschinkel, Chief, Securities Analysis Division, contributed to its development, and her staff, under Miss Anne Rowane's direction, verified the data used herein.*

System open market operations encountered new difficulties in 1971 in pursuing a monetary policy appropriate to a sluggish economy still troubled by inflation and a deep balance-of-payments deficit. The Federal Open Market Committee's (FOMC) operational instruction to the Trading Desk at the Federal Reserve Bank of New York gave important emphasis, as in 1970, to achieving desired growth in the monetary and credit aggregates, with due attention to interest rate developments. In 1970, it will be recalled,  $M_1$ —currency plus adjusted demand deposits held by the public—had expanded at a reasonably steady 6 percent rate over the first three quarters, and the fourth-quarter slowdown to a 3.4 percent annual rate was plausibly attributed to the effects of the automobile strike. But in 1971 growth in  $M_1$  varied considerably, although the Committee was willing to countenance considerable variation in interest rates.

The problem of obtaining a prompt response in  $M_1$  became apparent early in 1971. Through January and most of February the money supply failed to expand as rapidly as was required if the Committee's desire to make up the fourth-quarter shortfall was to be realized. Having already lowered the Federal funds rate from 6½ percent to 4¾ percent over the fourth quarter, the Desk pressed nonborrowed reserves on the banking system until the rate fell to 3½ percent in the second half of February. At this point, the money supply began to grow rapidly. In early April the Committee called for a firming of the money market to help curb this expansion.  $M_1$  growth continued

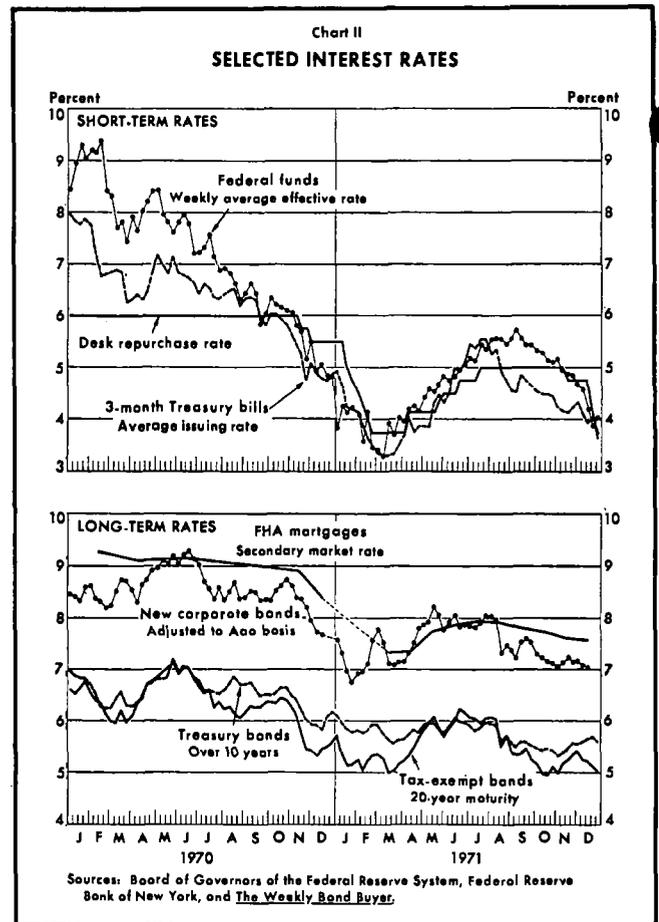
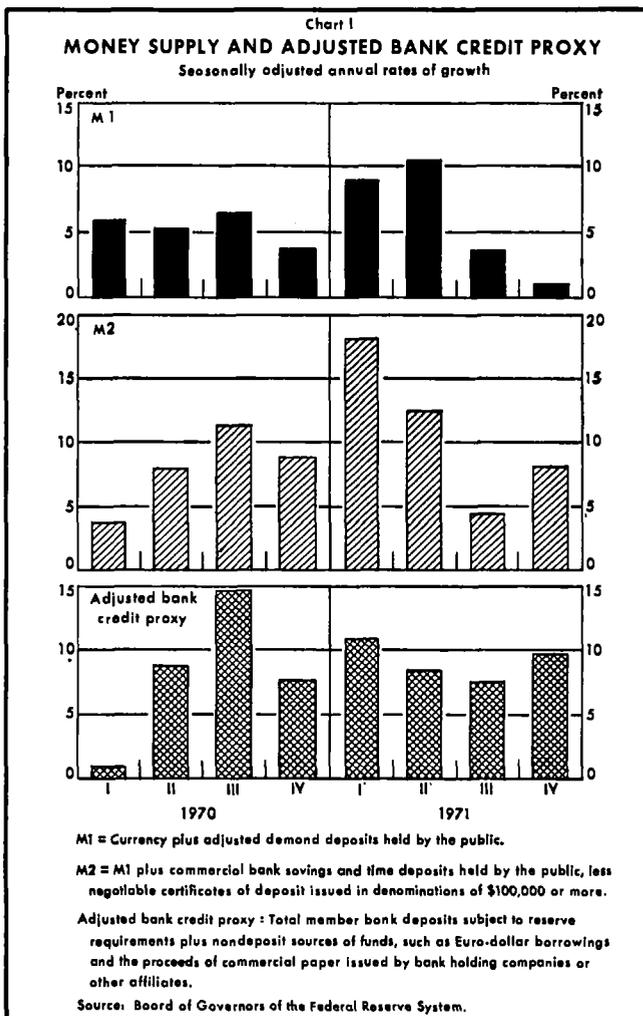
rapid into the summer, even though the Desk's reluctant provision of reserves led to an increase in the Federal funds rate to 5½ percent by August. The President's new economic program, announced on August 15, reduced inflationary expectations, and growth in the money supply slowed markedly over the remainder of the year. Again, the System stepped up its provision of nonborrowed reserves, in the process reducing the Federal funds rate to 3¾ percent by the year-end. Nonetheless,  $M_1$  did not respond quickly to changes in open market operations (see Chart I).

The lagged response of  $M_1$  to open market operations in late 1970 and throughout 1971 underscored once again the complexity of the linkages between the Desk's operations, on the one hand, and bank behavior, interest rates, financial flows, and the asset choices of the public, on the other. An unusual opportunity for the study of these linkages was provided, however, by the changes in thrust of open market operations during the year. This report uses the background of the year's developments to present a view of the process by which open market operations affect reserves, interest rates, and the monetary and credit aggregates.

System open market operations have a direct and immediate effect on the nonborrowed reserves of the banking system. The response of the banks quickly affects the Federal funds rate, as well as the level of member bank borrowings at the Reserve Banks, especially when the funds rate is at or above the Federal Reserve discount

rate. The change in the Federal funds rate produces a closely related change in other short-term interest rates in reasonably quick order.

Two channels carry this impetus forward, exerting a pervasive influence on other interest rates and financial flows and ultimately on economic activity. First, operations affect the interest rate expectations and investment decisions of banks and other investors. The actions of these participants in the credit markets help shape interest rate developments and influence the rate of growth of bank credit. Secondly, short-term interest rates affect the public's portfolio choices between market instruments and deposits at banks and other institutions. (The main changes in interest rates in 1970 and 1971 are shown in Chart II.)



System open market operations thus set in motion a complex portfolio adjustment process. While the direction of influence is clear, the timing and extent of the effects generated depend importantly on market expectations of the future and the feedback of influence from the economy itself. In 1971, both the broader money supply ( $M_2$ ) and the credit proxy<sup>1</sup> appeared to respond more quickly than  $M_1$  to System-initiated changes in the supply of non-borrowed reserves and the Federal funds rate. Moreover,

<sup>1</sup>  $M_2$  includes  $M_1$  plus commercial bank savings and time deposits other than large negotiable certificates of deposit (CDs). The adjusted bank credit proxy consists of total member bank deposits subject to reserve requirements plus nondeposit sources of funds, such as Euro-dollar borrowings and the proceeds of commercial paper issued by bank holding companies or other affiliates.

there were apparently significant shifts in the public's demand for  $M_1$  in the course of the year, making it most difficult, and probably inappropriate, to achieve a steady quarterly growth rate in  $M_1$ .

The Committee from time to time took account of both capital market conditions and the behavior of the aggregates—chiefly  $M_1$ —in its directives to the Desk. When  $M_1$  grew rapidly in the second quarter, concern about the capital markets moderated the speed and intensity with which the Desk exerted upward pressure on interest rates in the process of restraining rapid monetary expansion.

### THE TRANSMISSION OF MONETARY POLICY

The execution of System open market policy in 1971 involved both a day-to-day target for open market operations and a procedure for modifying that target between meetings in accordance with the Committee's intermediate-term objectives. In 1971 the Committee continued to specify a desired range for the Federal funds rate as the most important component of the money market conditions to be achieved by the Desk. Over the interval between meetings, the FOMC provided guidance as to the appropriate Desk response to the behavior of the monetary and credit aggregates and of interest rates in the capital markets. The Committee's trade-offs between these objectives varied over the year, but on balance the Committee's primary concern was with  $M_1$ .

**THE FEDERAL FUNDS RATE AS A TARGET.** The Committee's use of the Federal funds rate gave the Manager an objective that he could usually hold within reasonable limits during the statement week. The Federal funds rate also is highly visible to member banks and the financial community. The rate directly affects the profit calculus of member banks, as it is the opportunity cost of marginal reserves. To others, changes in the Federal funds rate serve as an early indicator of changes in the Federal Reserve's willingness to supply nonborrowed reserves to the banking system. Thus, the banks and the financial markets quickly become aware of changes in the thrust of central bank operations.

In shaping weekly money market strategy, the Manager used two sets of forecasts—being fully aware of the confidence limits that attach to each. First, there was the forecast of the likely level of excess reserves in the banking system, allowing for carry-over excesses and deficiencies and discernible historical patterns. The Desk's experience with such forecasts since mid-1971 suggests that average excess reserves can usually be projected within \$50 million to \$100 million for the current statement

week, although there are significant aberrations from time to time. With required reserves preestablished under lagged reserve accounting, realized total reserves will thus generally fall within \$50 million to \$100 million of the projected number. The second set of weekly reserve projections involved the factors affecting nonborrowed reserves—notably, Federal Reserve float, currency in circulation, Treasury and international balances at the Reserve Banks, and the like. The projection errors here are quite large—principally because of unexpected swings in Federal Reserve float. In 1971 the average difference between the projections of all such factors made at the New York Bank on the first day of the statement week and the final outcome was \$275 million.

Faced with this degree of uncertainty, the Manager of the Open Market Account must make a daily judgment of the probability that attaches to his forecasts. Then, he must take action that will fit into an orderly program of supplying, or absorbing, nonborrowed reserves. There are often market limitations on the volume of operations that can be conducted on a single day. To the extent possible, the Manager also seeks to avoid frequent reversals of outright market transactions in the interest of maintaining a smoothly functioning Government securities market. Repurchase agreements and matched sale-purchase transactions help to effect large temporary changes in nonborrowed reserves without exerting much influence on securities prices.<sup>2</sup>

A stream of information flows to the Trading Desk each day, including data each morning on the reserve positions and discount window borrowings of all member banks for the previous day and on the Federal funds and dealer lending operations of forty-six major money market banks. This new information enables the statistician to adjust his projections for a deviation in reserves from his projected path. It also gives the Desk insight into the reserve management strategies of major groups of member banks as revealed by their cumulative excess or deficit reserve positions. But the Federal funds market is the chief source of current information to the Desk on the behavior of nonborrowed reserves during the day. The

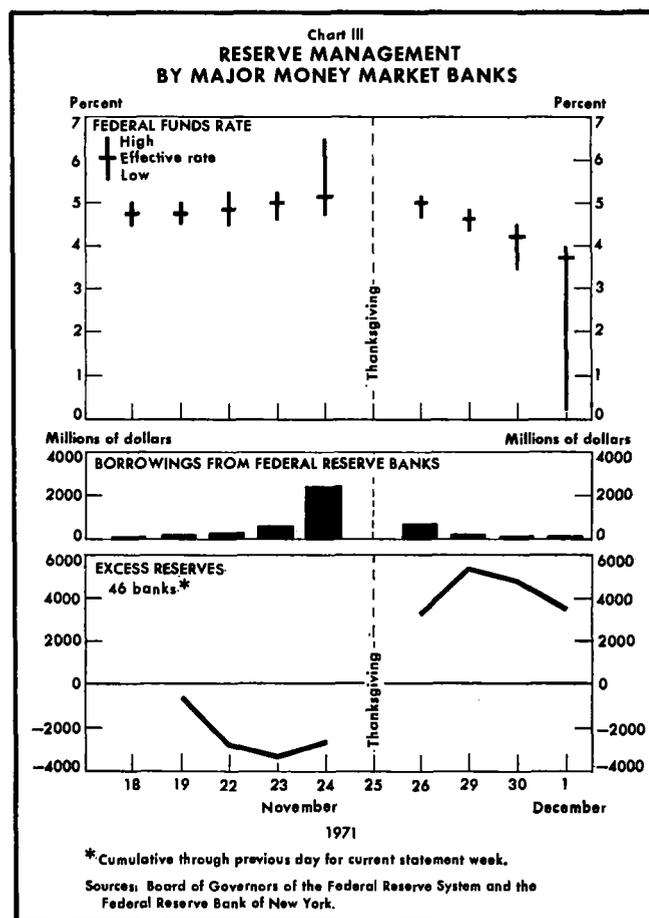
<sup>2</sup> Repurchase agreements involve the System purchase of eligible securities or bankers' acceptances from nonbank dealers under contracts that provide for their resale from one to fifteen days later. Matched sale-purchase transactions involve a System sale of eligible securities that is matched by a contract to repurchase them, usually a few days later. Such transactions are conducted with both bank and nonbank dealers in Government securities.

supply-demand balance in that market shifts as member banks react to incoming information on their reserve positions or as their willingness to hold excess reserves changes. Based on its expectations of likely levels of excess reserves, and on projections of various reserve factors, the Desk can make reasonable judgments about how the money market should behave. Current information from the Federal funds market during the day then suggests whether nonborrowed reserves are, in fact, behaving as expected.

One can gain more appreciation of the Desk's need for a current indicator of nonborrowed reserves by examining the behavior of nonborrowed reserves on Fridays during 1971. Friday is a key day for the Desk since the reserve levels on that day carry over Saturday and Sunday as well, thereby accounting for three sevenths of the weekly average. During 1971 the average absolute change in nonborrowed reserves on Fridays, exclusive of System open market operations, was \$434 million, but it required a band of  $\pm$ \$959 million to include 90 percent of the actual changes. The Federal Reserve Bank of New York's projections of nonborrowed reserves anticipated a considerable part of this variation, but unexpected variations remained quite large. A band of  $\pm$ \$585 million was required to include 90 percent of the deviations of actual nonborrowed reserves (exclusive of System operations) from projected levels. The average absolute "miss" was \$292 million.

The Desk can anticipate member bank reserve strategy to some degree, but by no means perfectly. In 1971 there continued to be a strong tendency for a tight Federal funds market at the end of a statement week to increase the demand for excess reserves by major banks in the following week, especially over the weekend. Conversely, an easy Federal funds market at the end of the week tended to be followed by a more relaxed attitude on the part of money market banks toward the accumulation of reserve deficiencies over the following weekend. The resultant variations in excess reserves were a major factor in an average week-to-week swing in excess reserves of \$187 million.

The Desk was generally able to anticipate a major part of such swings in 1971, but the extent of the change was sometimes surprising. For example, in the November 24 statement week (in which nonborrowed reserves were overstated by \$400 million through a clerical error), the forty-six major money market banks were willing to accumulate a reserve deficiency of \$3.0 billion over the weekend (see Chart III). The Federal funds rate gave little sign of a \$540 million reserve shortfall on Friday or of the large net reserve deficiency building up in the banking



system. The Desk's injection of \$2 billion of nonborrowed reserves in three days—the maximum attainable in the circumstances—was not sufficient to prevent the Federal funds rate from rising well above the  $4\frac{3}{4}$  percent desired. Member bank borrowings at the discount window also bulged to almost \$2.4 billion on the statement date, which preceded Thanksgiving. Predictably, the forty-six money market banks hoarded excess reserves over the following weekend, accumulating \$5.4 billion in excess reserves by Monday morning. In consequence, the Federal funds rate broke to as low as  $\frac{1}{4}$  percent by the end of the week. The Desk's willingness to interpose only token resistance to this decline meant that the seesaw management of reserve positions by the banks proved expensive to them. Such experiences tend to moderate the swings in bank behavior.

There is still another dimension of the Desk's weekly strategy that relates directly to the Committee's use of the Federal funds rate as an important short-run target. When

the FOMC's directive calls for a Federal funds rate below the discount rate, the Desk supplies nonborrowed reserves abundantly and is quite tolerant of an easy money market toward the end of the statement week. This was notably the case in the January-March interval and again in November and December. However, when the FOMC's policy stance calls for increasing the pressure on member banks as in the April-August interval, the Desk typically allows the demand for reserves to push up the Federal funds rate before it supplies nonborrowed reserves. In such periods, it is also quick to mop up reserve excesses when the Federal funds rate begins to slip below the desired range. In this way, the daily conduct of open market operations underscores the Committee's policy stance, and is one of the ways that the System communicates its current policy intent to the banking system and financial markets.

**THE PURSUIT OF THE COMMITTEE'S INTERMEDIATE OBJECTIVES OVER THE INTERVAL BETWEEN MEETINGS.** In 1971 the FOMC continued to be concerned with both the growth rates to be achieved in the monetary and credit aggregates and with the behavior of interest rates. Through the March 9 meeting, the Committee's directives to the Desk called for pursuing desired growth in the aggregates and for accommodating downward movements in long-term interest rates. After a transitional directive in April, the primary emphasis was placed on moderating the growth of the aggregates, but capital market developments remained an important conditioning element in the Desk's instructions as interest rates rose. After the announcement of the President's new economic program on August 15, the principal focus continued to be the aggregates, but the Committee made clear its expectation that lower interest rates would follow. In its August 24 meeting the Committee also authorized outright transactions in Federal agency securities to widen the base of operations and add breadth to the market for such securities. By late in the year, strong emphasis was placed on a resumption of growth in  $M_1$ .

The Committee's decision at each meeting regarding acceptable behavior of the aggregates was embodied in a tracking path of weekly values for each of three aggregates over the interval until the next Committee meeting and a path of monthly values over the quarter. The Committee's instructions to the Desk focused chiefly on  $M_1$ , currency plus demand deposits in the hands of the public. Some weight was also given to the behavior of  $M_2$  and the adjusted credit proxy. The FOMC typically indicated to the Desk whether it was more concerned with upside or downside deviations. And it provided guidance on occasion

about the rapidity with which the Desk should respond.

For the Manager the pursuit of the Committee's intermediate objectives involved two types of decisions. First, there was the decision each week as to whether the targeted range of the Federal funds rate was to be changed in response to developments in the aggregates or in capital markets. Secondly, there was an ongoing choice of the channels to be used in affecting nonborrowed reserves. For example, the Desk often employed purchases of Treasury coupon securities as a means of both supplying reserves and contributing, at least marginally, to the accommodative capital market environment desired by the FOMC. Beginning in September the System began buying Federal agency securities from time to time in the normal course of operations.

Each week the Manager decided on the approximate setting of the Federal funds rate range for that week. These decisions were largely geared to the recent behavior of  $M_1$  and the other aggregates in relation to the weekly tracking paths. Each Friday morning the Manager had before him a preliminary estimate of  $M_1$ ,  $M_2$ , and the adjusted credit proxy for the preceding statement week and a revised report of each of the three for the week before that. There were also two sets of revised projections of all three for the current month and calendar quarter—one by the Federal Reserve Board staff and one by the New York Bank staff. The Manager and his associates at the Trading Desk gave less weight to the projections of behavior over the remainder of the quarter since a sizable margin of error attached to them.

The Desk's response to a significant deviation in  $M_1$  rested on a number of considerations. Under the FOMC's instructions the Desk was likely to move its weekly Federal funds rate objective more quickly, and to a greater extent, if the latest deviation continued a cumulative departure from path that had been under way for some time and seemed likely to persist. Secondly, the Desk might give some weight to the behavior of  $M_2$  and the credit proxy. Finally, the Manager had to fold in the capital market element of his instructions, weighing the impact of the projected changes in the Federal funds rate on his ability to achieve expressed Committee desires regarding long-term interest rates.

The experience after the FOMC's January 12, 1971 meeting illustrates the factors typically encountered in setting weekly targets.  $M_1$  had grown at about a 3.5 percent annual rate in the fourth quarter of 1970, compared with the 5 percent rate expected at the December 15 meeting of the Committee. The Desk had responded to the shortfall by lowering the Federal funds rate to around 4½ percent from the 5 percent level prevailing before the December

meeting. The Federal Reserve discount rate had been lowered from 5½ percent to 5¼ percent effective January 8. At the January 12 meeting, the Committee agreed to promote accommodative conditions and moderate expansion in the monetary and credit aggregates and called for some easing of money market conditions soon. There was also agreement that conditions would be eased further if it appeared that the aggregates were expanding at rates below those needed to make up the fourth-quarter shortfall in  $M_1$ .

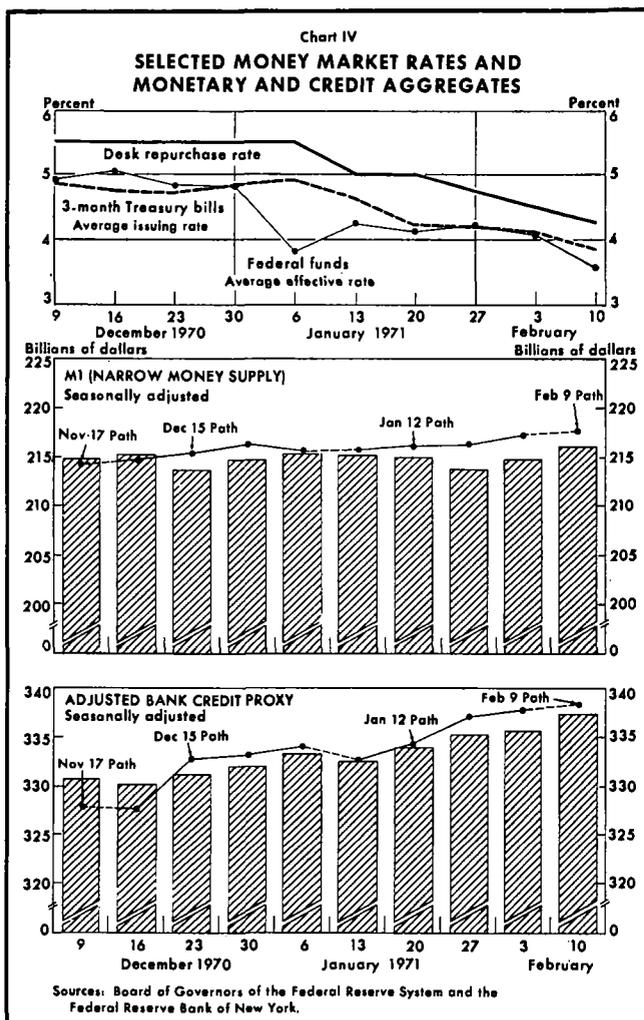
Following the meeting, the Desk aimed for a Federal funds rate around 4¼ percent. In the January 13 week, the aggregates appeared to be close to their respective tracking paths (see Chart IV). Then,  $M_1$  fell far short of

its path in both the January 20 and January 27 weeks. In contrast, the credit proxy continued relatively strong, growing at an annual rate of 10 percent in January.

In the credit markets, expectations of a decline in interest rates had been reinforced by a ¼ percentage point cut in the Federal Reserve discount rate to 5 percent beginning on January 19. Working in the same direction was the Trading Desk's negotiation of repurchase agreements with nonbank dealers at a rate below the discount rate for the first time in six years and two ¼ percentage point cuts in the commercial bank prime lending rate. The capital markets were experiencing a dramatic rally. Corporate bond yields fell by about ½ percentage point between mid-December and late January. The Treasury's announcement of a refinancing of nine outstanding issues (of which \$19.5 billion was held by the public) was greeted with such enthusiasm that unprecedented first-day premiums of 29/32 (bid) emerged for the two new issues being offered in the exchange.

Against the background of the Committee's strong desire to get  $M_1$  moving, the Desk shifted its Federal funds rate objective down by ½ percentage point by the time the Committee next met on February 9. The rate on three-month Treasury bills fell by about 85 basis points over the interval between meetings to 3.82 percent. One could describe the Desk's response to the  $M_1$  shortfall in terms of nonborrowed reserves equally well. To keep the Federal funds rate well below the discount rate involved supplying nonborrowed reserves plentifully in relation to required reserves. Member bank borrowings at Federal Reserve Banks, aside from special problem borrowing, declined to a negligible \$5 million in the statement week that ended February 10. Required reserves reflected the shortfall in the private demand deposit component of  $M_1$  in the January 20 and 27 weeks two weeks later—i.e., in the February 3 and 10 statement weeks. In pursuit of a lower Federal funds rate, the Desk pressed nonborrowed reserves on the banking system. With the willingness of the money market banks to accumulate excess reserves limited to the amount that could be carried forward into the subsequent statement week, the Federal funds rate responded quickly to the Desk's action. The average effective Federal funds rate for the February 10 week fell to 3.59 percent from over 4 percent the week before.

**THE IMPACT OF SYSTEM POLICY SHIFTS ON THE SHORT-TERM MARKET IN 1971.** The System's management of nonborrowed reserves has its initial impact in the market for bank reserves and the Federal funds market and spreads quickly to the rest of the short-term market. A key linkage in this process is provided by the borrowing of dealers

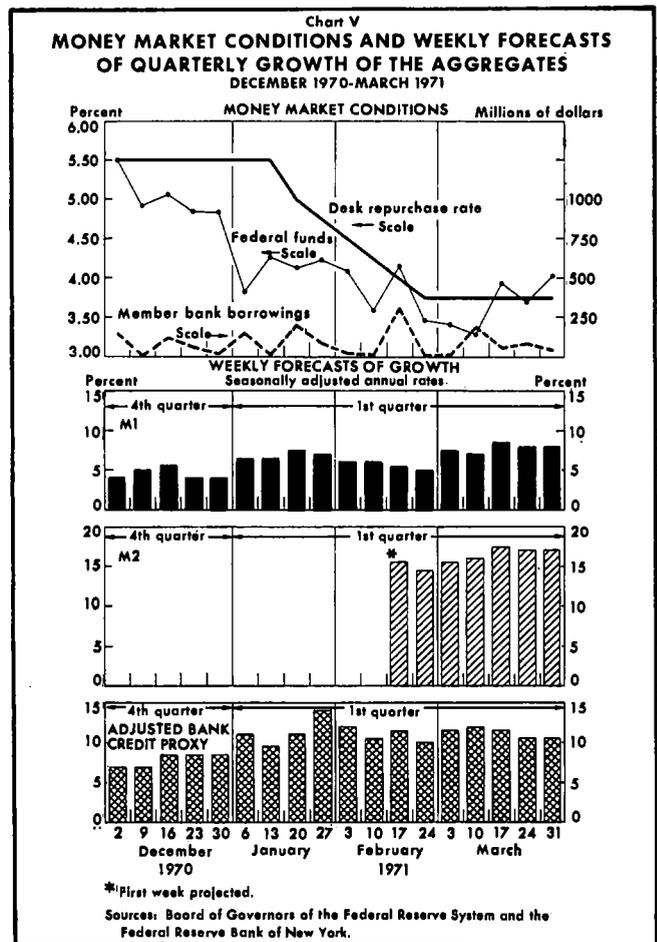


in Government securities to carry their inventories, which ranged between \$2.5 billion and \$7.3 billion, of Treasury and Federal agency securities during 1971. The bank dealers are affected quite directly by the Federal funds rate since most bank dealer departments are charged at this rate for the funds employed in their operations. The nonbank dealers seek out repurchase agreements from corporations, state and local governments, and Federal agencies as the least costly means of financing their positions, but usually they must rely on the banks as well.

The sensitivity of dealer loan rates to the Federal funds rate assures that System open market operations have a rapid, and roughly commensurate, impact on the financing costs of the dealers in Government securities. This, in turn, affects the interest rates at which dealers are willing to hold Treasury bills and other short-term market instruments. To be sure, other factors also affect the dealers' willingness to position bills—notably the current and prospective demand for bills, the Treasury's bill financings, and expectations of future interest rates. These keep the linkage between the Federal funds rate and Treasury bill rates from being a simple mechanical one. Still, changes in dealer financing costs exert such a strong and pervasive influence on Treasury bill rates—both directly and through their impact on dealer expectations—that other factors may modify but can seldom offset it over a period of weeks. The response of lenders and borrowers to changes in the Federal funds and Treasury bill rates assures a rapid, if sometimes uneven, response of other short-term rates to the changing management of nonborrowed reserves. (The transmission of effects to the market for longer term securities is treated below.)

As noted earlier, the System's management of reserves during 1971 can be divided into three phases. During the first three months, the System was pressing nonborrowed reserves on the banking system to increase the growth in  $M_1$  while accommodating a decline in long-term interest rates. Then, from April through mid-August, the emphasis shifted to resisting the rapid growth of  $M_1$ , then under way within the constraints imposed by continuing concern about the capital markets. Finally, with the President's new economic program enhancing prospects for a higher rate of real economic growth and reduced inflationary pressures, the System stepped up the provision of nonborrowed reserves as  $M_1$  slowed down. It thereby fostered a climate of credit availability and lower interest rates that was largely free of fears that excessive demand and inflationary pressures would soon revive.

**January through March.** In the first quarter of the year, the Committee sought to make up the shortfall of  $M_1$  in the fourth quarter of 1970 when it was believed to have



grown at a 3.4 percent annual rate,<sup>3</sup> compared with about 6 percent in the first three quarters of 1970. The FOMC also called for accommodating the fall in long-term interest rates through open market operations.

The Trading Desk experienced little conflict in pursuing the FOMC's dual objectives during the first quarter, although  $M_1$  continued weaker than desired in January. After the January 12 FOMC meeting, the Desk's initial target range for the Federal funds rate centered on 4¼ percent. As noted earlier,  $M_1$  began in late January to fall short of the Committee's tracking path. This led the Board staff to revise downward its *projection* of the growth likely to be achieved over the quarter (see Chart V). The Desk responded to the shortfall by lowering its Federal

<sup>3</sup> Revised in November 1971 to 3.8 percent.

funds rate objective to around  $3\frac{3}{4}$  percent by the time of the February 9 meeting. The Committee's next directive called for a prompt response to any further shortfall, and the Desk lowered the center of the desired range to  $3\frac{1}{2}$  percent on February 12, when incoming data suggested such a result. By the March 9 Committee meeting  $M_1$  was showing a bit more strength, suggesting that the fourth-quarter shortfall might well be made up. Soon afterward, both  $M_1$  and  $M_2$  began to show somewhat more rapid growth than desired. Accordingly, the Desk sought to foster a shade less accommodative money market conditions—a Federal funds rate centering on  $3\frac{1}{2}$  to  $3\frac{3}{4}$  percent. In the event, however, the Federal funds market became tighter than desired in spite of Desk action, with the rate rising to 4 percent or above on a number of days in mid-March and again around the end of the month.

As the Federal funds rate was reduced in the first quarter, dealers were able to borrow at rapidly declining rates—especially from nonbank sources. As a result, the Desk found it increasingly difficult to make repurchase agreements with nonbank dealers at the discount rate. Accordingly, the Desk lowered the rate on repurchase agreements to 5 percent on January 20 in order to be able to continue using this valuable means for injecting reserves for short periods. This cut in the repurchase rate brought it below the discount rate for the first time in six years, and gave rise to market expectations of a further cut in the discount rate. Subsequent reductions brought the rate on repurchase agreements to  $4\frac{1}{4}$  percent in early February and to  $3\frac{3}{4}$  percent on February 18. (The discount rate was cut to  $4\frac{3}{4}$  percent, effective February 13.) Market observers soon recognized that the rate was being adjusted lower routinely to keep it competitive with lower market rates, but bullish sentiment tended to be encouraged nonetheless.

The decline in the Federal funds rate brought dealer lending rates in the New York City banks down from around  $5\frac{1}{4}$  percent in early January to about  $3\frac{3}{4}$  percent in early March. The downward pressure this exerted on Treasury bill rates was augmented by strong demand from foreign central banks and the Federal Home Loan Banks in February and early March. At this point, many market participants also strongly expected interest rates to continue to decline. In this environment the Treasury's offering of a strip of \$1.2 billion of weekly maturities was snapped up without any lasting effect on rates. The three-month bill rate fluctuated narrowly around  $3\frac{3}{8}$  percent through most of March, compared with the  $4\frac{7}{8}$  percent rate prevailing in December. Over the January-March interval, rates on 60- to 89-day CDs, 30- to 89-day finance

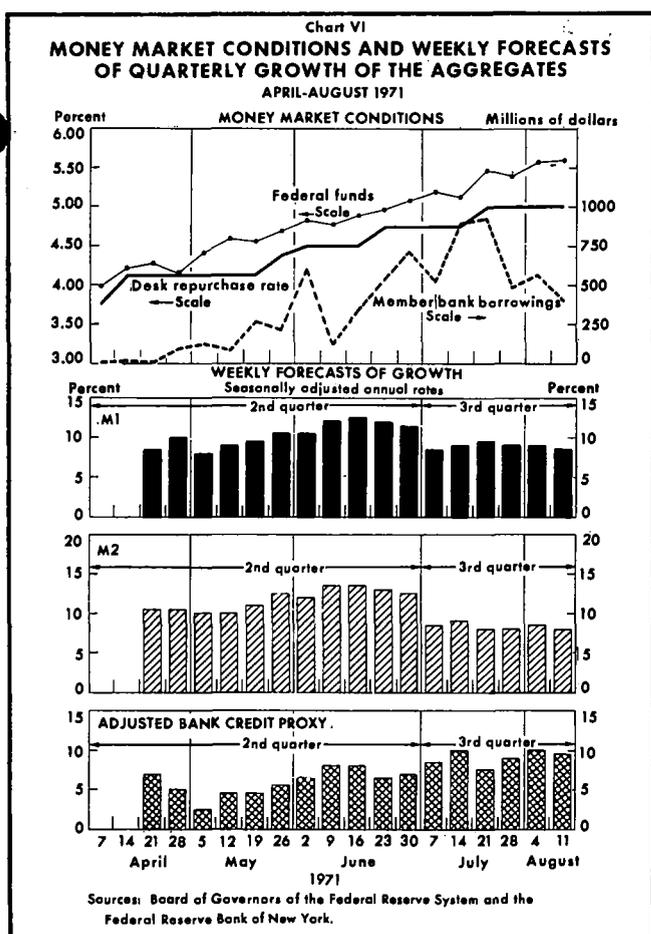
company paper, and 90-day Euro-dollars fell generally by about  $1\frac{3}{4}$  percentage points to the vicinity of  $3\frac{3}{4}$  percent,  $3\frac{1}{2}$  percent, and  $5\frac{1}{2}$  percent, respectively.

The low level of short-term rates led to official concern about short-term money outflows to the rest of the world. On March 16 the Treasury announced that it would add \$5 billion in three segments to the supply of bills outstanding. Undesired firmness in the Federal funds market contributed to a rise in rates that carried the three-month rate to 3.70 percent just before the FOMC's April 6 meeting. The rise was cushioned, however, because Government securities dealers increased their bill positions by \$2.6 billion in the two weeks ended April 7.

Yields in the long-term capital markets moved briskly lower in the opening weeks of the year. New Aaa-rated corporate bonds declined to around  $6\frac{3}{4}$  percent by late January, down almost a full percentage point for the month. Municipal bond yields declined by about  $\frac{1}{2}$  percentage point. The decline in yields brought an influx of new issues to the corporate bond market, however, with the four-week visible supply rising from \$1.5 billion to over \$3 billion between mid-January and mid-February. Yields on new corporate issues rose appreciably in February (see Chart 11), while municipal bond yields retraced only a part of their earlier declines. Long-term Government yields rose in February in sympathy with the competitive corporate market, but intermediate-term yields continued to decline as the System supplied nonborrowed reserves freely and short-term rates fell.

Against this background and under the Committee's instruction to accommodate declining long-term interest rates, the Desk supplied the major part of its long-term provision of reserves during the first quarter through the purchase of Treasury coupon issues. The strong demand pressures evident in the bill market provided still another week-to-week reason for buying coupon issues. The Desk added \$1,027 million of such securities to the System's portfolio in the seven weeks that ended March 31, including \$195 million of issues maturing in over ten years. The System's repeated entry into this market, at a time that it was also supplying nonborrowed reserves at a pace that pushed short-term rates down, contributed to the ability of the corporate bond market to distribute an unprecedented volume of offerings in March at declining rates. By the end of March, yields in all sectors of the bond markets were again at or close to their lows for the year.

*April through mid-August.* At the April 6 FOMC meeting, staff analysis suggested that if prevailing money market conditions were maintained  $M_1$  would grow somewhat faster over the second quarter than the 8 percent rate



pattern of April persisted through May and June. Despite a successive rise in the targeted range of the Federal funds rate, staff projections of the second-quarter growth in  $M_1$  (see Chart VI) continued to exceed the FOMC's objectives. And as  $M_1$  continued to come in higher week by week than its tracking path, the Desk kept raising its sights for the Federal funds rate. By the end of June the rate was back to 5 percent, around the level of late December. But  $M_1$  grew at a 10.6 percent annual rate in the quarter, compared with 9.1 percent in the first quarter. In contrast, both  $M_2$  and the credit proxy grew more moderately—at rates of 12.4 percent and 8.4 percent, respectively, compared with rates of 18.1 percent and 10.9 percent in the first quarter.

The System's response to the overruns in  $M_1$  in the second quarter was conditioned by the Committee's concern for the long-term credit markets. But the Desk could not avoid spillover effects on interest rates. It could only try to foster an orderly adjustment in the credit markets to a number of disturbing influences. The shift in the System's money market targets dashed existing expectations that still lower interest rates lay immediately ahead. The rapid growth of  $M_1$  and the continuation of price increases in a sluggish economy raised fears that inflation would remain a major economic problem with adverse consequences for the bond market. Market participants were deeply disturbed by the lack of Government action to deal with persistent inflation. And finally the massive speculative flow into Germany in early May before the mark was allowed to float suggested to many that higher interest rates would be required in the United States for defense of the dollar.

then estimated for the first quarter. The staff expected a moderation of the rapid growth rates of  $M_2$  and the credit proxy recorded in the first quarter—17.5 percent and 11 percent, respectively. The Committee decided that some minor firming of money market conditions was in order. Some members favored this to help achieve less rapid growth in the monetary aggregates; others placed the emphasis on narrowing the interest rate differential between this country and abroad. The directive called for continuing the purchase of coupon issues in the interest of promoting accommodative conditions in long-term credit markets.

System open market operations initially sought to establish the Federal funds rate in the upper part of a 3¾ to 4¼ percent range. Incoming data soon showed that both  $M_1$  and  $M_2$  were \$2 billion in excess of their tracking paths and subsequent data confirmed the strength, especially for  $M_1$ . Accordingly, the Desk raised the center of its Federal funds rate range to about 4¼ percent. The

The reaction in the credit markets was sharp. Yields on new Aaa-rated corporate bonds rose by about 1 percentage point to over 8 percent in the six weeks that ended in mid-May. *The Weekly Bond Buyer's* twenty-bond index of twenty-year municipal bonds rose a like amount to around 6 percent. Both series retreated to the levels of November 1970. In the Treasury market, long-term yields rose by ½ percentage point to around 6¼ percent under the special pressure of the Treasury's May financing and the liquidation of short-term positions by dealers and trading banks. (A fuller discussion of the mechanism through which monetary policy is transmitted to the credit markets is given later.) In contrast, the implicit yield on Government-underwritten mortgages in the Federal National Mortgage Association's (FNMA) biweekly auction of purchase commitments rose by only about ¼ percentage point, remaining about 1¼ percentage points below the November 1970 level.

Against this background the Desk's shift in its Federal

funds rate target was gradual—from about  $4\frac{1}{8}$  percent after the FOMC's April meeting to  $4\frac{1}{2}$  percent by mid-May. The Manager's reports to the Committee at the time indicated that market conditions were limiting his response to the overrun in  $M_1$ . This meant that nonborrowed reserves were growing faster than an unconstrained  $M_1$  target would have called for. But the turmoil in the credit markets—notably, in the Government securities market—pointed to a much more fundamental change in the portfolio strategy of banks and other investors than the modest change in money market rates might suggest. The Federal funds rate at such turning points hardly reflects the full effects on the banking system of a shift in central bank direction.

Short-term interest rates reflected the changes in the Federal funds rate. The rate on three-month Treasury bills rose to around  $4\frac{3}{8}$  percent in the second half of May, after having been held down earlier in May by concentrated foreign central bank buying as a result of the flow of funds to Germany. By comparison with this  $\frac{3}{4}$  percentage point rise in three-month bill rates over eight weeks, rates on 60- to 89-day CDs advanced by just over 1 percentage point and those on 30- to 89-day finance company paper by  $1\frac{1}{4}$  percentage points. Reflecting borrowing for exchange speculation, rates on three-month Euro-dollars rose sharply during early May, subsided, and then rose again at the month end to  $7\frac{1}{2}$  percent, more than 2 percentage points above their end-of-March level.

As the Federal funds rate was pushed up to around the  $4\frac{3}{4}$  percent discount rate in the second half of May, it became a less reliable indicator for a time of the degree of adjustment pressure being exerted on the banking system by open market operations. With the Desk holding back on the provision of nonborrowed reserves to nudge the Federal funds rate still higher, member banks responded by turning to the Federal Reserve discount window. Such borrowings (exclusive of problem borrowing) had remained at a very low level, while the Federal funds rate was raised from  $3\frac{1}{2}$  percent to  $4\frac{1}{2}$  percent. But they rose to an average of \$242 million in the last two statement weeks in May and then to \$627 million in the last two weeks of June. Nonborrowed reserves actually declined in June, while the Federal funds rate moved only  $\frac{3}{8}$  percentage point higher. In turning to a privileged source of reserves, banks did not exert as much pressure on the Federal funds rate as in the preceding two months, but the impact on bank attitudes may well have been as great, perhaps greater.

Dealer financing costs rose modestly in June in tandem with the Federal funds rate, but Treasury bill rates rose rather rapidly. The three-month rate rose by  $\frac{7}{8}$  percentage

point to around  $5\frac{1}{4}$  percent, while the one-year rate rose more than a full percentage point to 5.84 percent. Concern over progressive System firming was augmented by fears of heavy Treasury financing. There were also bill sales by the German central bank at the time. While other short-term rates rose considerably less, yields on Treasury coupon issues maturing in three to five years rose by about  $\frac{1}{2}$  percentage point as banks and dealers continued apprehensive about the outlook for interest rates. In the longer term markets, corporate bonds moved narrowly after mid-May as the forward calendar began to recede. Municipal bonds worked a bit higher in yield as bank buying declined, and implicit mortgage yields moved up by  $\frac{1}{2}$  percentage point in the FNMA auctions between mid-May and mid-June.

When the FOMC met on June 29, the staff projected that  $M_1$  and  $M_2$  would expand at annual rates of 9 percent over the third quarter, even if money market conditions were somewhat firmer. The staff felt, however, that growth in these aggregates would recede to quite modest proportions late in the year. Committee members were concerned about both the rapid growth in the monetary aggregates and the recent upward pressure on interest rates, in view of the dependence of the recovery on such interest-sensitive sectors as housing. While there was agreement that an unduly sharp firming should be avoided because of the risk to market interest rates, the Committee decided that open market operations should be directed at achieving more moderate growth in the monetary aggregates over the months ahead.

The Desk once again found  $M_1$  moving above its tracking path and responded by pushing the Federal funds rate up to around  $5\frac{1}{2}$  percent after mid-July and a shade higher in August. Member bank borrowings from the Reserve Banks rose somewhat further on average, but the Federal funds rate became more responsive to Desk action than in June. (The Federal Reserve discount rate was increased from  $4\frac{3}{4}$  percent to 5 percent, beginning July 16.) After mid-July the Board staff began to revise downward its projections of  $M_1$  growth in the third quarter on the basis of incoming data. Even so, the projection of 8.5 percent growth on August 12 remained appreciably faster than the Committee desired, and it continued to maintain its higher Federal funds rate objective. Most short-term rates rose in July and held steady in August, while long-term yields continued to edge higher. Treasury bill rates began to come under strong downward pressure in August, when foreign central banks sought to invest the rising tide of funds flowing to them as speculation against the dollar mounted to massive proportions in the exchange markets.

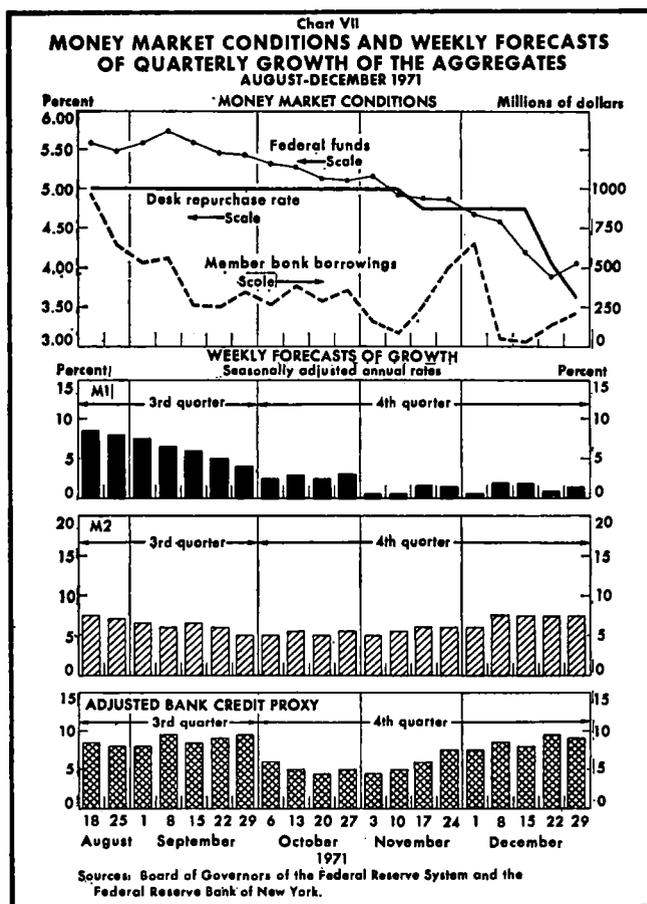
**August 15 through December.** The President's new economic program altered fundamentally most forecasts of the economic outlook and the expectations of investors about the future course of interest rates. At home the institution of a wage-price freeze and the promise of an incomes policy encouraged economists to believe that the tax stimuli of the program would both increase real growth and reduce the rate of advance in prices. The suspension of dollar convertibility and the imposition of the temporary 10 percent import surcharge marked a new initiative that raised hopes of progress on the nation's long-standing balance-of-payments problem. On both domestic and international grounds, market observers quickly concluded that the monetary authorities would have considerably greater freedom to pursue a more stimulative monetary policy over the next year or so. Long-term interest rates declined sharply as market participants scrambled to reestablish the speculative positions liquidated earlier. Short-term interest rates declined to a lesser degree with the exception of Treasury bill rates, which had already been moving lower on heavy foreign central bank demand. When the FOMC met on August 24, the three-month bill rate was 4¾ percent, 40 basis points lower than on August 13 and 71 basis points lower than on the eve of the Committee's previous meeting.

September the weakening in  $M_1$  that had begun developing in late August began to become visible to the general public. With the staff's projection for the quarter down to 5 percent, the Trading Desk shifted the center of the Federal funds rate range down to 5¼ to 5½ percent on the eve of the Committee's September 21 meeting. The more generous provision of nonborrowed reserves led to a prompt decline in member bank borrowings at the discount window, even before there was much effect on the funds rate.

Over the last quarter of the year the Committee was increasingly concerned with the persistent sluggishness in  $M_1$ . As new data came in week by week, projections of its growth were revised irregularly downward (see Chart VII). The Desk responded to the shortfalls in  $M_1$  below successive paths by reducing the center of its Federal funds rate range repeatedly, to about 3¾ percent by late December from 5½ percent in mid-September. (The

The Committee's staff tentatively concluded that the new economic program would raise real growth and dampen inflation in the rest of 1971. The staff also felt that the maintenance of existing money market conditions would moderate the growth in  $M_1$  to an 8 percent rate in the third quarter and substantially less in the fourth quarter.  $M_2$  was expected to grow more slowly in the last half of the year than in the second quarter, while the credit proxy was expected to grow somewhat faster than the 6.5 percent second-quarter rate. The Committee felt that the ultimate consequences of the new program for monetary policy could not yet be assessed with assurance and that any marked change in policy would be premature. There was particular concern that any easing of money market conditions be in response to clear public evidence that the monetary aggregates were, in fact, slowing down.

The Desk sought to maintain the Federal funds rate in its recent range after the meeting, but unusual reserve pressures around the Labor Day holiday led to persistent trading at 5¾ percent, somewhat firmer than desired. Treasury bill rates rebounded somewhat around mid-September from the artificially low levels to which foreign demand had pushed them, partly because of fears that foreign central banks might become sellers in the future. There was also a temporary rise in bond yields. By mid-



Federal Reserve discount rate was reduced by  $\frac{1}{4}$  percentage point, first on November 11 and then again on December 13, bringing it to  $4\frac{1}{2}$  percent.) The fourth-quarter growth in  $M_1$  turned out to be 1.1 percent at an annual rate, bringing growth over the year to a 6.2 percent rate.  $M_2$  and the credit proxy closed with quarterly growth rates of 8.0 percent and 9.7 percent, respectively, and annual growth rates of 11.1 percent and 9.5 percent, respectively.

The decline in the Federal funds rate over the last quarter was accompanied by a further decline in member bank borrowings at the Reserve Banks—aside from some unusual stresses that developed around the Thanksgiving Day holiday and on some other isolated occasions. By early December, member bank borrowings were again close to a frictional minimum as open market operations pushed the Federal funds rate below the discount rate. As usual, dealer lending rates at the New York City banks followed the Federal funds rate down, but most other short-term rates tended to anticipate the System's actions. With business loan demand notably slack, commercial banks cut their prime lending rate from 6 percent in late September to  $5\frac{1}{4}$  percent at the year-end, and a number of banks began experimenting with a floating prime rate related to open market rates on commercial paper. The rate on 90- to 119-day prime paper declined by  $1\frac{1}{4}$  percentage points over the quarter to  $4\frac{3}{8}$  percent at the year-end, and the rate on 60- to 89-day CDs declined by  $1\frac{1}{2}$  percentage points to about 4 percent.

Treasury bill rates continued to be depressed relative to other short-term rates by persistent demand for bills from foreign countries trying to retard the appreciation of their currencies against the dollar. In the intermediate Treasury market, yields dropped from 6 percent in late September to  $5\frac{3}{8}$  percent in early November, and banks and Government securities dealers built up massive positions during the Treasury's November refunding. In this situation, the Desk resorted to heavy purchases of Treasury coupon issues, and moderate purchases of Federal agency issues, in supplying seasonal reserve needs in late November and early December. These purchases helped cushion the upward pressure on interest rates of the overhang of undistributed Treasury securities and avoided adding to the downward pressure on bill rates from foreign buying. Over the quarter, purchases of Treasury coupon issues amounted to \$858 million while \$389 million of Federal agency purchases brought that portfolio up to \$485 million at the year-end.

Long-term interest rates worked generally lower over the final quarter. The corporate bond market successfully worked through a heavy November calendar with some

rise in yields. But by the year-end the yield on Aaa-rated issues was about  $7\frac{1}{4}$  percent, down about 88 basis points from mid-August and 35 basis points on the year. Municipal bonds moved to new low yields for the year in October, but gave up about half of the post-August improvement before yields turned down again in December. At the year-end, the *Bond Buyer's* index of twenty municipal bonds stood at 5.02 percent, down 101 basis points from mid-August and 56 basis points from a year earlier. Implicit mortgage yields in the FNMA auction of four-month purchase commitments declined gradually to 7.63 percent in mid-December, compared with rates of 8.07 percent on three-month commitments auctioned in late July and 8.51 percent in mid-December 1970.

**THE TRANSMISSION OF MONETARY POLICY TO BANK BEHAVIOR AND INTEREST RATES.** In contrast to the close relationship between the Desk's provision of nonborrowed reserves and the rates on Federal funds and various short-term instruments, the linkages between System open market operations, bank behavior, and long-term interest rates are more complex and the reaction time may either be quite short or extend over several months. One can hypothesize an orderly process in which banks project deposit growth and loan demands, based on a particular economic and financial outlook, with portfolio strategy emerging largely as a residual. While many banks probably employ this general approach, a large number of sophisticated banks recognize that they have considerable leeway to manage their liabilities so that their lending and investment decisions need not be constrained by near-term deposit flows. The aggressive bank can readily increase its liabilities, and assets, within limits by recourse to the Federal funds, CD, and Euro-dollar markets if loan and investment opportunities offer profitable prospects. To some degree, these banks in the aggregate can also fall back on borrowings from the discount window if the Desk provides nonborrowed reserves sparingly.

What the Desk's operations do affect is the opportunity cost of reserves to all banks—through either Federal funds or close alternatives. As these effects feed back over subsequent weeks and months to affect bank decision making and the loan demands and asset preferences of bank customers, aggregate bank credit and the various measures of the money supply begin to be affected. Even then, such external forces as shifts in business demands for loans and for demand deposits can exert powerful influences tending to delay or speed up the response of the banking system to System-engineered changes in the marginal cost of reserves.

In 1971 a major part of the System's impact on bank

credit and interest rates in the capital markets came through the changes it set in motion in the investment strategies of major banks, Government securities dealers, and others. Business demand for bank loans was notably quiescent during the year in contrast to the dynamic strength of some earlier years, which had had such a strong impact on bank behavior and bank balance sheets. An increasing number of banks turned to aggressive portfolio management as well as to increased mortgage and consumer lending in their efforts to maintain or boost earnings in an environment of generally lower interest rates. Expanded short-term trading in Government, Federal agency, and municipal issues had already been spurred by the 1969 revisions in the tax laws, which essentially removed the favorable treatment formerly given long-term capital gains. Since that time, securities trading has been much less inhibited by tax considerations than previously, when the alternation of profit and loss years often dominated bank portfolio activities.

*The short-term nature of securities speculation.* In moving to a more aggressive portfolio strategy, the trading banks markedly shortened their time horizons for trading. In 1970 and 1971 many banks set up securities trading operations, which were often separate from their normal investment activities. The trading accounts sought to profit from price swings over a few weeks or even days, as well as by taking speculative positions when interest rates were expected to move lower over the next two or three months. In effect, these banks joined the professional underwriters of Treasury, Federal agency, and municipal debt issues in trying to anticipate the course of interest rates in order to make short-term profits.

The investment strategy of trading banks, Government securities dealers, and other short-term holders depends upon the expectations of these groups concerning the behavior of interest rates over the next several months. These professional investors are keenly sensitive to any suggestion from their analyses pointing toward changes in monetary or fiscal policy, or any other factors that might affect the interest rate outlook. Their common objective is to anticipate the movement of rates before the general body of bank and nonbank investors. Most of these professionals probably have a profit horizon no longer than two to four months in taking major positions in intermediate- or longer term debt securities.

Adding to the extreme sensitivity of participants in the market is the highly leveraged nature of their operations. Nonbank dealers in Government securities often hold securities equal to fifteen or twenty times net worth, so that a 2 percent fall, or rise, in the market value of their assets would lower, or raise, their net worth by one third.

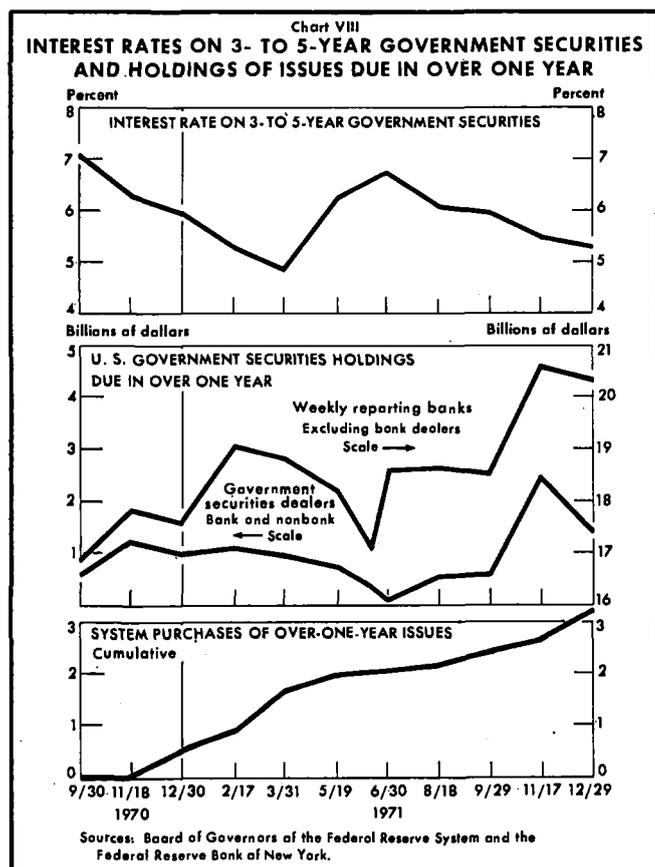
Accordingly, these firms are likely to react quickly to protect their capital if interest rates rise contrary to their expectations. Their capital can be seriously impaired if they misjudge the direction or even the timing of changes in rates. Conversely, the successful anticipation of a decline in interest rates offers the prospect of substantial capital gains. Bank dealers in Government securities undertake similar risks—comparable in kind, if not generally in degree, to that taken by the nonbank firms.

*The System's influence on securities trading.* The System exerts its impact on the interest rate expectations and portfolio commitments of dealers, trading banks, and others through the policy actions, speeches, testimony, and informal contacts of System officials with the financial community and through the conduct of open market operations under the FOMC's directives. Market participants analyze Desk actions to gain an idea of the desired Federal funds rate range or other FOMC objectives. The rate serves as an indicator of the System's desired throttle setting for the provision of nonborrowed reserves to the banks. The Desk's purchases of coupon issues, while accepted as a normal instrument of open market operations, at times tend to be regarded in the market as efforts to relieve supply pressures and hence serve to encourage rate declines or discourage increases. In the past two years, market participants have followed closely the behavior of  $M_1$  as likely to foreshadow changes in the System's weekly targets. The importance attached to this indicator reflects the increased significance given to it by the FOMC.

The System's changing policy thrust in 1971 was clearly reflected in the way in which Government securities dealers and weekly reporting banks managed their holdings of Government securities maturing in over one year. And the shifts in these holdings gave major impetus to changes in interest rates on intermediate-term Government securities during the past fifteen months.

In the fourth quarter of 1970 the nonbank dealers and the weekly reporting banks used the Treasury's November financing (announced on October 27) as the occasion to add heavily to their position in over-one-year securities (see Chart VIII). Yields on three- to five-year Government issues dropped by  $\frac{1}{2}$  percentage point by mid-November as these two groups emerged with almost \$1.9 billion more over-one-year securities than they held on September 30. (The net positions of other holders declined by a like amount.) In the final six weeks of the year, yields declined another  $\frac{3}{8}$  percentage point to around 6 percent as the Trading Desk purchased \$536 million of over-one-year securities—essentially from the positions of the dealers and weekly reporting banks.

After the turn of the year, market expectations of a



further decline in interest rates were still strong. The Trading Desk was aggressively pushing the Federal funds rate lower and the sluggish behavior of  $M_1$  in the fourth quarter encouraged professional investors to expect continuing ease. As interest rates fell further, dealers built up their positions in over-one-year issues by about \$1 billion to a record \$2 billion near the end of January and then distributed most of the increase at rising prices to banks and others over the next three weeks. Thus, they accounted for little of the \$4.1 billion net rise in such debt outstanding in public hands after the year-end as a result of the financing. Weekly reporting banks increased their holdings of over-one-year issues by over \$1.5 billion while other public holders, which had reduced such holdings by \$1.3 billion in the fourth quarter, added \$2.6 billion of these issues. After mid-February, interest rates tumbled still further. Desk purchases of \$687 million of over-one-year securities contributed to a further steep decline in interest rates, which carried the three- to five-year rate down to  $4\frac{1}{2}$  percent by mid-March.

The Committee's April 6 decision to move toward firmer money market conditions, and the Desk's response to continuing overruns in  $M_1$  during April, led to a drastic revision in interest rate expectations. System purchases of \$196 million of over-one-year issues in the April 14 statement week took a portion of the securities being pressed for sale. But the yield on three- to five-year issues rose in almost a straight line to  $6\frac{1}{4}$  percent by mid-May as the dealers and weekly reporting banks together reduced their positions by about \$700 million. The rise of  $1\frac{1}{2}$  percentage points in yield was more than double the increase in the Federal funds rate over the interval. Concern over the rapid growth of  $M_1$ , the persistence of inflation and discouragement over Government leadership in this area, and the international monetary situation reinforced expectations of higher rates.

At the higher interest rates, other investors were willing to absorb still another \$800 million of over-one-year issues from these two groups over the next three weeks. At the end of the second quarter, the Government securities dealers had almost eliminated their inventories of over-one-year issues while the weekly reporting banks held \$200 million less than three months earlier despite a build-up of over \$1 billion in late June by virtue of a Treasury note financing. In the six weeks that preceded the President's mid-August program, the weekly reporting banks (exclusive of the bank dealers) again turned to cutting their inventories as  $M_1$  continued to grow and the Desk continued to resist by pushing up the Federal funds rate. However, by the time of the Treasury financing in late July, both the dealers and the weekly reporting banks appeared ready to assume some underwriting risk at the higher yields.

The dealers responded to the President's program by bidding up prices actively in the course of rebuilding their speculative positions by \$600 million in over-one-year issues in the four weeks ended September 8. System open market purchases of \$346 million in late August and September helped first to foster the decline in rates and then to relieve positions when market uncertainties about Phase Two developed in September. Most of the strong impetus to lower interest rates came, however, from strong expectations about what future System policy would be rather than from observed open market operations. There was also renewed hope that the new incomes policy would dampen inflation.

As October progressed, market participants saw the Desk move the Federal funds rate downward successively, in line with their expectations. The sluggish behavior of  $M_1$  and lackluster business news reinforced expectations that a still more expansive System policy would be forth-

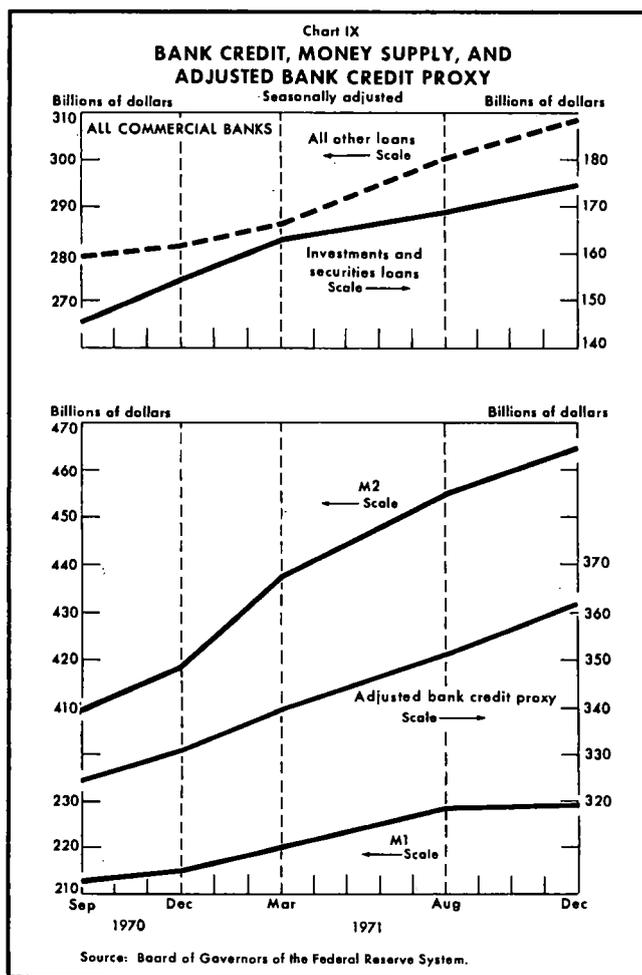
coming. The weekly reporting banks joined the Government securities dealers in adding to positions in October, pushing yields on three- to five-year issues down about ½ percentage point in the process. At the lower yields, tremendous enthusiasm developed among all investors in the Treasury's pre-refunding in late October. Accordingly, the over-one-year positions of dealers were \$2.1 billion higher on November 17 than at the end of September, and the weekly reporting banks showed a similar increase. Other public holders, which had been selling earlier, also subscribed heavily so that their positions rose by \$5.6 billion. Not surprisingly, this enormous overhang of new securities exerted some upward pressure on yields, despite the continued easing of money market conditions by open market operations and two cuts in the Federal Reserve discount rate. However, System purchases of \$824 million of over-one-year Treasury coupon issues during the last seven weeks of the year largely contained the upward pressure. There was also relief at the absence of foreign selling of Treasury bills, and yields were again tending lower at the year-end.

**The effect of bank investment strategy on bank credit.** The shifts in bank and dealer behavior triggered by monetary policy left an important trace on bank credit as well as on interest rates. First, the loan demands of Government securities dealers and other underwriters provided an exogenous credit demand. Then, there was the aggressive pursuit of short-term gains by banks—in tax-exempt and Federal agency as well as Government issues. In this way, a major part of the outpouring of new securities by these issuers was underwritten by the dealers and trading banks and more solidly placed over time with the banking system. The major banks financed the dealers and their own positions in part through the issuance of CDs and other short-term liabilities. The System's pursuit of aggressive ease early in the year also provided a sharp rise in bank time deposits as individuals switched from the Treasury bill market. When the dealers and trading banks sharply reduced their underwriting positions in the April-August period, there was corresponding pressure on the growth in bank liabilities—through a reduction in their financing needs and reduced switching of savings from the markets to the banks.

The three main phases of System policy stand out clearly in Chart IX. In the fourth quarter of 1970, in which  $M_1$  was growing slowly, bank portfolios and dealer loans were growing rapidly. The pace of portfolio growth accelerated in the first quarter of 1971 to an annual rate of 14 percent, more than compensating for some decline in dealer lending. Loan growth was comparatively sluggish. In the five months that ended in August, there was a marked decline

in the growth of bank investments while dealer lending fell still further. Loan growth picked up in this period—chiefly because of the growth in consumer and mortgage loans, although business loans also spurted in August as corporations moved funds abroad. With the swing in expectations brought by the President's program, bank investments in municipal and Federal agency issues spurted over the last four months, and lending to securities dealers also rose substantially. However, the banks' net acquisition of short-dated Treasury issues was less than seasonal as foreign central banks financed most of the Treasury's seasonal need. Mortgage and consumer loans continued to grow at a good pace, but business loans relapsed into quiescence.

The System-induced swings in investment strategy and in bank intermediation were also reflected in the behavior of total liabilities during the year. As the System



pushed short-term rates lower in the fourth quarter of 1970, the adjusted credit proxy rose at a 7.8 percent annual rate in that quarter and  $M_2$  at an 8.8 percent rate, while  $M_1$  grew at a 3.8 percent rate. In the first quarter of 1971,  $M_2$  grew at an 18.1 percent rate while the proxy rose at a 10.9 percent rate, as banks used the System-induced inflow of time deposits to replace Euro-dollar and other high-cost liabilities.  $M_1$  grew at a 9.1 percent rate in the first quarter. In the five months ended in August, the proxy slowed down to about an 8 percent growth rate, reflecting the System's posture of increasing restraint on reserves with its associated change in the banking system's cost-profit calculus. The System-induced rise in short-term interest rates also cut back on the switching of funds from marketable securities to the banks and  $M_2$  growth slowed to a 9.6 percent annual rate. The growth in  $M_1$  continued strong at 9.1 percent. Finally, in the last four months of the year, as the System pressed short-term rates lower, time deposit growth speeded up sharply. The bank credit proxy grew at a 9.3 percent rate over the interval, and  $M_2$  at a 6.7 percent rate.  $M_1$ , however, slowed to a 0.3 percent growth rate.

#### SOME LESSONS OF THE 1970-71 EXPERIENCE

The divergent behavior of the monetary and credit aggregates during the recent past provides additional evidence on the Committee's continuing problem of specifying the intermediate-term objectives of open market operations. The fluctuating behavior of  $M_1$  made it a peculiarly elusive target in the particular economic environment prevailing during this period.  $M_1$  did not respond quickly to the changing impact of open market operations on reserves and interest rates. At the same time,  $M_1$  did respond to variations in the public's demand for it for precautionary and other reasons that are imperfectly understood. In particular, precautionary balances apparently were built up in the second quarter, when concern with inflation and unemployment were high, and reduced later in the year after the President's new economic program raised hopes of progress on both these fronts.

Recent experience suggests that  $M_1$  responds only slowly to the changes in nonborrowed reserves and the Federal funds rate initiated by System open market operations. To be sure, the decline in the Federal funds rate from October 1970 to February 1971 was followed by a more rapid growth of  $M_1$  beginning in February. And the rise in the Federal funds rate from March to August was fol-

lowed by a retardation of  $M_1$ 's growth in August. But the lag in the response of  $M_1$  appears rather long, perhaps on the order of four to six months, although independent shifts in the public's demand schedule for  $M_1$  during the period may well have distorted  $M_1$ 's actual response to System operations.

On the other hand, both  $M_2$  and the credit proxy were reasonably sensitive to the System's influence, exerted through short-term interest rates. The time and savings deposits included in  $M_2$  responded to System-initiated changes in the attractiveness of such deposits relative to short-term marketable securities. The adjusted bank credit proxy—which includes CDs, Euro-dollars, and Treasury deposits—incorporated the member bank response both to these savings inflows and to the changing interest rate outlook as it affected bank portfolios. Both  $M_2$  and the credit proxy responded to shifts in open market operations within one to three months—with the credit proxy the more stable of the two series.

The Committee, of course, did not concentrate solely on monetary aggregates during 1971. In the second quarter, in particular, it was very much concerned that a substantial rise in long-term interest rates might undermine the economic recovery then under way. The System's moves toward restraint were accordingly more gradual than they would have been had  $M_1$  been the sole guide.  $M_2$  and the bank credit proxy did reflect fairly promptly the Committee's shift in direction. Their behavior, in combination with the movement in interest rates, suggests that open market operations were exerting a drag on bank credit creation during the summer even though  $M_1$  was growing rapidly.

The Committee's formulation of its quantitative policy strategy depends upon the kind of relationships it perceives between the aggregates and economic activity, and upon the protection that a given strategy offers against major error. This report has not focused on the larger policy issue of which measures of monetary expansion and credit conditions most accurately indicate the degree of financial stimulation or restraint appropriate to the particular needs of the economy. From the Desk's vantage point, however, the 1970-71 experience suggests that the Committee is better served by an examination of the full range of information provided by the three aggregates and interest rates than by preoccupation with any single measure. In terms of operating instructions, the Committee may find it desirable to use all three aggregates as a protection against unforeseen, and often temporary, demand shifts affecting a particular aggregate.