Open Market Operations in 1972

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 function, was primarily responsible for preparation of the report.*

Federal Reserve policy during 1972 sought to promote the moderate monetary growth deemed essential to a strong economic expansion and to continued progress in dampening inflation. As in 1970 and 1971, the Federal Open Market Committee (FOMC) included the rate of growth of the money stock—private demand deposits plus currency in the hands of the public—as one of its important policy objectives. Once again, M_1 proved an elusive target. It grew at the relatively rapid rate of 8.3 percent over the year (see Chart I), well above the rate of other recent years. M_2—M_1 plus time and savings deposits exclusive of large negotiable certificates of deposit (CDs) —also grew rapidly, expanding at a 10.8 percent rate over the same period. The adjusted bank credit proxy—a close approximation of total member bank liabilities, exclusive of capital—grew at an 11.6 percent rate.[1]

The Committee adopted in February a reserve-targeting procedure for guiding open market operations. Under this procedure, which is described more fully below, the Committee formulated its operating instructions to the Desk in terms of tolerance ranges for the growth of reserves available to support private nonbank deposits (RPD). Typically, the Committee specified an expansion of this measure over a two-month period that the staff believed would mesh with the growth desired for the monetary aggregates. If RPD growth appeared likely to exceed its prescribed tolerance range, for example, the instructions called for the Desk to provide nonborrowed reserves more grudgingly to the banking system so long as the average Federal funds rate did not move out of the tolerance range established by the Committee. In consequence, nonborrowed reserves grew at a 6.0 percent rate over the year, compared with growth rates of 9.7 percent and 9.5 percent recorded for RPD and total reserves, respectively.

The economic recovery, which had seemed sluggish through much of 1971, gathered steam in 1972, reducing unemployment and the margin of unused capacity in the process. In 1970 and 1971, open market operations had pressed reserves on the banks to spark the monetary and credit creation needed to improve liquidity and to spur the credit-financed spending essential to economic revival. But in 1972 the quickening pace of the economy itself augmented the demands for money and credit falling on the banking system. The Federal Reserve's role shifted to resisting the banking system's demand for reserves as the banks sought to satisfy strong loan demands from the housing, business, and consumer sectors while continuing to add to their investment in securities.

Open market operations began the year on an expansive note as the Committee sought to make up for the sluggishness of M_1 in the latter part of 1971. By early February the ready availability of nonborrowed reserves had pushed the Federal funds rate down to 3¼ percent from 4¾ percent in early December. In the latter part of February, however, both RPD and the money stock began to grow rapidly. Under the new RPD procedures, the Desk promptly held back on the provision of nonborrowed reserves relative to the growth of reserve requirements, and the Federal funds rate rose within three weeks to the

[1] Since the FOMC sought in early 1972 to make up for the slow M_1 growth of the fourth quarter of 1971, the fifteen months ended in December 1972 provide perhaps a more appropriate time period for judging the behavior of the aggregates. Over this interval, M_1, M_2, and the credit proxy grew at rates of 7.0 percent, 10.6 percent, and 11.4 percent, respectively.

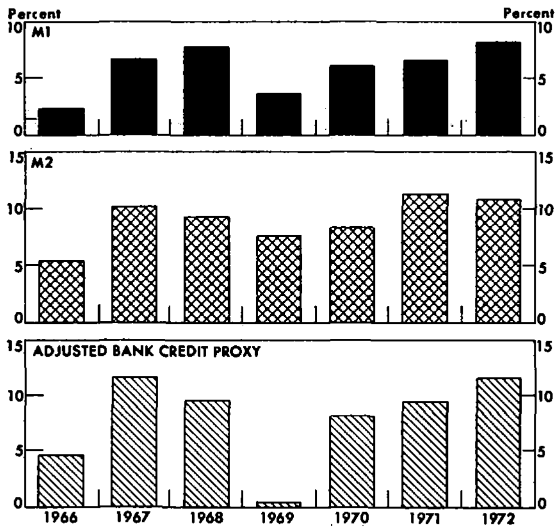


Chart I
CHANGES IN MONEY SUPPLY AND ADJUSTED BANK CREDIT PROXY

M1 = Currency plus adjusted demand deposits held by the public.

M2 = M1 plus commercial bank savings and time deposits held by the public, less negotiable certificates of deposit issued in denominations of $100,000 or more.

Adjusted bank credit proxy = 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.

Source: Board of Governors of the Federal Reserve System.

upper limit of the Committee's prescribed tolerance range. Subsequent periods of strength in RPD and M_1 led to a further moderate shift in operations, bringing the Federal funds rate about in line with the 4½ percent Federal Reserve discount rate at midyear. The growth in M_1, in fact, slowed to 6.1 percent in the second quarter from 9.2 percent in the first.[2]

By midyear, the economy was clearly moving ahead strongly while a resurgence of speculative international currency flows to Europe and Japan provided cause for concern. A burst of M_1 growth in July elicited further System efforts to damp down the provision of nonborrowed reserves, and the Federal funds rate rose to about 5⅛ percent near the end of the third quarter. However, a sharp reaction in market interest rates from mid-August to mid-September required the Manager of the System Account, under the FOMC's instructions, to avoid further reserve pressure. At about this point, the growth of both RPD and M_1 began to moderate, so that no further adjustments in reserve strategy were required under the RPD procedure for a number of weeks. About mid-November, M_1 and RPD again began to grow rapidly and open market operations again resisted the demand for reserves. The Federal funds rate rose to around 5⅜ percent at the year-end, compared with 4 percent a year earlier.

System efforts to restrain the growth of nonborrowed reserves over the year were reflected in the rise of member bank borrowings at the Reserve Banks from a minimal level of $33 million in February to $1,050 million in December. The Federal funds rate rose in parallel fashion from 3¼ percent to 5⅜ percent. Other short-term interest rates followed suit. The banks aggressively expanded their negotiable CDs to meet their loan demands—with the rate on 60- to 89-day CDs rising to 5⅜ percent in December, up 1⅜ percentage points over the year. Treasury bill rates increased as well, although there were several times

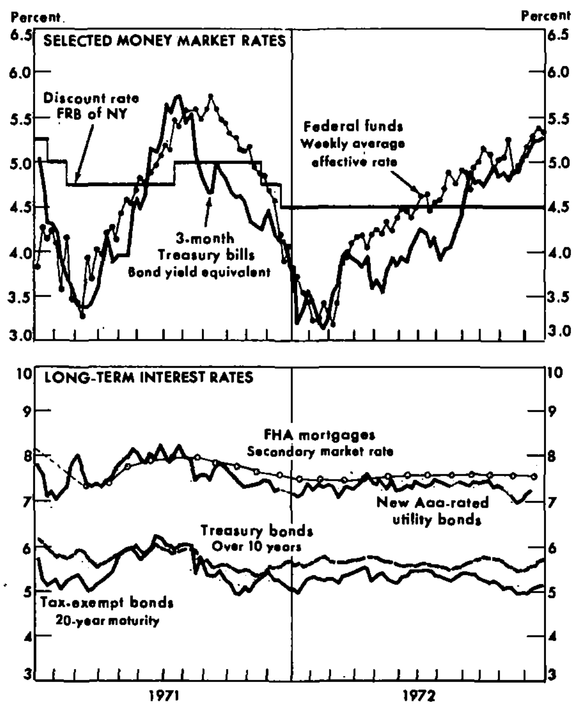


Chart II
SELECTED INTEREST RATES

Sources: Board of Governors of the Federal Reserve System, Federal Reserve Bank of New York, and The Bond Buyer.

[2] These data on the aggregates reflect the revisions of early 1973. The data used later in describing operations during the year are those available at the time.

during the year when foreign central bank demand depressed bill rates relative to rates on other instruments. At the year-end, the three-month bill rate was bid about 5⅛ percent, 146 basis points above the level one year earlier.

In contrast, interest rates in the capital markets were comparatively stable over the year (see Chart II), as inflationary expectations diminished and demands for long-term credit proved moderate. Corporate borrowing in the long-term bond markets declined appreciably from the previous year. Municipal borrowing also receded somewhat toward the end of the year, as tax collections and Federal revenue sharing helped rebuild liquidity at the state and local government levels. Mortgage credit grew at a record clip, but a good savings inflow, thrift industry liquidity, and the growth of real estate investment trusts sustained the high volume of activity with little increase in yields. United States Government coupon issues traded in a narrower range of yields than in many years, although heavy Treasury financing in the last quarter contributed to a rise near the end of the year.

THE COMMITTEE'S RESERVE-TARGETING STRATEGY

The Committee's choice of a reserve strategy for open market operations in February continued the evolutionary search for more effective means of pursuing the Committee's long-term objectives for the monetary and credit aggregates. As the year progressed, the Desk developed new operational procedures and the Committee modified its own formulation of instructions to the Desk. For the Manager of the Open Market Account, the reserve approach necessitated formulating the Trading Desk's weekly operational targets explicitly in terms of reserves and changing the weekly reserve targets in accordance with the FOMC's new instructions.

THE FOMC'S INSTRUCTIONS TO THE MANAGER. The Committee embodied its reserve strategy in a set of interlocking instructions that together specified how the Manager should respond to incoming information on reserves and the aggregates between FOMC meetings. The Committee expressed its primary instruction in terms of RPD—i.e., total reserves less reserves required for United States Government and interbank deposits. Drawing on alternative specifications prepared by its staff for each meeting, it established a tolerance range for the growth of RPD from the calendar month before the FOMC meeting to the calendar month after the meeting. This corresponded approximately to the deposit behavior required in the four weeks after the FOMC meeting to move in the direction of the Committee's longer term goals for the aggregates.

During much of 1972, the Committee was concerned primarily with overly rapid growth of the money stock (M_1) and other aggregates. The Committee's reserve instruction ensured that, if the projected growth of RPD rose toward the top of its tolerance range, or above it, between meetings, the Manager was to retard the growth of nonborrowed reserves relative to deposit growth. This process would bring upward pressure on the Federal funds rate and member bank borrowings at the Reserve Banks. In time the portfolio adjustments set in motion by higher short-term interest rates would be expected, *ceteris paribus*, to dampen the growth of private deposits and RPD.

The Committee also stipulated, however, that it wished to avoid both sharp short-run fluctuations in money market conditions and undesirably large cumulative deviations in money market conditions in either direction in the interval between meetings. To this end, it chose a tolerance range within which the Manager could move the Federal funds rate between meetings. The Committee also indicated that—even if RPD were on target—allowance should be made for any significant deviations that developed between the actual rates of growth in the aggregates (mainly M_1) and the growth rates desired, because of a shift of the multiplier from that expected by the staff. Finally, it was understood that the Chairman might call upon the Committee to consider the need for supplementary instructions if serious problems arose in the attempt to achieve the Committee's multiple objectives.

These specifications of a response function for the Desk differed in a number of ways from those that had prevailed in 1971. In that year, the FOMC had called for the Desk to respond by varying the Federal funds rate promptly when the most recent information on M_1, M_2, and the credit proxy indicated a significant deviation from their respective tracking paths. The FOMC had prescribed generally modest changes in the Federal funds rate, giving considerably more weight to M_1 than to the other two aggregates.[3]

The intent of the new approach was to attempt to achieve better control of the aggregates through focusing on reserves as a handle for those aggregates. At the same time, use of the two-month growth rate provided a procedure

[3] Alan R. Holmes and Paul Meek, "Open Market Operations and the Monetary and Credit Aggregates—1971", *Monthly Review* (Federal Reserve Bank of New York, April 1972), pages 79-94.

for smoothing out swings in weekly data, whereas this had previously been done judgmentally by the Manager. It also appeared to be part of the Committee's intent to permit greater changes in the Federal funds rate than had been allowed previously.

THE MANAGER'S OPERATIONAL STRATEGY. In evolving practice, the Manager and his staff formulated each week's reserve targets on Friday morning in the light of new information on RPD and the other aggregates. At that time, both the Board of Governors and the New York Bank staffs presented new estimates of how RPD might grow over the prescribed two-month interval at current interest rates. Subordinate detail on the expected weekly behavior of RPD was included. The two staffs also presented their projections of the behavior of M_1, M_2, and the credit proxy for the remainder of the calendar quarter, and—near the end of the quarter—for the following quarter as well. Again there was subordinate weekly detail for the period leading up to the next FOMC meeting.

The starting point for the weekly review of strategy was the behavior of RPD itself—both for the weeks on which hard data were available and for the two-month interval. Suppose RPD were running above its weekly path and were projected above the top of its two-month tolerance range. The Manager would first examine whether this overrun resulted from such technical factors as higher excess reserves or a shift in the distribution of deposits toward banks with higher average reserve requirements, both relative to the assumptions made by the FOMC staff in drawing up the RPD path. If RPD strength persisted after allowance for these technical factors, the behavior of M_1 and the other aggregates relative to the Committee's desires had to be considered. If these aggregates were also in excess of the desired levels, then the Manager would set a weekly reserve target that involved scaling back the level of nonborrowed reserves relative to the behavior of deposits. (If, on the other hand, M_1 were on track, the Desk would tend to give less weight to RPD strength in setting its weekly targets.)

As noted earlier, the FOMC's choice of a reserve-oriented strategy led to a recasting of the Desk's weekly operational targets. For the first statement week after the FOMC meeting, the Desk developed a reserve target that it believed was consistent with the FOMC's initial money market conditions. The Desk first estimated the volume of excess reserves expected for the week under the given initial conditions, allowing for historical patterns and the carry-in from the preceding week of reserve excesses or deficiences by the banks. It then arrived at an estimate of total reserves for the week by adding its estimate of the likely level of excess reserves to required reserves, which were preestablished under lagged reserve accounting. The week's nonborrowed reserve target was then calculated by subtracting the member bank borrowing level associated with the initial Federal funds rate specified by the Committee.

The modification of weekly reserve targets in accordance with actual RPD behavior was quite straightforward under this procedure. If, for example, the behavior of RPD and the aggregates suggested the need to hold back on nonborrowed reserves, the Desk would increase the borrowing level to be subtracted from estimated total reserves to give the week's nonborrowed reserve target. (Typically, the Desk tended to move in $50 million increments.) The Federal funds rate could be expected to rise, and this was appropriate as long as it had not reached the upper end of the FOMC's tolerance range. This procedure provided for an orderly week-to-week progression in the Federal funds rate when RPD and the aggregates so indicated, but avoided sharp fluctuations in the rate.

RESERVE TARGETING IN OPERATION. The Desk's experience immediately after the February 15 meeting provides a case study of the new procedures in operation. The FOMC's instructions specified a 6-10 percent range for the growth of RPD from January to March. The Federal funds rate was expected initially to average around 3¼ percent, well below the Federal Reserve discount rate of 4½ percent.

On February 18, the Desk learned that RPD for January had been revised downward sufficiently to add about 1 percentage point to the January-March growth rate. The Board staff's new estimate of that growth was 9 percent—about the middle of the range, allowing for the January revision—but the New York estimate was about 12 percent because of stronger expectations of growth in private nonbank deposits through mid-March. By February 25, incoming data showing pervasive deposit strength led both staffs to project RPD growth over the two months near the upper end of the FOMC's tolerance range. Moreover, the first-quarter growth rates of M_1, M_2, and the bank credit proxy appeared somewhat above what the Committee had expected. Some downward revision in weekly nonborrowed reserve targets was therefore indicated, carrying with it the likelihood that the Federal funds rate would rise.

The reserve outlook on February 25 for the March 1 statement week is shown in the table. With excess reserves estimated at $270 million, bank demand for total reserves for the week was expected to approximate a daily average of $31,795 million (line 3). Given the strength in RPD, it appeared appropriate to scale the nonborrowed reserve target down to around $31,700 million (line 4) rather than to continue supplying sufficient nonborrowed reserves to hold the Federal funds rate near 3¼ percent. Turning to prospective sources of reserves, a rise in float and a decline in Treasury balances at the Reserve Banks were expected to combine with other market factors to provide a $1,091 million rise in nonborrowed reserves (line 6). System open market operations undertaken prior to Friday would more than offset this, draining $1,148 million of reserves (line 7). Even so, projected nonborrowed reserves were still in excess of the targeted level (line 10). The reserve projections indicated a need to absorb a moderate amount of reserves through open market operations.

In the event, the Desk concluded that nonborrowed reserves were even more abundant than the statisticians were estimating, because reserves appeared to be abundant in the Federal funds market. It acted on Friday, February 25, to lower the week's average nonborrowed reserves by $321 million. On Monday, the reserve reports showed that market factors had supplied far more reserves than expected on Friday so that nonborrowed reserves still appeared above target. On Monday, Tuesday, and Wednesday, System operations absorbed an additional $1,380 million of reserves or about $200 million on a daily average basis for the statement week. Federal funds traded predominantly at 3¼ percent on Tuesday and Wednesday, with some trading as high as 3⅝ percent on the final day of the statement week (see Chart III). On balance, although nonborrowed reserves came out close to target, the average Federal funds rate of 3.18 percent was below what was implied by Friday's decision that nonborrowed reserves should be kept under a tighter rein.

On Friday, March 3, RPD continued to look on the high side for the weeks ahead, and the aggregates remained strong. The Desk again undertook to hold nonborrowed reserves below the estimated bank demand for total reserves, expecting that this would cause the Federal funds rate to rise to around 3½ percent. The projections indicated that market factors and previous System operations would drain $307 million of nonborrowed reserves (line 8), so that no further System action to absorb reserves was indicated. Upward pressure on the Federal funds rate on Thursday and Friday indicated that nonborrowed reserves appeared to be behaving as desired. No System action turned out to be required during the statement week. Federal funds traded chiefly at 3⅜ percent before the weekend, and 3½ percent thereafter. On the statement date, March 8, the banks bid up the rate as the extent of the

RESERVE ESTIMATES AND DATA — 1972

Daily average; in millions of dollars; not seasonally adjusted

	March 1 week as of		March 8 week as of		March 15 week as of	
	February 25	March 3	March 3	March 10	March 10	March 17
Bank demand for reserves:						
1. Required reserves	31,525	31,525	31,323	31,323	31,713	31,713
2. Excess reserves	270*	213	200*	167	250*	405
3. Total reserves	31,795*	31,738	31,523*	31,490	31,963*	32,118
4. **Approximate Desk nonborrowed reserve target**	31,700		31,400		31,850	
Sources of nonborrowed reserves:						
5. Nonborrowed reserves for preceding week	31,855	31,855	31,668	31,668	31,387	31,387
Change in nonborrowed reserves in current week:						
6. Market factors	+1,091*	+1,520	− 456*	− 431	+ 128*	+ 347
7. System operations	−1,148	−1,705	+ 149	+ 150	+ 11	+ 370
8. Total change	− 57*	− 185	− 307*	− 281	+ 139*	+ 717
9. Nonborrowed reserves* for current week (5 +8)	31,798*	31,670	31,361*	31,387	31,526*	32,104
10. **Nonborrowed reserve target less projected nonborrowed reserves (4—9)**	− 98*		+ 39*		+ 324*	

Note: Reserve data are those employed at the time; data do not reflect revisions made subsequently.
*Projected.

cumulative reserve deficit became apparent. The rate rose as high as 4½ percent and member banks borrowed $704 million that night at the Reserve Banks (see Chart III). In the afternoon, even though it was too late to affect reserves that day, the Desk bought $76 million of Treasury coupon issues for delivery the next day, using the only channel open to it to indicate resistance to the sharp rise in the Federal funds rate.

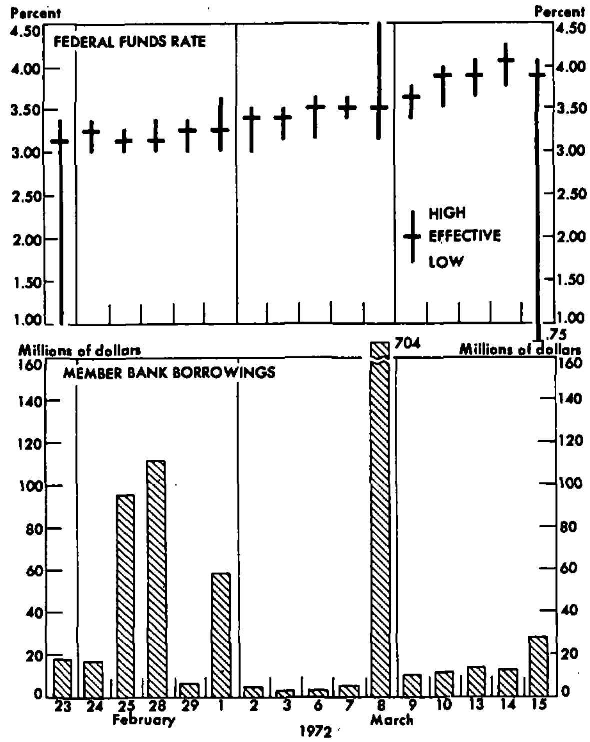
On Friday, March 10, the RPD estimates suggested a January to March growth rate of 10 to 11 percent, of which 1 percent still reflected the downward revision of January's data since the FOMC meeting. However, these estimates included lower excess reserves than assumed in the construction of the tolerance ranges and there had also been an unexpected shift of deposits toward "country" banks, which lowered the average required reserve ratio. M_1 growth for the first quarter was projected at 2 percentage points higher than had been expected at the February 15 meeting, and M_2 and the credit proxy were similarly strong. Accordingly, the Manager again planned to be a reluctant supplier of nonborrowed reserves.

The reserve outlook on March 10 was such that the interbank market for reserves—the Federal funds market—should have experienced considerable demand pressure. Member bank demand for total reserves in the March 15 statement week was expected to rise by $473 million from the previous week by virtue of a $390 million increase in required reserves for the week and the Desk's estimate that excess reserves would also rise. Since market factors and previous System action were expected to supply only a moderate amount of reserves, nonborrowed reserves were estimated to be more than $300 million below target. In this situation, the Federal funds rate opened on Friday, March 10, at 3¾ percent and began to rise further. At this point the Desk stepped in to supply reserves, chiefly through repurchase agreements, adding $252 million on average to weekly nonborrowed reserves. After the weekend, strong bank demand for reserves pushed the Federal funds rate to 4 percent. The Desk injected reserves on Monday and Tuesday, raising daily average nonborrowed reserves for the week by an additional $104 million. Market factors were also supplying an unexpectedly large volume of reserves (line 6). On Wednesday, March 15, member banks discovered belatedly that they had accumulated reserves substantially in excess of their requirements and Federal funds traded as low as ¾ percent (see Chart III).

The initial experience with reserve targeting after the February 15 meeting underscored one important point. The new procedure was effective in prescribing the Desk's response to incoming information, but that response did not assure that the RPD objective would be

Chart III

FEDERAL FUNDS RATE AND MEMBER BANK BORROWINGS FROM FEDERAL RESERVE BANKS



Sources: Board of Governors of the Federal Reserve System and the Federal Reserve Bank of New York.

attained. The Desk's management of nonborrowed reserves led to a ¾ percentage point rise in the Federal funds rate within a month, a somewhat larger change than the Committee had been willing to contemplate in previous years. RPD growth over the January-March interval turned out to be 9.9 percent, compared with the FOMC's 6 to 10 percent objective. However, after allowing for the January revisions and the unexpected behavior of deposit distribution and excess reserves, RPD, in fact, turned out to be about 1.5 percentage points above the upper end of the Committee's tolerance range.

The episode indicated that one month was too short an interval for the System's action to bring about the necessary change in private deposits, and hence in RPD. This result was quite consistent with System research findings that the lag from Desk action through nonborrowed reserves and the Federal funds rate to the response of deposits is measured in months rather than weeks. The mean lag from changes in the Federal funds rate to changes in private demand deposits was about four to five months in the Pierce-Thomson twelve-equation behavioral monthly model and in the Davis reduced-form equations.[4] According to both of these formulations, the principal impact on deposits of Desk-initiated changes in reserve management occurs beyond the four to five weeks ahead, and thus beyond the horizon of the FOMC's tolerance ranges. The RPD approach must be judged then on its effectiveness in triggering a Desk response appropriate to the FOMC's primary longer run objective of controlling the aggregates themselves. One cannot expect the Desk to be able to hit the FOMC's stated RPD objectives within the short period embraced by the FOMC's instructions if deposits depart significantly from the staff's estimates.

RESERVE TARGETING DURING 1972

MARCH-JUNE. By the March 21 FOMC meeting the Desk was managing reserves with a view to maintaining the Federal funds rate at 4 percent. The rise in the Federal funds rate had exerted upward pressure on other short-term interest rates. Treasury financing had also added \$4.6 billion to the market supply of bills in the intermeeting interval, and the three-month bill rate had risen by 87 basis points from February 14 to March 20. Interest rates on long-term securities had shown little change over the interval. The growth rates of the aggregates appeared quite strong. M_1, after three months of slow growth, appeared likely to expand at a rapid rate in the first quarter (see Chart IV). M_2 and the credit proxy were expected to grow even more rapidly over the same interval.

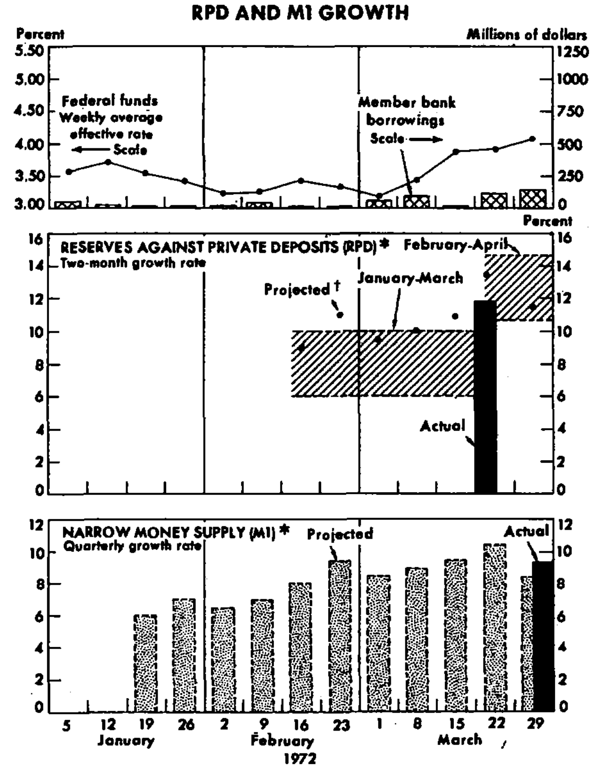
Against the background of a strengthening economic outlook, the Committee agreed that moderate growth in the aggregates was called for over the second quarter—rates of growth less rapid than appeared likely for the first quarter. The FOMC decided that a growth rate of 9-13 percent in RPD would be appropriate for the February-April period. The Committee was to be consulted if a marked rise in the weekly average Federal funds rate seemed indicated.

Implementation of the Committee's instructions proved straightforward. Deposit growth continued strong, and RPD gravitated above the FOMC's tolerance range, albeit about 1 percentage point of the growth reflected allowable technical factors. M_1, M_2, and the credit proxy rose above their tracking paths, although not dramatically so. Consequently, nonborrowed reserves were persistently held down, and average member bank borrowings at the Federal Reserve discount window rose to \$106 million in the four weeks ended April 12, compared with \$43 million in the preceding five weeks. The Federal funds rate rose from 4 percent to 4¼ percent over the intermeeting period. The upward pressure on both borrowings at the discount window and the Federal funds rate tended to be concentrated on Wednesdays, when the accumulated reserve deficiencies resulting from the System's reserve management had to be settled.

New questions of interpretation of the RPD targeting procedure arose in the interval after the FOMC's April 18 meeting. The Committee established a 7-11 percent

Chart IV

MONEY MARKET CONDITIONS AND WEEKLY FORECASTS OF RPD AND M1 GROWTH



*Seasonally adjusted annual rates.
†As of two days after end of statement week shown.
Sources: Board of Governors of the Federal Reserve System and the Federal Reserve Bank of New York.

[4] Thomas D. Thomson and James L. Pierce, "A Monthly Econometric Model of the Financial Sector" (paper presented at the May 1971 meeting of the Federal Reserve System Committee on Financial Analysis), and Richard G. Davis, "Estimating Monthly Changes in Deposits with Reduced-Form Equations" (unpublished manuscript, Federal Reserve Bank of New York, April 1972).

tolerance range for the March to May growth in RPD at that meeting (see Chart V). The major objective continued to be a slower second-quarter growth rate for the aggregates than had prevailed in the first quarter. Through May 5, projections of RPD over the two-month interval tended to creep up. M_1 and M_2 were close to the path, and the credit proxy was running quite strong relative to expectations. The Desk continued to supply nonborrowed reserves a step behind the banking system's demand for reserves. On May 12, however, new data on M_1 suggested much weaker than expected behavior, so that RPD growth for the two-month interval was scaled down to about 8.5 percent. Projected growth of M_1, M_2, and the adjusted credit proxy for the second quarter remained quite strong.

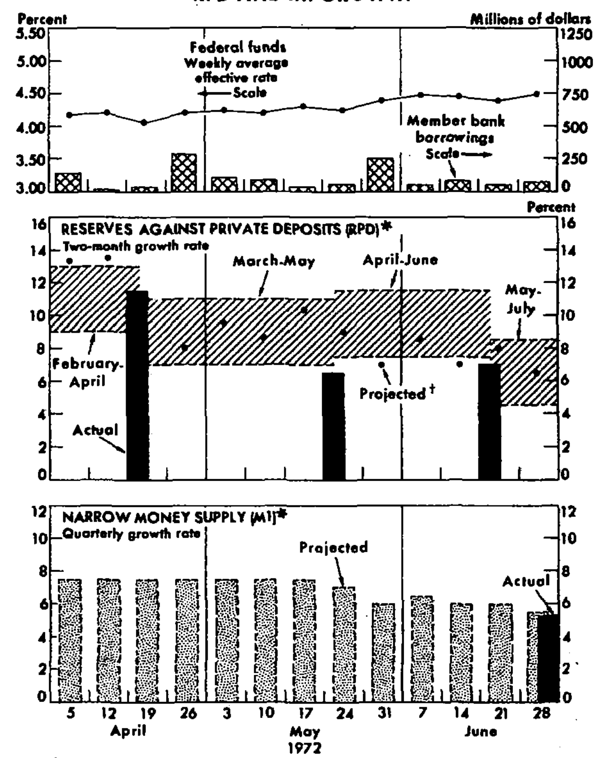
The Manager felt at this point that discussions within the Committee and three months of experience had established that RPD was the handle through which the FOMC sought to control the aggregates rather than an end in itself. In emerging practice, account had already been taken of variations in excess reserves and in the average reserve ratio. With the aggregates still expected to be quite strong for the second quarter, it did not seem appropriate to become more generous in the provision of nonborrowed reserves. Member bank borrowings at the Reserve Banks averaged $113 million in the five weeks ended May 17, about the same as in the previous four weeks. The Federal funds rate continued to fluctuate around the 4¼ percent level.

At both its May 23 and June 19-20 meetings, the Committee reiterated its desire to achieve moderate rates of growth in the monetary aggregates over the months ahead. In each case, it was expected that the RPD tolerance ranges established might necessitate some firming of money market conditions. Committee discussion, however, made clear that additional consultation would be in order if the Federal funds rate were to rise sharply.

After both meetings, the RPD and aggregate estimates were initially on the strong side, but subsequently turned weak. The Manager responded to strength in late May by supplying nonborrowed reserves sparingly, pushing the Federal funds rate toward 4½ percent. As weakness appeared, he shaded upward his weekly nonborrowed reserve targets, and the rate moved to around 4⅜ percent. Responding to initial strength in RPD and the aggregates after the June meeting, the Manager became a more reluctant supplier of nonborrowed reserves. Member bank borrowings at the Reserve Banks rose, and the Federal funds rate moved up to trade around the 4½ percent discount rate. As weakness in RPD developed, the Desk again planned to be a less reluctant supplier of reserves. But reserves fell persistently short of expected levels and

Chart V

MONEY MARKET CONDITIONS AND WEEKLY FORECASTS OF RPD AND M1 GROWTH



*Seasonally adjusted annual rates.
†As of two days after end of statement week shown.
Sources: Board of Governors of the Federal Reserve System and the Federal Reserve Bank of New York.

member banks also borrowed little on the June 30 statement publishing date. The resulting reserve deficiencies led to strong upward pressure on the Federal funds rate around the July 4 holiday despite large System reserve injections. Banks responded by hoarding excess reserves in the following week and Federal funds continued to trade at 4⅝ percent and 4¾ percent before the weekend despite an abundance of nonborrowed reserves in the banking system. Thus, bank behavior and the problems of projecting nonborrowed reserves resulted for a time in greater than desired stringency in the money market.

JULY-SEPTEMBER. By the time the Committee met on July 18, the unintended firming of rates appeared advantageous. Private deposits had turned extraordinarily strong in the first two weeks of July, a development that had become clear only on July 14. RPD growth was now projected at the top of the 4½ to 8½ percent growth specified for May-July at the previous meeting. Reviewing these developments, the FOMC established a 3-7 percent tolerance range for RPD over the following two-month period (see Chart VI). M_1, which had risen at a 5.3 percent rate in the second quarter, was expected to grow somewhat faster in the third quarter, while M_2 and the credit proxy were both expected to grow more rapidly than M_1. The Desk was instructed to take account of the Treasury financing then in prospect, as well as capital market and international developments.

As the period unfolded, both private demand deposits and large CDs came in quite strongly, leading to a progressive increase in the projected growth of RPD over the two-month interval. The Account Management became more grudging with respect to nonborrowed reserves, expecting that money market conditions would become firmer and that a greater part of member bank reserve needs would be met through the discount window. The pace and extent of the System's moves were constrained, however, by the major Treasury financing under way during the period. The Federal funds rate rose from about 4⅝ percent at the time of the July meeting to about 4¾ percent by mid-August. Average member bank borrowings at the Reserve Banks rose in the four weeks ended August 9 to $249 million from $182 million in the preceding four weeks.

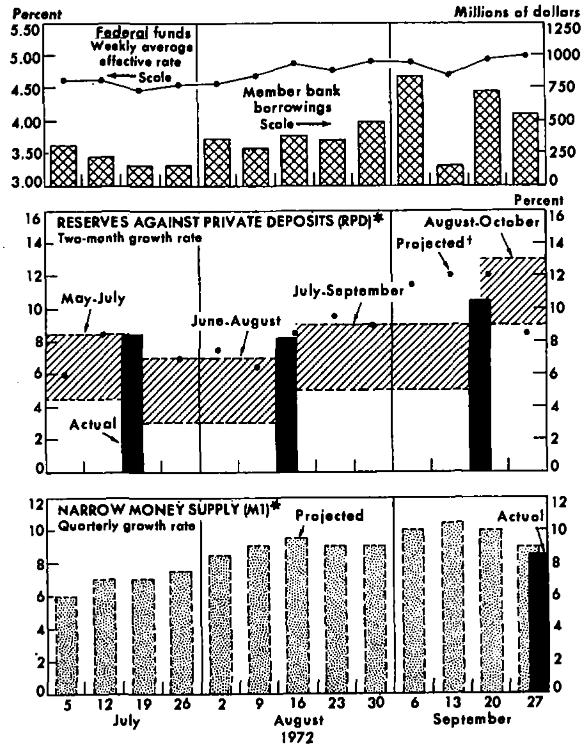
At its August 15 meeting the FOMC's staff indicated that M_1, M_2, and the credit proxy appeared likely to grow quite rapidly in the third quarter. The Committee agreed that the economic outlook called for moderate growth in the monetary aggregates over the months ahead. It decided that RPD growth in a 5-9 percent range for July to September would be appropriate, expecting this rate to bring some moderation in monetary growth. The Committee recognized that this goal might result in firmer money market conditions, but indicated that a marked firming should be avoided.

Soon after the meeting, RPD estimates rose to near the top of the range (after allowance for deposit distribution) and the monetary aggregates continued strong. Accordingly, moderate additional pressure was put on the banking system, with Federal funds expected to move up to around 5 percent. Extraordinary bank demands for excess reserves prior to the Labor Day weekend pushed the Federal funds rate well above this level despite large reserve injections by the Desk.

Against a background of announced Treasury borrowing in the bill market and expectations of a strong economic advance, a substantial reaction developed in the credit markets. The three-month Treasury bill rate increased from below 4 percent in mid-August to 4¾ percent by mid-September. Three- to five-year Govern-

Chart VI

MONEY MARKET CONDITIONS AND WEEKLY FORECASTS OF RPD AND M1 GROWTH



*Seasonally adjusted annual rates.
† As of two days after end of statement week shown.
Sources: Board of Governors of the Federal Reserve System and the Federal Reserve Bank of New York.

ment issues were up by almost 40 basis points in yield over the same interval. To avoid disruption in the credit markets, the Manager had to temper any further adjustments of weekly reserve targets. The task of reserve management was further complicated by a sharp rundown in the Treasury's balances at the Reserve Banks before the September 15 corporate tax date. The credit markets gradually stabilized at higher interest rate levels.

When the Committee met on September 19, it appeared that RPD would be about at the upper end of the Committee's 5-9 percent range for July to September, after allowance for deposit shifts and excess reserve levels. M_1 growth appeared likely to be considerably faster for the third quarter than the Committee had originally envisioned. The FOMC agreed that slower growth in the aggregates would be appropriate in the coming months. Such growth, staff analysis suggested, would involve an expansion rate of 9.5-13.5 percent for RPD from August through October. The FOMC decided to seek RPD growth preferably in the lower part of that range, unless disturbances arose in financial markets or growth in the aggregates fell far short of expectations. In view of the sensitive state of financial markets and the uncertainties associated with prospective changes in Regulations D and J, the Committee also decided that the Manager should give more than customary attention to money market conditions while avoiding marked changes in such conditions.

The Account Management's initial goal was to achieve reserve conditions consistent with a Federal funds rate of around 5⅛ percent and with member bank borrowings at the discount window of $450 million. During the period, incoming deposit data indicated that growth in the aggregates was moderating considerably, with M_1 growing only half as fast in September as had been previously projected by the Board staff. A little later RPD growth was expected to be just below the Committee's tolerance range. Since the slower growth in the aggregates and RPD was seen as broadly consistent with the Committee's longer term objectives, the Desk did not strive to make up for the shortfalls. It sought instead to foster the moderating trend by maintaining reserves only a touch more plentiful than at the beginning of the interval.

OCTOBER-DECEMBER. At the October 17 meeting, the FOMC modified its general approach to reserve targeting to distinguish more clearly between the Committee's targets and the staff's projections. It focused in a more formal fashion on the long-term targets for the monetary and credit aggregates that it believed were appropriate to the current economic outlook. Consistent with these longer term objectives, it would specify tolerance ranges for the growth not only of RPD but also of M_1 and M_2 over a two-month interval. It was agreed that the Desk should continue to put primary emphasis on RPD and to make allowance for unanticipated changes in excess reserves and the reserve-deposit multiplier. Attention should also continue to be given to the other aggregates. As for the tolerance range specified for the Federal funds rate, the Committee clarified its view that the Desk should shade the funds rate slightly higher (or lower) if the aggregates appeared to be close to the upper (lower) limits of their ranges. If the aggregates should be outside the range of tolerance, the Desk should move with greater vigor. The Committee agreed further that, if its various operating constraints appeared significantly inconsistent, the Manager should notify the Chairman who would decide whether the situation called for special supplementary instruction by the FOMC.

There was also some change in the Committee's approach to the menu of alternative policy courses presented to it by its staff. In preparing these, the staff seeks to develop two or three mutually consistent sets of relationships among RPD, M_1, M_2, the credit proxy, and short-term interest rates over a six-month period. This longer horizon allows adequate time for changes in nonborrowed reserves and interest rates to exert a substantial effect on M_1 despite the lags found by System research. The two-month operational horizon used in giving instructions to the Desk is too short for much feedback from operations to M_1. Accordingly, the near-term projections of the aggregates are more heavily influenced by staff judgments of other factors currently affecting them than by the impact of System operations within the next four to five weeks.

At the October meeting the Committee reduced the lower end of the two-month ranges for the aggregates that the staff had suggested were consistent with the FOMC's long-term objectives. For the September to November interval, it specified a growth rate of 6-11 percent for RPD. Over the longer term the Committee envisioned growth objectives that were appreciably more moderate than the growth rates experienced in the third quarter.

In the event, RPD and the aggregates remained within the Committee's tolerance ranges during the next five weeks.[5] Slower than anticipated growth in demand deposits at member banks kept RPD growth near the bottom of its range, and M_1 growth was also acceptable. Growth in consumer-type time and savings deposits led to moderate strength in M_2, and the credit proxy remained quite strong. Against this background, the Trading Desk's weekly nonborrowed reserve targets continued to be chosen to produce member bank borrowings at the discount window of about $450 million with the expectation that Federal funds would trade at 5 percent or a shade above.

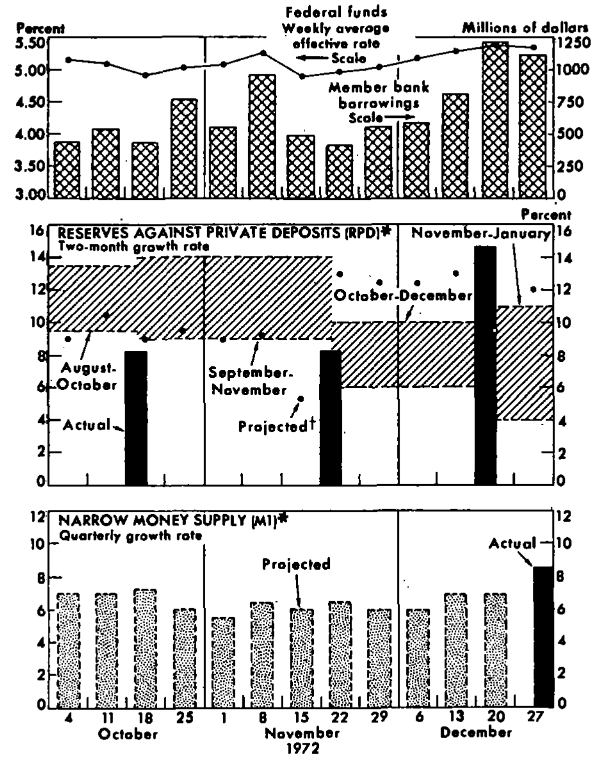
At its November 21 meeting, the Committee shaped its instructions to call for a prompt Desk response should M_1 and M_2 growth begin to pick up. The RPD growth range was set at 6-10 percent for October to December, a rate intended to support more moderate growth than the annual rates of about 8.5 percent for M_1 and 9.5 percent for M_2 recorded over the third quarter.

In the next four weeks the growth of deposits and RPD did accelerate, and the Desk became progressively more

[5] Following the Board's decision on October 24 to implement the amendments to Regulations D and J as of November 9, 1972, the range of tolerance for the RPD growth rate was modified to 9-14 percent as a technical adjustment to the regulatory changes. (see Chart VII).

Chart VII

MONEY MARKET CONDITIONS AND WEEKLY FORECASTS OF RPD AND M1 GROWTH



*Seasonally adjusted annual rates.

† As of two days after end of statement week shown.

Sources: Board of Governors of the Federal Reserve System and the Federal Reserve Bank of New York.

grudging in its management of nonborrowed reserves. By December 15, RPD was expected to grow at 12½-13 percent over the interval, although deposit shifts toward banks with higher reserve requirements accounted for much of the excess above the FOMC's 6-10 percent range. For the two months, M_1 and M_2 were expected to grow faster than the tolerance ranges selected by the FOMC. The Desk responded by choosing weekly nonborrowed reserve targets to produce successively higher levels of member bank borrowings at the discount window, in the process allowing the Federal funds rate to rise to about 5½ percent. By December 15, the borrowing objective had been lifted from $450 million at the beginning of the period to $650 million (including a $50 million allowance for transitional borrowing associated with the changes in Regulations D and J).

The Desk's operations during the interval were complicated by the difficulty of projecting market factors affecting reserves in the wake of the changes in Regulations D and J. In such circumstances, more reliance than usual had to be placed on the Federal funds market for indications of reserve availability, but member banks reacted initially to the increased pressure on their reserve positions by rather heavy recourse to the discount window. Such borrowing rose, in consequence, more than desired, averaging $1,223 million in the statement week ended December 20. The Federal funds rate gradually rose from around 5 percent to average 5.38 percent in the week ended December 20.

The Committee at its December meeting based its operational instructions to the Desk concerning RPD, M_1, and M_2 on the more restrictive of the options presented by the staff. On this occasion, the staff expected fairly rapid growth in RPD and M_1 from November to January, given the strength already indicated for the first two weeks in December. The Committee, in consequence, reduced the lower end of the staff's proposed tolerance range, making clear that it did not want any relaxation of pressure on the banks unless the aggregates were to turn very weak indeed. The two-month RPD range was set at 4-11 percent. It was understood that the Treasury's forthcoming sale of a long-term bond might well constrain the Manager's ability to respond to incoming information on the money and credit aggregates.

After the meeting, new data on both M_1 and M_2 suggested that both were turning out near the upper end of their respective tolerance ranges. Thus, the reins were tightened a bit further on nonborrowed reserves. But member banks, confronted with the special uncertainties that typically affect reserves during the holiday season, turned to the discount window heavily. This relieved the demands made on the Federal funds market so that the Federal funds rate averaged 5.34 percent in the December 27 week, little changed from the previous week. Pressures mounted in the following week and the rate averaged 5.61 percent, about as intended.

CONCLUDING COMMENTS

As it functioned in 1972, reserve targeting proved a workable means of providing operational instructions to the Manager for conducting System open market operations. The FOMC established in advance the direction and magnitude of the Manager's response to future developments in RPD and the aggregates. Its tolerance ranges for the aggregates and Federal funds rate constraints worked to produce a smooth System response to the strength that developed in M_1 and the other aggregates during the year. The Federal funds rate was no more volatile on a week-to-week basis than in other recent years. The new procedures caused no special problems for financial markets. They also continued to generate clear signals of the System's response to the behavior of the aggregates, and to foster thereby the portfolio adjustments consistent with the System's long-term objective of holding growth in them to moderate rates.

As experience with the reserve-targeting procedures accumulated, it became clearer that the Desk's actions could not keep RPD within its tolerance ranges if deposits behaved quite differently than the staff had expected. The tolerance ranges served as an important means of prescribing the Desk's response to new information. The Committee's emphasis on the distinction between its tolerance ranges and the staff's projections gave a clearer definition to the response expected from the Manager. There was widening recognition that the fairly long lags between operations and the aggregates called for the specification of desired growth rates six months or so in advance. At the same time, skepticism continued about the System's ability to specify precisely either the reserve or money market conditions presently needed to achieve the longer term objectives. Accordingly, the Committee relied to a large extent on tolerance ranges to trigger Desk responses to undesired behavior on the part of the aggregates.

There was growing appreciation during the year that this approach also involved important problems. Specifying appropriate tolerance ranges implies an ability to discriminate in advance between the underlying trend and the exogenous disturbances that appear to have a large influence on monthly movements in private demand deposits, in particular. At first glance, the use of a two-month interval should help wash out some of the random variation. However, the two-month growth rate still depends primarily on the forecast of the single month following the FOMC meeting. The average absolute error in staff estimates of M_1 for the following month over the past three years was about 3¾ percentage points. Against this background, the Committee's decision on occasion to base its RPD, M_1, and M_2 tolerance ranges on the more restrictive of the alternatives developed by the staff seemed a useful way to help guard against cumulative overruns in the aggregates. There remains, of course, the possibility that exogenous influences will override for a time the fundamental behavior of the aggregates and cause an inappropriate System response.

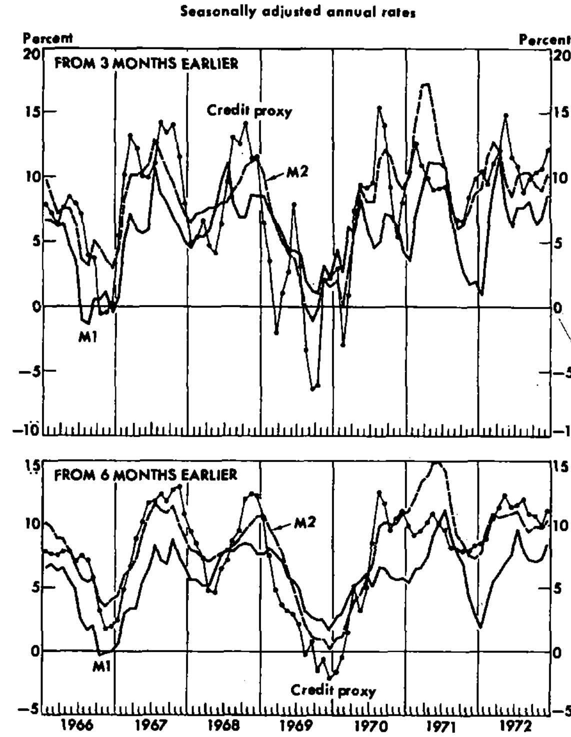
More fundamentally, the 1972 experience again cast doubt on whether M_1 alone was performing adequately as an indicator of the thrust of monetary policy. Nonborrowed reserves, of course, serve as the System's point of entry for influencing the dynamic portfolio adjustments of both banks and the public. But these adjustments have an impact on various components of bank balance sheets unevenly over time. The three aggregates—M_1, M_2, and the credit proxy—frequently provide different signals to open market operations for a number of months.

In 1972 the problem with M_1 was that its growth was quite lumpy, with big surges in February-March, July, and December. Even changes over three- and six-month intervals showed considerable instability over the past two years (see Chart VIII). This variability of M_1 has probably tended to strengthen the Committee's concern about the predictability of the relationships among System-controlled variables, the economy, and the aggregates over a longer time horizon. But bimonthly tolerance ranges do not provide an escape from this handicap. Given the erratic monthly behavior of M_1, the probability of detecting a deviation from the desired long-term growth rate during the intermeeting period is likely to be low unless the deviation is quite large. Even then, such bulges are likely

Chart VIII

GROWTH RATES OF THE MONETARY AND CREDIT AGGREGATES

Seasonally adjusted annual rates



Source: Board of Governors of the Federal Reserve System.

to be considered unusual events and generate hopes that they will be reversed quickly.

Growth in the broad money supply, M_2, was a bit more even over 1972 than that of M_1, reflecting the greater stability of time deposit growth relative to demand deposit behavior. In the latter part of 1971 and early 1972, M_2 showed little of the extraordinary weakness shown by M_1, which prompted aggressive System provision of nonborrowed reserves. M_2's first-half growth rate of 10.8 percent suggested considerable monetary stimulus. Over the year as a whole, M_2's growth of 10.8 percent was strong; compared with the 1971 growth of 11.4 percent.

The expansion of the bank credit proxy remained consistently strong throughout most of 1972. This measure of member bank liabilities rose at an 11.6 percent rate over the year, compared with a 9.4 percent increase in 1971. In an environment of strengthening demand for loans, banks were able to compensate for the temporary slowing of other deposit inflows by issuing negotiable CDs. During the second quarter, for example, when demand and other time deposit inflows slackened noticeably, a $3.7 billion increase in CDs kept proxy growth at above the 11 percent first-quarter rate.

The diverse behavior of M_1, M_2, and the credit proxy in 1972, as in 1971, provided the Committee with different signals at different times concerning the current thrust of monetary policy. What is really needed, of course, is a satisfactory specification of the interrelationship among nonborrowed reserves, these aggregates, and the real economy. While this work goes forward, the Committee is likely to continue relying on recent behavior of these aggregates to indicate departures from desired rates of growth. On a monthly basis, M_2 and the credit proxy are about as erratic as M_1, so that it is probably as difficult to specify meaningful two-month tolerance ranges for them as for M_1. However, both have been more stable over the three- and six-month intervals than M_1 in the past two years, and they may give off better signals of undesired behavior over these somewhat longer time periods. This possibility deserves further study in the System's on-going efforts to improve its control over the monetary and credit aggregates.