OPEN MARKET OPERATIONS DURING 1997

Federal Reserve Bank of New York

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IMPLEMENTATION OF MONETARY POLICY IN 1997

Operating Procedures and Practices

In 1997, the Trading Desk at the Federal Reserve Bank of New York managed reserve conditions with the objective of maintaining the federal funds rate around the level desired by the Federal Open Market Committee (FOMC). The FOMC tightened monetary policy at its March meeting, raising the intended federal funds rate from 5 ¼ percent to 5 ½ percent, where it was held over the remainder of the year (Table 1). There was no associated change in the discount rate.

The Committee's directives instruct the Trading Desk to maintain the federal funds rate on average around a specified level. Open market operations are used to provide a level of nonborrowed reserves that will allow the federal funds market to clear at the indicated rate. Each day, the Desk aims to keep the rate as close to the targeted level as possible with a minimum of volatility. But in deciding each day's operations, the Desk also considers how its flexibility for arranging operations in upcoming days might be affected by that day's course of action as well as how the behavior of the funds rate that day might influence rates in subsequent days.

At the start of each two-week maintenance period, a strategy for meeting reserve needs is developed that is consistent with the estimated demand for excess reserves and the expected reserve supply arising from discount window borrowing. These estimates are captured in the Desk's allowances for excess and borrowed reserves made each period.[1] The reserve management strategy also depends on the estimated daily pattern of reserve supply and demand. The approach must be flexible enough to allow for the inevitable revisions to the reserve estimates, and as a period unfolds the Desk will also respond to the observed behavior of the federal funds rate which may prompt some reassessment of daily or period needs. Each morning, this process of developing a strategy both for the day and for the remainder of the maintenance period is repeated.

In deciding on open market operations each day, the Desk takes account of the estimates of reserve supply, any special factors that may raise or lower the need for excess reserves such as high or uncertain payment flows, cumulative excess holdings to that point in the period, the number of days remaining until the settlement day, and the risks seen in the reserve estimates. If the federal funds

Adapted from a report to the Federal Open Market Committee by Peter R. Fisher, Executive Vice President of the Federal Reserve Bank of New York and Manager of the System Open Market Account. Virginia Cheng, Spence Hilton and Ted Tulpan were primarily responsible for the preparation of this report. Many other members of the Markets Group assisted in the preparation; Annemarie Gemma and David Parseghian provided invaluable research support.

Table 1
FOMC MEETING DATES AND POLICY RATES

Date of FOMC Meeting	Expected Federal Funds Rate (Percent)	Discount Rate (Percent)
12/17/96	5 ¼	5
2/4 to 2/5/97	5 ¼	5
3/25/97	5 ½	5
5/20/97	5 ½	5
7/1 to 7/2/97	5 ½	5
8/19/97	5 ½	5
9/30/97	5 ½	5
11/12/97	5 ½	5
12/16/97	5 ½	5

rate is trading away from its desired level at the time of the operation, the Desk may adjust the daily level of excess reserves it aims to provide to contain pressures in the financing markets and to steer the rate back towards its desired level in later trading. Responding inadequately to current rate pressures increases the likelihood that these pressures will become self-reinforcing and influence rates in upcoming days. But the Desk also attempts to anticipate how the rate would trade over the entire day and recognizes that providing high or low levels of excess could lead to elevated volatility.

Several changes were made to the Desk's usual operating practices during 1997. At the start of the year, the normal entry time for temporary operations was advanced by one hour, to shortly after 10:30 a.m, and the par value of all accepted propositions on each market operation began being announced shortly after selections are completed. Over the year, the different tranches comprising a coupon pass were spread out over longer periods of time. In November, the Desk also began making public each morning the standard deviation measuring the volatility of the federal funds rate on all trades arranged the previous day by the brokers surveyed by the Markets Group.[2]

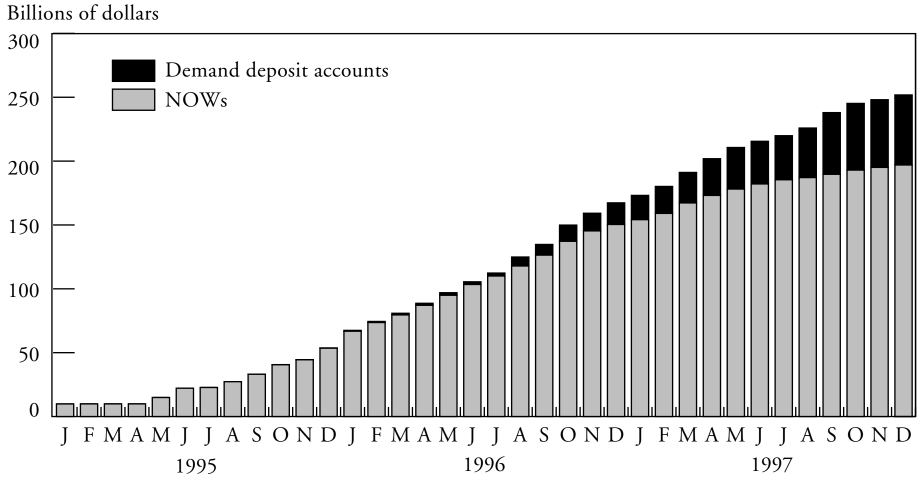
Sweep programs in 1997

The value of retail deposits affected by sweep programs continued to grow in 1997, further reducing the level of reserve balances maintained at the Federal Reserve. In 1997, deposits initially affected by new or expanded sweep programs totaled $85 billion, bringing the cumulative value of these programs since their inception in 1994 to $252 billion (Chart 1).[3] The increase in 1997 was less than the previous year's rise, which reflected a slowing in the spread of sweeps on NOW accounts. A larger proportion of the new programs implemented in 1997 was applied to retail demand deposits. New sweeps in 1997 more than explain the total drop of $3.2 billion in reserve requirements over the year (Chart 2).

Chart 1

THE RAPID GROWTH OF SWEEPS

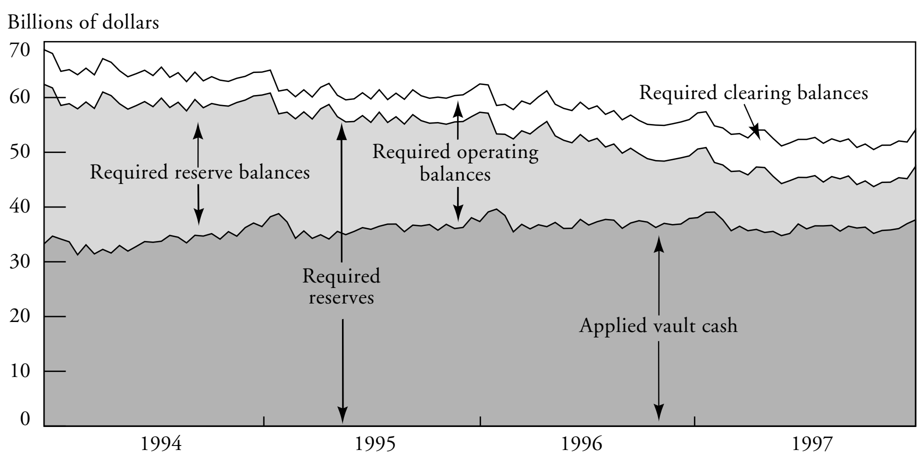
By Transaction Deposit Category



Note: Cumulative monthly value of initial sweeps.

Chart 2

RESERVE MEASURES



Notes: All figures are maintenance period averages. Required reserves are the sum of required reserve balances and applied vault cash. Required operating balances are the sum of required reserve balances and required clearing balances.

Required operating balances—which include the balances that banks must hold to meet clearing balance requirements and reserve requirements but exclude applied vault cash—fell by somewhat less than required reserves, about $2.7 billion, reflecting a slight increase in the level of required clearing balances and small drop in applied vault cash.[4] The rise in clearing balances was minor because many banks had already increased these to the maximum level warranted by their use of Federal Reserve priced services.[5] The fall in applied vault cash was accompanied by an even greater drop in total vault cash, which includes surplus vault cash. Many banks that now have no required reserve balances have explored ways to economize on their vault cash holdings to minimize the opportunity cost associated with their surplus vault cash.

PERMANENT ACTIVITY FOR THE SYSTEM OPEN MARKET ACCOUNT

In 1997, the portfolio of domestic securities in the System Open Market Account (SOMA) expanded by a record $41 billion (excluding all temporary operations), ending the year at $448 billion (Chart 3). Outright purchases of Treasury securities totaled $44 billion, offset to a small degree by redemptions of some Treasury and federal agency issues. The growth in the portfolio during 1997 was significantly higher than the $15 billion increase recorded in the preceding year. Movements in operating factors and reserve demands were important determinants of the size of the portfolio's expansion, but the shifts in strategies used by the Desk to address seasonal reserve shortages ahead of the last two year-ends also contributed to the increased level of purchases in 1997.

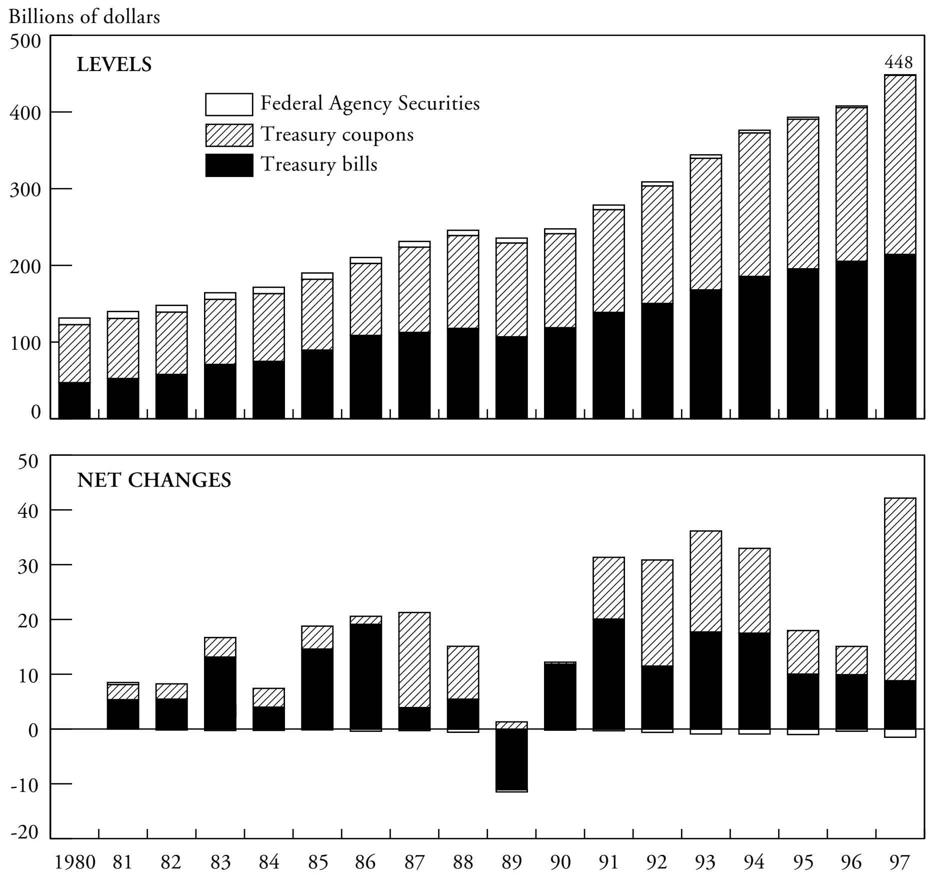
Reserve Patterns

Currency in circulation rose $31 billion from year-end to year-end and was the reserve factor that created the greatest need for a permanent expansion of the portfolio in 1997 (Table 2).[6] Apart from the foreign RP pool, which rose $3 billion, other factors affecting nonborrowed reserve supply did not change significantly on balance over the year. The decline in reserve requirements brought on by the further expansion of sweep accounts moderated the need for a permanent expansion of the portfolio. Currency growth was greater in 1997 than in 1996 while the absolute decline in reserve requirements was less. Altogether, movements in nonborrowed reserve factors and required reserves deepened underlying reserve shortages about $13 billion more in 1997 than in the previous year.

The Impact of Year-end Reserve Management Strategies

Shifts in the Desk's year-end reserve management strategies also help explain why the total increase in the portfolio last year was so much larger than in the preceding year. As explained in last year's annual report, the Desk conducted relatively few outright purchases late in 1996 in order to place itself in a position of needing to add, rather than drain, reserves on a temporary basis when required reserve balances reached their seasonal low in early 1997. A relatively modest level of outright purchases made in late 1996 left a reserve shortage of nearly $16 billion in the maintenance period covering the 1996 year-end that was addressed with temporary RPs, about $5 billion more than was used to address shortages over the preceding year-end period.[7] After the seasonal low passed

Chart 3
SYSTEM PORTFOLIO OF TREASURY AND FEDERAL AGENCY SECURITIES
Year-end Holdings



in early 1997 and as reserve needs began to grow again, the Desk bought nearly $6 billion of coupons outright in the market in the first quarter, adding relatively more on a permanent basis than is usually the case at this time of year and returning the underlying needs to more typical levels.

In planning for the lows in operating balances in early 1998, the Desk felt that this interval could be addressed with either moderate add or drain needs, given the banking system's successful management with declining reserve balances over the past year. Thus, its approach to the year-end build up in reserve needs in 1997 was more typical to that of years prior: the reserve shortage over the year-end maintenance period was reduced to about $10 billion through $19 billion of Treasury coupons and bills purchased in the final two months of the year.

Table 2
REQUIRED RESERVES AND FACTORS AFFECTING NONBORROWED RESERVES
(Billions of dollars)

	Levels in maintenance period ending:			Changes over:[a]	
	Jan 3 1996	Jan 1 1997	Dec 31 1997	1996	1997
Required Reserves	57.3	50.6	47.4	-6.7	-3.2
Factors affecting nonborrowed reserves					
Currency in circulation	423.4	448.1	479.4	-24.7	-31.3
Foreign Currency	16.4	16.2	16.6	-0.2	+0.4
Foreign RP Pool	12.5	14.0	17.0	-1.5	-3.0
Gold and Foreign Deposits	21.0	20.6	20.1	-0.4	-0.5
Float and FRSA	1.0	2.0	0.9	1.0	-1.2
Treasury Balance	6.7	6.0	4.9	0.7	1.1
Applied Vault Cash	37.4	38.1	37.7	0.7	-0.4
Required Clearing Balances	5.2	6.6	6.7	-1.4	-0.1
All Other Items	25.5	24.3	23.2	-1.2	-1.1
Net changes in nonborrowed factors	—	—	—	-27.0	-36.3
Outstanding RPs					
Par value	11.4	16.3	10.1	4.9	-6.2
Premium	0.7	1.4	0.5	0.6	-0.8

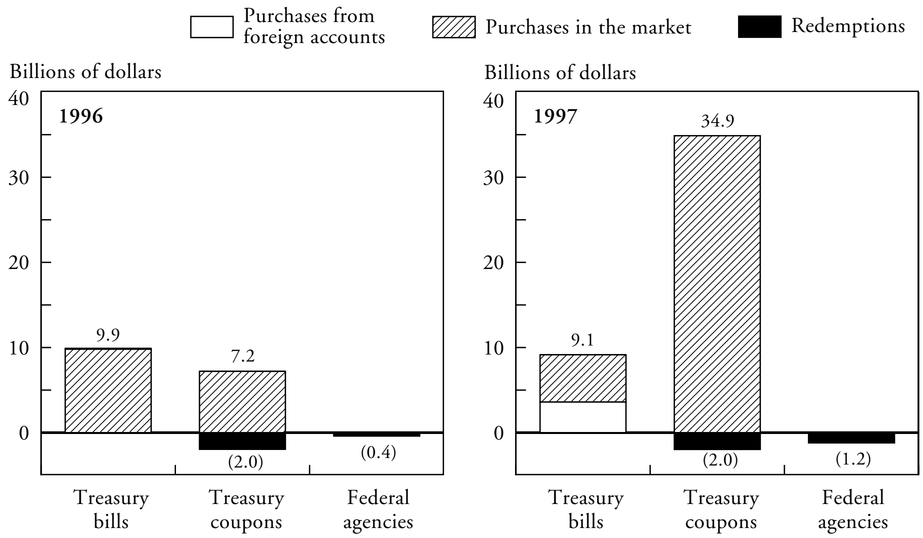
[a] Changes in factors affecting nonborrowed reserves are expressed in terms of the impact on reserve supply.

Technique of Outright Transactions

Most of the expansion of the portfolio was achieved by arranging outright purchases in the market (Chart 4). However, nearly $3.6 billion of bills were purchased directly from foreign accounts, compared with only $88 million in 1996. The Desk bought most of these—$3 billion—on two separate occasions in December. The second of these two purchases, totaling $2 billion, was made late in the month. This purchase further reduced temporary reserve shortages over the year-end, but the reserve impact was not long-lasting because the Desk chose to purchase Treasury bills that matured in January and to redeem them at maturity.

The Desk continued to break out its purchases of coupon securities into separate tranches covering different portions of the yield curve. In late 1996, the SOMA Manager informed the FOMC and the primary dealers that coupon purchases might be spread out over several weeks, whereas previously the tranches making up a pass had been more concentrated, generally falling within the span of a few days. The sets of tranches that made the passes in 1997 spanned intervals that ranged from five to twenty-four business days. The intention was to reduce the impact of the

Chart 4
SYSTEM OUTRIGHT OPERATIONS



Notes: Purchases are positive values; redemptions are negative values.

Desk's market entries on market prices, and over the year prices showed little reaction to our operations.

SOMA Portfolio Management

The overall expansion of the portfolio was more concentrated in holdings of Treasury coupon securities than in the preceding year, largely because reduced Treasury issuance of bills deflected some of the Desk's outright purchases into the coupon sector. Altogether, the Desk bought $35 billion of coupon securities in the market in 1997 in six passes, compared with $7 billion purchased in two passes in 1996. Bill purchases totaled $9 billion, with about $5 1/2 billion bought in two passes in the market, down a bit from the $10 billion purchased in 1996, almost all of which was acquired in two passes in the market. Given the relatively greater total of outright purchases needed in 1997, the Desk's preference would have been to purchase bills and coupon securities in more equal proportions. However, the Desk felt that the reduced bill issuance over much of 1997 would have made it difficult to purchase much supply in the secondary market without having a sharp impact on market prices. Thus, the Desk did not buy any bills in the market between April and November. In December, after a period of somewhat larger bill auctions and more liquid market conditions, the Desk bought bills in the market again, but in relatively modest quantities, and prices did not respond much to these purchases.

Because outright purchases were concentrated in the coupon sector, the average maturity of the SOMA holdings of Treasury securities increased to 42.6 months at the end of the year from 41.2 months one year earlier. As of the end of 1997, 13.0 percent of total marketable Treasury debt outstanding was held in the SOMA, up from 11.7 percent one year earlier. This increase reflected the high level of outright purchases made amid an environment of shrinking federal government deficits.

In midyear, the Desk picked up the pace of its gradual runoff of federal agency securities which began in 1982 by redeeming all agency securities rather than exchanging them for new eligible issues as they matured. Holdings of these issues dropped by $1.2 billion over the year. About $2 billion of Treasury coupon securities, a portion of the maturing original issue seven-year notes held by the SOMA, were also redeemed during 1997. The remaining seven-year notes that matured were rolled into the Treasury's inflation-indexed securities, and the Desk held $1.65 billion of these securities at the end of the year, about 5 percent of the total issuance.

TEMPORARY ACTIVITY FOR THE SYSTEM OPEN MARKET ACCOUNT

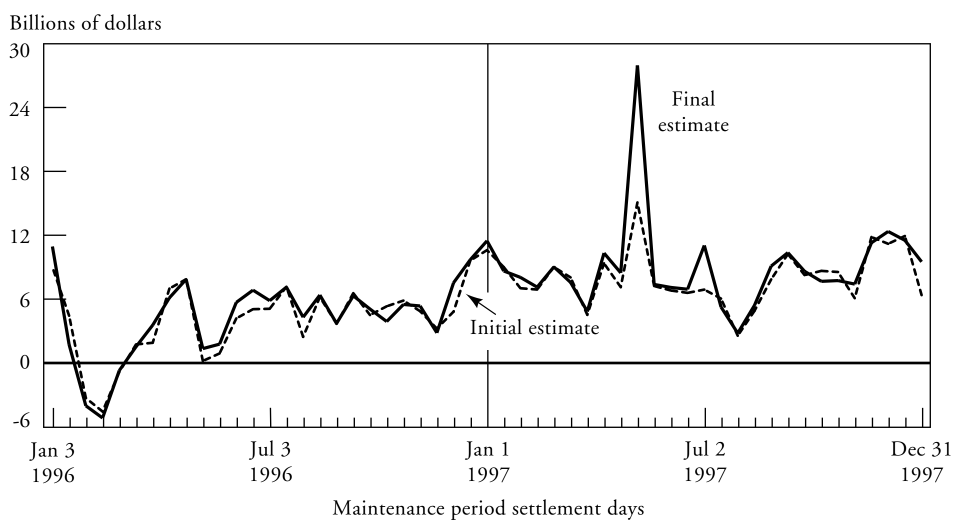
Temporary Reserve Needs and Reserve Projection Errors

The Desk arranges temporary operations to meet reserve needs not addressed by its outright operations. These temporary operations must be structured to allow for day-to-day variations in reserve supply and demand and for the possibility of revisions to reserve estimates within a maintenance period.

Chart 5

OPEN MARKET OPERATIONS NEEDED TO HIT PATH

By Maintenance Period



Note: Initial estimates are as of the first day of each period; final estimates reflect all revisions to nonborrowed reserve factors and required reserves available as of the day after the period ended.

The initial reserve shortages estimated at the start of each period were somewhat larger in 1997 than in the preceding year (Chart 5). The Desk was more comfortable arranging larger temporary RPs once it began to operate at an earlier time. But large shortages were not viewed as a necessity for managing the funds market as the banking system successfully adapted to lower operating balances with a variety of underlying reserve needs. The larger reserve shortages help to explain the absence of matched sale-purchase transactions in 1997.

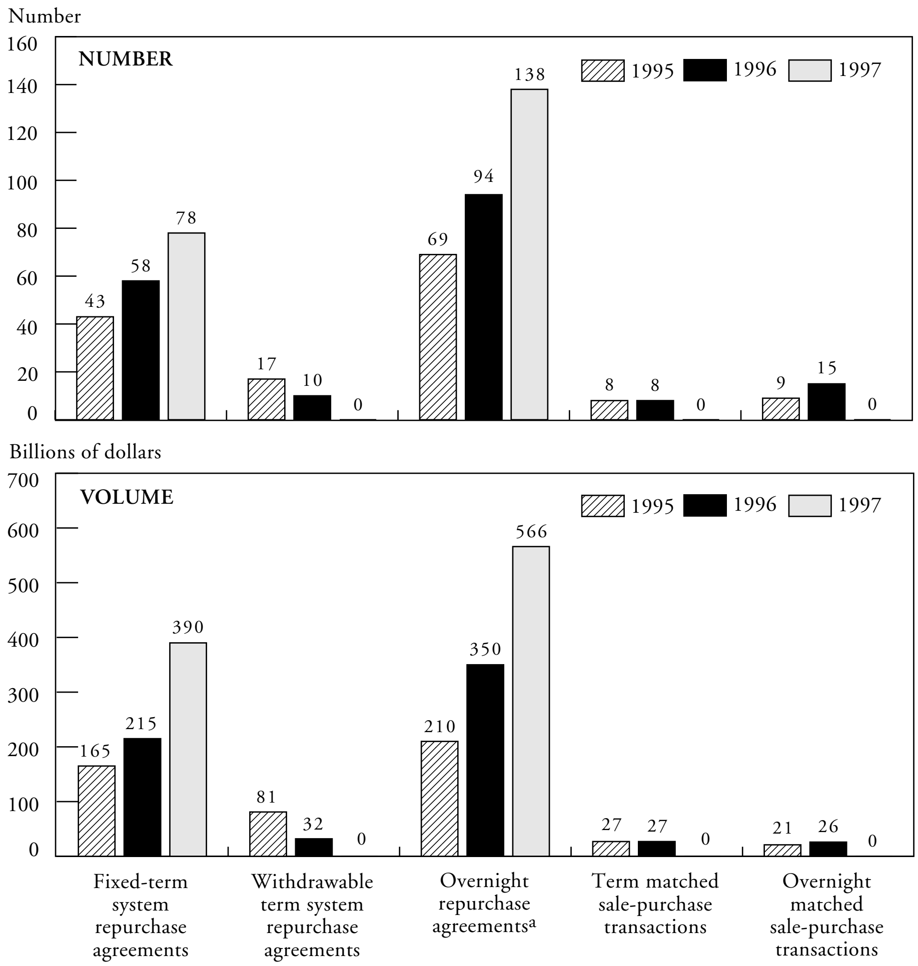
On balance, net revisions to nonborrowed reserve factors and required reserves made after a period had begun were somewhat greater in 1997 than in 1996, about \$1.3 billion in absolute value per period compared with \$900 million the previous year.[8] All of the increase reflected the unexpected inflow of tax receipts following the April 15 tax date. On the eve of this date, tax inflows were not expected to cause the Treasury balance to rise above its targeted level of \$7 billion. During the May 7 period, the Treasury balance averaged \$28 billion and peaked at \$52 billion on one day. Even apart from this episode, however, the Treasury balance proved to be one of the more difficult factors to predict, as it often had been in preceding years.

Period-average revisions to the foreign RP investment pool rose from about \$350 million 1996 to about \$500 million in 1997, reflecting a few instances when accounts placed a substantial amount of funds in the investment pool on relatively short notice. The need to complete daily projections sooner each morning to accommodate the Desk's earlier market entry time may also have contributed to some of the decreased predictability of this factor. Revisions to currency, on the other hand, were generally smaller in 1997.

Revisions to applied vault cash made within a maintenance period averaged \$230 million, similar in magnitude to the revisions in the prior year but considerably greater than the revisions in years before 1996. Sweep accounts have compounded the difficulties of estimating the amount of vault cash that could be used to meet reserve requirements. Required reserves proved modestly more difficult to forecast in 1997. Oftentimes, revisions to applied vault cash were positively correlated with revisions to required reserves, reducing their net impact on the overall period need, but revisions to these two measures were not always made on the same day within a period.

Another source of uncertainty for reserve operations was the premium on RPs—measured by the difference between the par and the cash values of collateral on accepted propositions. The drop in Treasury coupon yields over the second half of the year was associated with an increase in the average premia on our RPs as market prices on many outstanding coupon issues rose further above their par values. The premium on RPs during the final quarter of the year averaged 8 percent, twice as high in percentage terms as during the first half of the year. Although changes in the underlying trend of the premium were readily recognized, the premium often varied significantly from one operation to the next and was difficult to anticipate for any single operation.

Chart 6
SYSTEM TEMPORARY OPERATIONS



[a] Includes all System and customer-related RPs arranged for one business day.

Temporary Open Market Operations

In 1997, the Desk greatly increased its use of overnight (one business day) RPs (Chart 6). A trend toward increased use of overnight operations began in 1996 and largely reflected the Desk's perception that banks had less flexibility to absorb sizable imbalances between reserve supply and demand on any day when managing their accounts because of their reduced operating balances. In this environment, the Desk intervened more frequently to maintain a stable balance between daily reserve supply and demand. Relatedly, in structuring its temporary operations, the Desk was careful not to let the estimated level of operating balances fall to too low a level on any day, a consideration that sometimes argued for overnight operations.

The Desk still frequently arranged term RPs to help meet large underlying reserve shortages that had to be addressed with temporary operations, although these operations were often supplemented by overnight RPs to smooth uneven daily excess patterns. The number of days when two operations—one term RP and one overnight RP—were announced simultaneously increased from five in 1996 to seventeen in 1997, most often occurring at the start of a maintenance period. With term RPs used less frequently to meet all of an estimated reserve shortage, the risk that subsequent reserve revisions would unexpectedly create a surplus was reduced; for this reason the Desk did not find it necessary to make any of the term RPs it arranged in 1997 withdrawable.

The Desk continued to adhere to its normal practice of arranging its temporary operations at a preset time each day, sometime shortly after 10:30 a.m. On some occasions when large anticipated reserve shortages were estimated, the Desk conducted its operations before the normal entry time, usually around 10:00 a.m. after a full set of reserve estimates became available. But the number of instances when the Desk entered ahead of the normal entry time was down from the preceding year, eleven compared with nineteen in 1996, largely because the usual entry time had been moved forward. The need to enter the market early was most pressing during the April tax season, when upward revisions to the estimated Treasury balance left large deficiencies at the same time that the pool of available collateral was dwindling because of the sizable amounts already held on outstanding RPs.

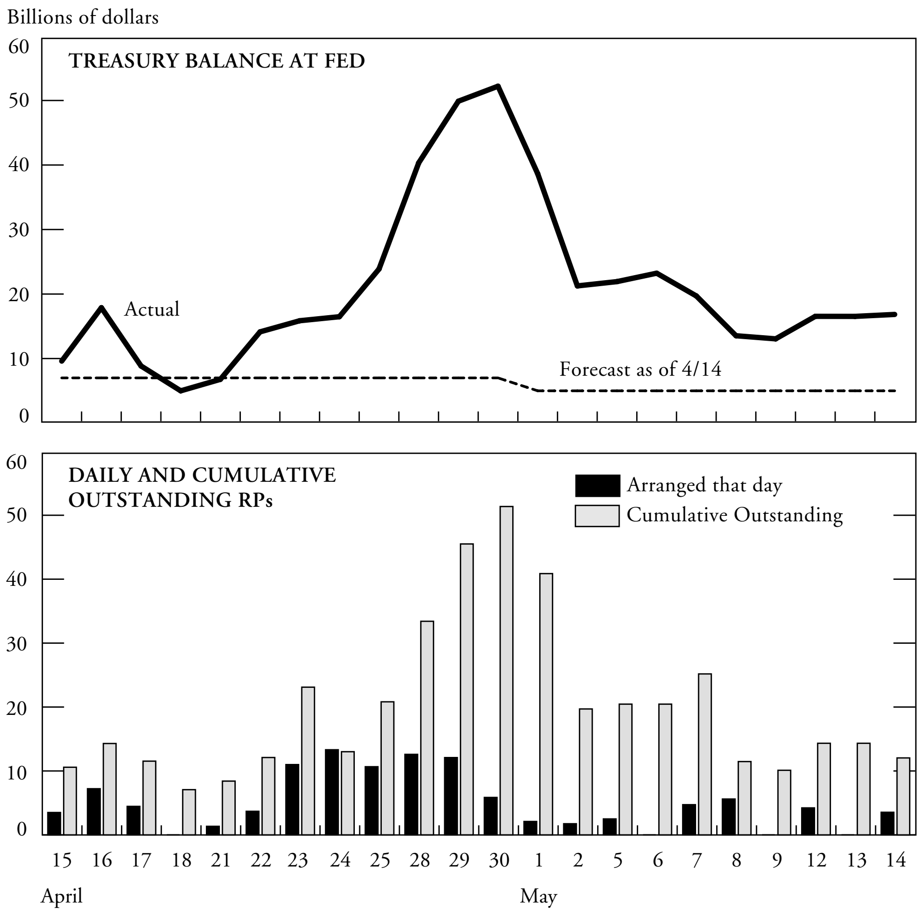
On three occasions in 1997 the Desk reentered the market shortly after having made its selections on a previously announced temporary operation. In all three cases, propositions on the earlier operations fell short of the amount needed to address the estimated reserve shortage on the day.

Reserve Management During the April Tax Season

During the second half of April, the Desk's activity was significantly influenced by unexpectedly large reserve shortages that resulted from tax receipts to the Treasury that far exceeded anticipated inflows. Most of the unexpected strength came from individual nonwithheld tax receipts. These receipts totaled $123 billion in April, about $30 billion more than expected and over 20 percent higher than the corresponding flows in 1996. It was initially believed that the Treasury balance at the Fed could be maintained around a target level of $7 billion. However, tax receipts by April 22 left no further capacity in commercial banks' Treasury Tax and Loan (TT&L) accounts to absorb additional inflows, which consequently had to be maintained at the Treasury's account at the Fed. The Treasury's Fed balance peaked on April 30 at a record high $52 billion (Chart 7).

The rapid progression of daily upward revisions to tax flows, the Treasury balance, daily reserve deficiencies and period-average reserve needs led the Desk to address huge daily reserve shortages with both sizable overnight and term RPs. Given the size of the daily needs, the Desk entered the market earlier than its normal operating time on six consecutive business days starting on April 23 in an attempt to garner sufficient propositions for its operations. On two occasions, propositions on an initial RP fell short of the Desk's desired amount and a second operation was arranged.

Chart 7
TREASURY BALANCES AND OUTSTANDING RPs



Collateral became increasingly scarce as the value of securities already held by the Desk on outstanding RPs grew, and the spread on RP rates to the funds rate dropped well below normal levels. As seen in the chart, the total par amount of RPs outstanding reached an all-time record peak of about $51 billion on April 30, coincident with the peak in the Treasury balance. Reserve shortages and RPs quickly receded when regular government outlays and principal and interest payments were made in early May.

BEHAVIOR OF EXCESS RESERVES AND THE FEDERAL FUNDS RATE

The Desk closely observed the behavior of the federal funds rate for any indication that the decline in operating balances associated with the spread of retail sweep programs or any other development was impeding its ability to control the funds rate or contributing to volatility in the rate. Excess reserve patterns also were examined to see whether banks were holding more excess reserves—

either because they wished to protect against end-of-day overdrafts or because they were less able to reduce large positive daily excess positions accumulated during a period. In general, excess reserve levels did rise over 1997, but the increase was concentrated at smaller institutions that have implemented sweep programs. Volatility in the federal funds rate did not increase from the previous year, but it remained above the levels that had characterized earlier years.

Excess Reserves

The period-average level of excess reserves rose gradually through much of the year and then jumped significantly higher in the final quarter, reflecting the Desk's accommodation of heightened bank demand (Chart 8). Among the group of large institutions, which includes about 120 banks and thrifts having relatively large deposit liabilities, increases were concentrated at a small number of banks that had adopted sweep programs.

Sweep programs have had some impact, however, on the interperiod pattern of excess holdings at large institutions in general. With lower levels of required reserve balances, usable carryover levels of these banks fell sharply in 1997. This decline has dampened period-to-period volatility in excess holdings at the large banks, and aggregate excess levels for these institutions now are rarely negative (Chart 9).

Chart 8

TOTAL EXCESS RESERVE HOLDINGS

Maintenance Period Averages

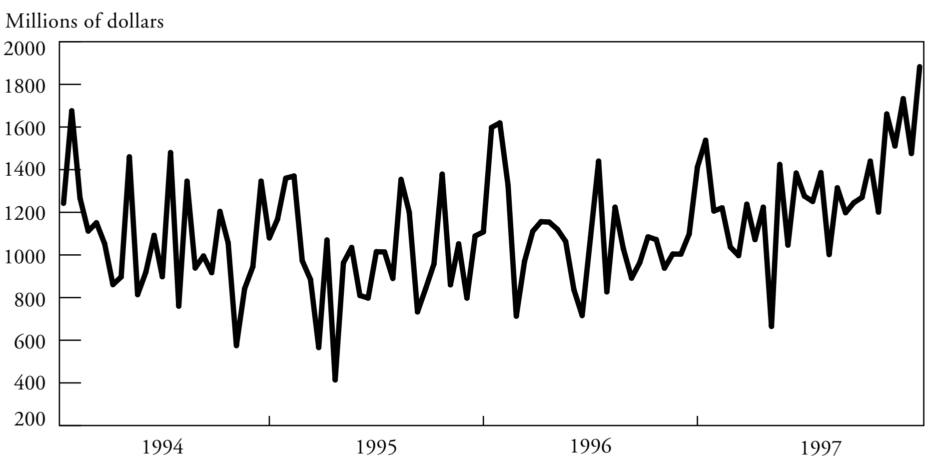
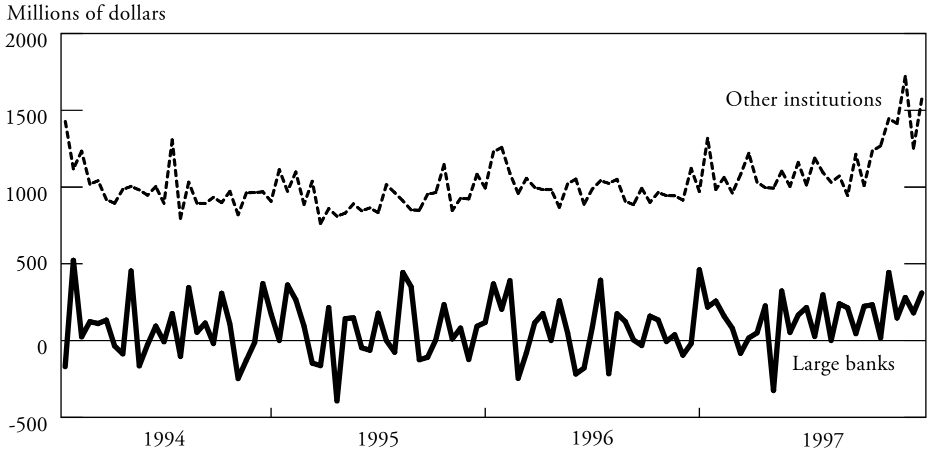


Chart 9

CUMULATIVE EXCESS RESERVE HOLDINGS BY LARGE BANKS AND OTHER INSTITUTIONS

Maintenance Period Averages



Note: Other institutions includes small banks, thrifts, foreign, and non-reporting institutions.

Much of the increase in excess reserves seen over the past year has been concentrated at smaller banks and thrifts, and specifically at those institutions that have implemented sweep programs, even though accumulated initial values of sweep programs at all depositories not categorized as large accounted for less than one-third of the total.[9] The extent to which the smaller institutions have deliberately increased their excess reserves to cover clearing needs remains unclear. At least some of the increase in excess holdings at these smaller institutions could prove temporary: among a small sample of institutions examined in this category, the level of excess reserves always rose sharply for a few maintenance periods immediately after a sweep program was launched, but then fell back to a much lower level after the institution adapted to its new reserve requirement environment.[10] In about half of the banks examined, after this initial adjustment, levels of excess reserves remained modestly above levels that were typical before the sweep program was implemented.

In arranging its open market operations, the Desk gauges the pace at which banks prefer to accumulate reserves during the maintenance period to meet period-average requirements. Because of averaging, there can be considerable variability in the intraperiod pattern of excess reserves that banks can comfortably hold, and actual intraperiod excess does vary from period to period. But historical patterns suggest that for several years banks have had a preference for accumulating more excess balances over the second week of a maintenance period, which the Desk attempts to accomodate in its reserve supplying operations to stabilize the federal funds rate (Chart 10). Within the second week, however, banks accumulated somewhat more excess reserves in the days leading up to the settlement day and somewhat less on the settlement day itself in 1997 than in the preceding year.

Chart 10

AVERAGE LEVELS OF EXCESS RESERVE HOLDINGS

By Day in a Maintenance Period

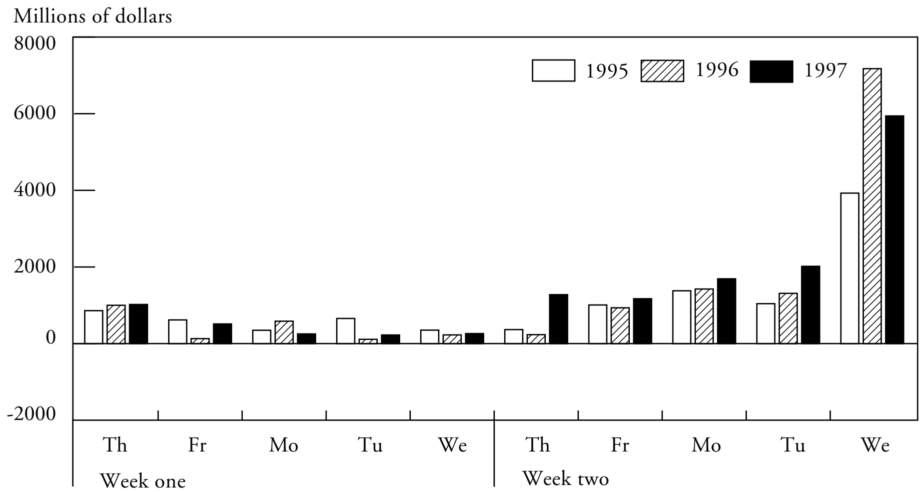
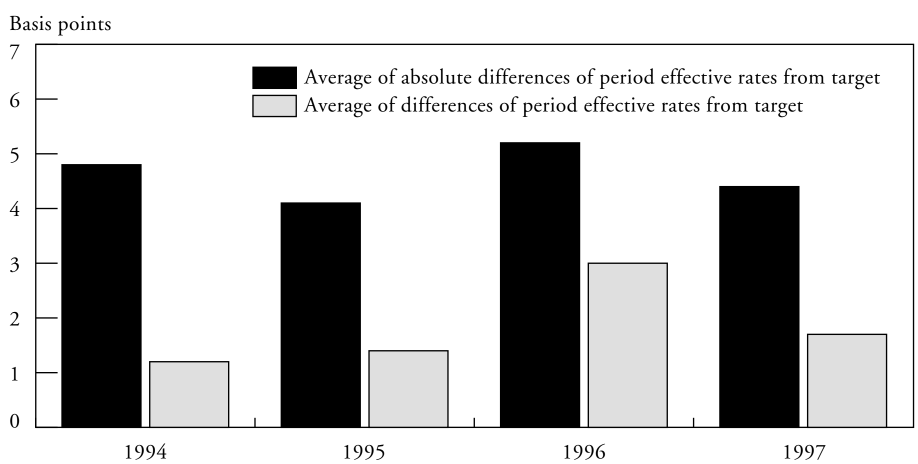


Chart 11

MAINTENANCE PERIOD MEAN EFFECTIVE FEDERAL FUNDS RATE VERSUS TARGET RATE



Note: Maintenance period average effective funds rates include weekends and holidays.

Behavior of the Federal Funds Rate

The federal funds rate averaged over two-week maintenance periods was generally as close to the intended funds rate in 1997 as it had been in earlier years.[11] The absolute values of the differences between the mean effective funds rate and the target rate for each maintenance period have averaged 4 or 5 basis points in each of the past four years (Chart 11). The period-average effective funds rates showed a slight upward bias of just over 1 ½ basis points relative to the intended rate in 1997. But while period-average levels of the funds rate have been as close to the target as before, deviations of the daily effective funds rate from target have increased modestly, coinciding with the large drop in operating balances beginning in 1996. The mean and median of the absolute values of the deviations of the daily effective funds rate from target for all business days rose by 5 and 3 basis points, respectively, in 1996, and did not fully return to earlier levels in 1997 (Chart 12). Daily deviations from target are generally greater than period-average deviations because of some tendency for firm and soft daily effective funds rates to be partly offsetting within a maintenance period.[12]

Intraday volatility as measured by the daily standard deviation of the funds rate on all trades arranged during the day increased in 1996 and remained at a similar level in 1997. The median standard deviation for all business days increased from 5 basis points to 10 basis points in 1996 and declined only slightly to 9 basis points in 1997 (Chart 13). The number of days when intraday volatility was especially high, defined as days marked by a standard deviation in excess of 50 basis points, also jumped to twenty-eight in 1996 from eighteen in the previous year, and it was twenty-five in 1997.[13] On most days, volatility is greatest in late trading, when the extremes on the daily trading range for the funds rate are typically reached. The lower operating balance environment of the past two years is seen as a principal cause of this increased volatility. It does appear, however, that the modifications that the Desk has made to its selection of operations and the provision of more excess reserves in 1997 prevented intraday volatility from worsening in 1997 despite the further decline in operating balance levels.

Another factor that also may have helped cap volatility in the funds rate was an increase in adjustment credit borrowing in 1997. Although absolute levels of this borrowing remained relatively low, adjustment credit on nonsettlement business days averaged about $120 million in 1997 compared with just over $50 million the preceding year. This increase in borrowing may have resulted from efforts to encourage banks to use the window when reserve markets tighten, although it could also reflect in part the banking system's reduced flexibility in adjusting to unanticipated shortfalls in reserves given the lower level of required operating balances.

Finally, intraperiod deviations of the daily effective funds rate from target showed some changes in 1997, although the changes do not appear to be directly linked to the level of operating balances (Chart 14). The firm financing conditions that have long been associated with maintenance period settlement days were much less pronounced in 1997 than in the preceding two years. The higher

Chart 12

FREQUENCY OF ABSOLUTE VALUES OF DEVIATIONS OF DAILY EFFECTIVE FEDERAL FUNDS RATE FROM TARGET

In Percentage Points

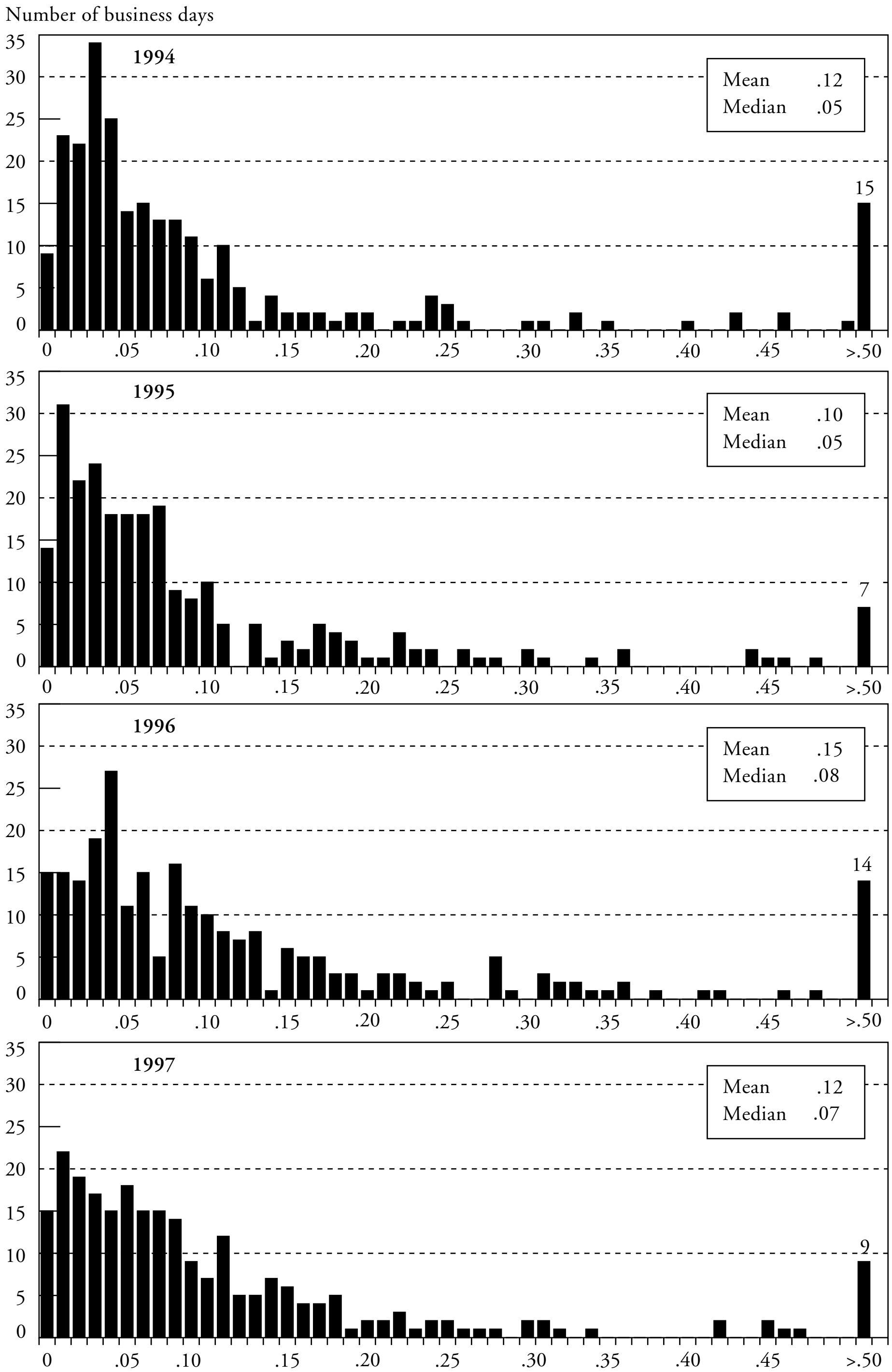


Chart 13

FREQUENCY OF STANDARD DEVIATIONS OF DAILY EFFECTIVE FEDERAL FUNDS RATE

In Percentage Points

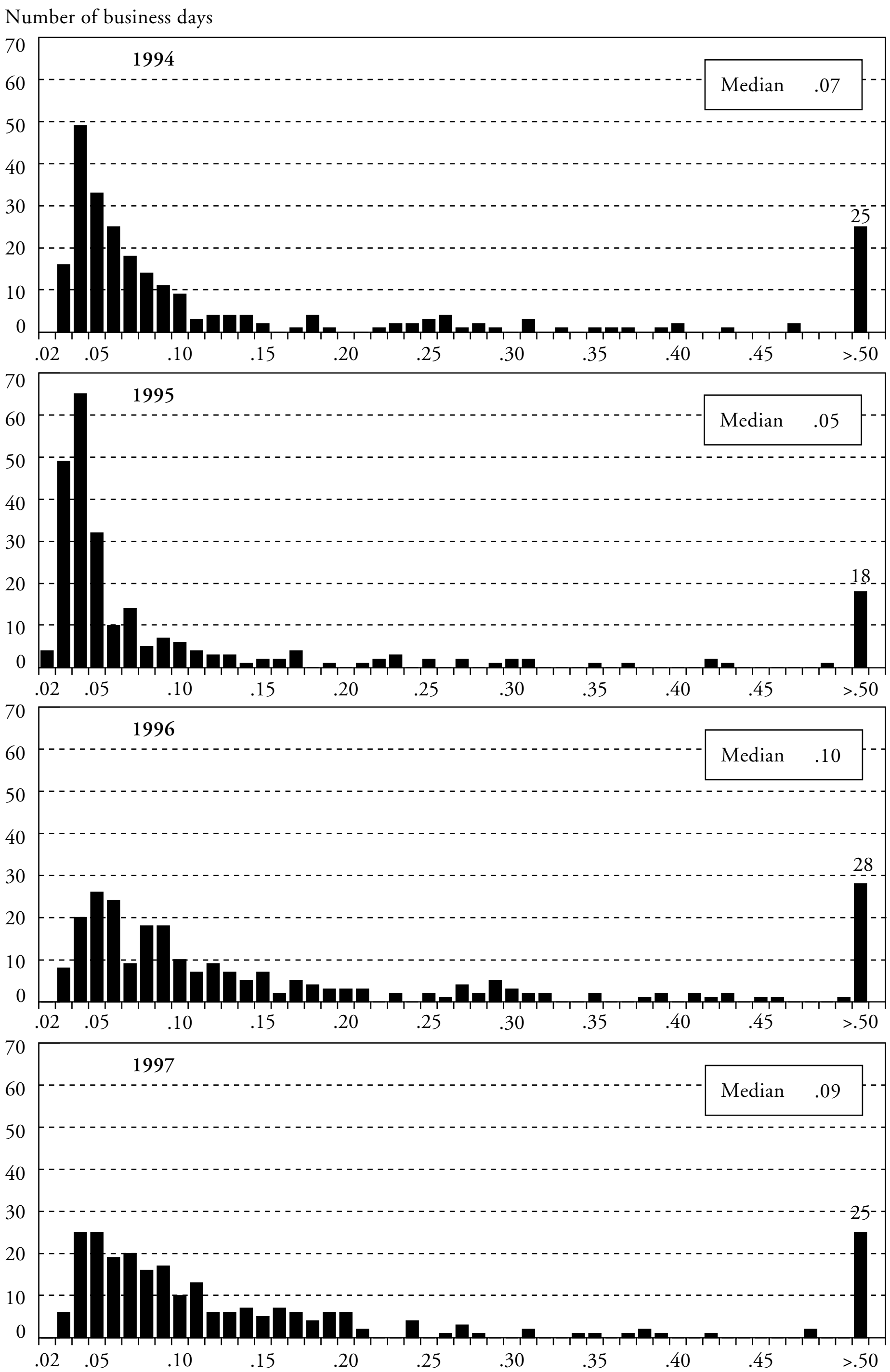
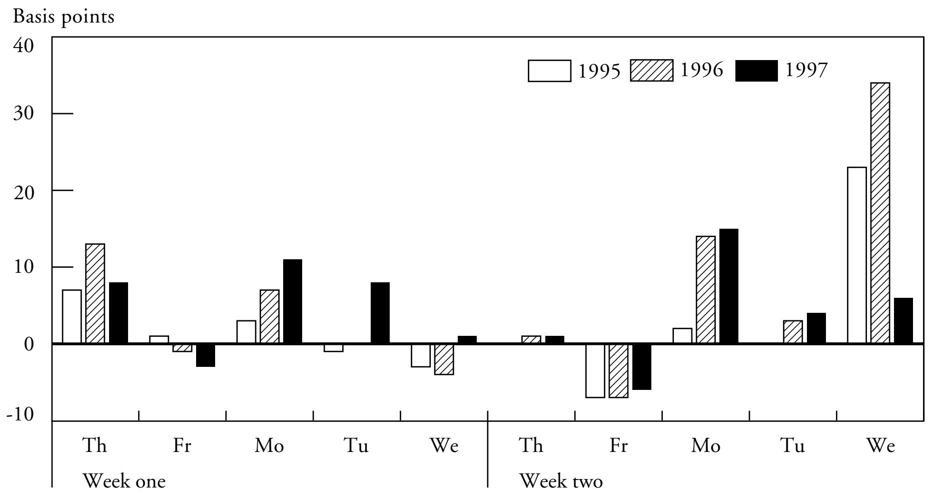


Chart 14

EFFECTIVE FEDERAL FUNDS RATE LESS TARGET RATE

Average of Differences by Day of Maintenance Period



period-average levels of excess and the provision of a greater portion of total excess holdings ahead of the settlement day in 1997 may have been contributing factors. Somewhat soft market conditions continued to prevail on Fridays, especially the second Friday of each period. The firm conditions that have characterized the market on many Mondays over the past two years to a large degree reflected a shift in calendar dates: many more days characterized by high payment flows and the associated firm market conditions fell on a Monday in 1996 and 1997 than in the preceding year.[14]

ENDNOTES

1. In the December 3 maintenance period, the allowance for excess reserves was lifted from $1 billion, where it had been set for many years, to $1.4 billion and held there for the balance of the year. The change was made in recognition of a rising trend in excess reserve holdings. As had been the case for several years, adjustment and seasonal borrowing was expected to meet just a fraction of total reserve demand in all periods, although average levels of adjustment borrowing were somewhat higher in 1997 than in earlier years. Actual levels of excess and borrowed reserves sometimes differed substantially from the formal allowances as a result of errors in the reserve projections or temporary disruptions to the efficient distribution of reserves. The Desk made informal adjustments to these allowances as needed.

2. The daily standard deviation measures the dispersion of the federal funds rate around the daily effective or average rate, in basis points. This measure of volatility accounts for the volume of trades arranged at different rates.

3. All estimates refer to deposits initially swept by depository institutions at the start of a program or when the coverage of a program is expanded. These figures are not updated to include any later changes in the underlying deposit balances affected by a sweep program.

4. This measure of required operating balances does not include the impact of as-of adjustments or carryins on the need to hold balances to meet all requirements.

5. Nonbound banks, which meet all their reserve requirements with vault cash, only earn 90 percent of the funds rate on any required clearing balances, and some nonbound institutions have indicated that this has made them less willing to increase their required clearing balances.

6. In percentage terms, currency grew 7 percent from year-end to year-end, modestly faster than in each of the preceding two years. Available data suggest that shipments abroad accounted for at least half of the increase in 1997, similar in size to other recent years.

7. These amounts represent the par values of the RPs arranged in the year-end maintenance periods. The cash values including premia were modestly higher in each year.

8. This calculation compares the actual impact of factors and required reserves on reserve needs during a maintenance period with their estimated impact at the start of a period. It does not measure net or gross daily forecast misses.

9. At year-end, sweeps at institutions other than large banks totaled $77 billion.

10. In general, a similar pattern of sharply higher excess holdings after a new sweep program was implemented was not found among larger institutions.

11. The calculation of the average or mean effective federal funds rate for a maintenance period includes weekends and holidays.

12. In addition, the mean values of the period-average deviations capture the effects of weekends and holidays while the mean values of the daily deviations only consider business days.

13. The daily data plotted in Charts 12 and 13 include days when the targeted federal funds rate was changed. There were six such days in 1994, three in 1995, and one in both 1996 and 1997. Excluding these days reduces the mean value of the absolute difference between the effective and targeted funds rates in 1994 by 1 basis point to 11 basis point in Chart 12; other summary statistics for the mean and median values presented in Charts 12 and 13 are unchanged.

14. Many financial payments and Treasury auction settlements that otherwise would fall on a weekend according to calendar rules are deferred to the next business day, increasing the likelihood that these payment flows would fall on a Monday.

APPENDIX A

APPENDIX A: AUTHORIZATION FOR DOMESTIC OPEN MARKET OPERATIONS

Open market operations during 1997 were conducted under the Authorization for Domestic Open Market Operations. The standard authorized limit on intermeeting period changes in System Account holdings of U.S. government and federal agency securities was $8 billion. Four temporary changes were made to this leeway during 1997. The Committee raised the authorized limit on intermeeting period changes in System holdings to $12 billion at its February, March, and November meetings. The leeway was increased a second time during the November intermeeting period to $17 billion on December 8.

The Authorization for Domestic Open Market Operations in effect for 1997, except when amended as above, is reprinted below:

Authorization for Domestic Open Market Operations

1. The Federal Open Market Committee authorizes and directs the Federal Reserve Bank of New York, to the extent necessary to carry out the most recent domestic policy directive adopted at a meeting of the Committee:

   (a) To buy or sell U.S. Government securities, including securities of the Federal Financing Bank, and securities that are direct obligations of, or fully guaranteed as to principal and interest by, any agency of the United States in the open market, from or to securities dealers and foreign and international accounts maintained at the Federal Reserve Bank of New York, on a cash, regular, or deferred delivery basis, for the System Open Market Account at market prices, and, for such Account, to exchange maturing U.S. Government and Federal agency securities with the Treasury or the individual agencies or to allow them to mature without replacement; provided that the aggregate amount of U.S. Government and Federal agency securities held in such Account (including forward commitments) at the close of business on the day of a meeting of the Committee at which action is taken with respect to a domestic policy directive shall not be increased or decreased by more than $8.0 billion during the period commencing with the opening of business on the day following such meeting and ending with the close of business on the day of the next such meeting;

   (b) When appropriate, to buy or sell in the open market, from or to acceptance dealers and foreign accounts maintained at the Federal Reserve Bank of New York, on a cash, regular, or deferred delivery basis, for the account of the Federal Reserve Bank of New York at market discount rates, prime bankers acceptances with maturities of up to nine months at the time of acceptance that (1) arise out of the current shipment of goods between countries or within the United States, or (2) arise out of the storage within the United States of goods under contract of sale or expected to move into the channels of trade within a reasonable time and that are secured throughout their life by a warehouse receipt or similar document conveying title to the underlying goods; provided that the aggregate amount of bankers acceptances held at any one time shall not exceed $100 million;

c) To buy U.S. Government securities, obligations that are direct obligations of, or fully guaranteed as to principal and interest by, any agency of the United States, and prime bankers acceptances of the types authorized for purchase under 1(b) above, from dealers for the account of the Federal Reserve Bank of New York under agreements for repurchase of such securities, obligations, or acceptances in 15 calendar days or less, at rates that, unless otherwise expressly authorized by the Committee, shall be determined by competitive bidding, after applying reasonable limitations on the volume of agreements with individual dealers; provided that in the event Government securities or agency issues covered by any such agreement are not repurchased by the dealer pursuant to the agreement or a renewal thereof, they shall be sold in the market or transferred to the System Open Market Account; and provided further that in the event bankers acceptances covered by any such agreement are not repurchased by the seller, they shall continue to be held by the Federal Reserve Bank or shall be sold in the open market.

2. In order to ensure the effective conduct of open market operations, the Federal Open Market Committee authorizes and directs the Federal Reserve Banks to lend U.S. Government securities held in the System Open Market Account to Government securities dealers and to banks participating in Government securities clearing arrangements conducted through a Federal Reserve Bank, under such instructions as the Committee may specify from time to time.

3. In order to ensure the effective conduct of open market operations, while assisting in the provision of short-term investments for foreign and international accounts maintained at the Federal Reserve Bank of New York, the Federal Open Market Committee authorizes and directs the Federal Reserve Bank of New York (a) for System Open Market Account, to sell U.S. Government securities to such foreign and international accounts on the bases set forth in paragraph l(a) under agreements providing for the resale by such accounts of those securities within 15 calendar days on terms comparable to those available on such transactions in the market; and (b) for New York Bank account, when appropriate, to undertake with dealers, subject to the conditions imposed on purchases and sales of securities in paragraph 1(c), repurchase agreements in U.S. Government and agency securities, and to arrange corresponding sale and repurchase agreements between its own account and foreign and international accounts maintained at the Bank. Transactions undertaken with such accounts under the provisions of this paragraph may provide for a service fee when appropriate.

APPENDIX B

APPENDIX B

Operations in United States Government Securities and Federal Agency Securities
(Settlement date basis, in thousands)
For the year ended December 31, 1997

	Purchases	Sales	Redemptions	Exchanges	Net Changes	Holdings 12/31/97	Holdings 12/31/96
System Open Market Account							
Government Securities:							
Treasury Bills:							
Outright	9,146,900	-	-	443,486,509 (443,836,509)*	8,796,900	214,149,444	205,352,544
Matched Trans.	3,577,951,533	(3,580,272,240)	-	-	(2,320,707)	(17,026,746)	(14,706,039)
Total Bills	3,587,098,433	(3,580,272,240)	-	(350,000)	6,476,193	197,122,698	190,646,505
Treas. Notes & Bonds							
Maturing:							
Within 1 year	5,549,000	-	(1,995,910)	(27,498,311)	(23,945,221)#	49,369,485	29,045,221
1 to 5 years	19,688,246 @	-	-	20,273,311	39,961,557 #	95,028,355	95,607,624
5 to 10 years	3,863,818 @	-	-	5,215,000	9,078,818 #	40,906,736	33,781,913
Over 10 years	5,897,100	-	-	2,360,000	8,257,100 #	48,308,293	41,825,857
Total Notes and Bonds	34,998,164	-	(1,995,910)	350,000	33,352,254	233,612,869	200,260,615
Total Gov't secs.							
Incl. Matched Trans.	3,622,096,597	(3,580,272,240)	(1,995,910)	-	39,828,447	430,735,567	390,907,120
(Excl. Matched Trans.)	44,145,064	-	(1,995,910)	-	42,149,154	447,762,313	405,613,159
Federal Agency Issues							
Maturing:							
Within 1 year	-	-	(1,540,150)	(1,185,000) 1,185,000	(1,540,150)&	252,000	1,223,050
1 to 5 years	-	-	-	-	- &	152,900	519,900
5 to 10 years	-	-	-	-	- &	254,650	456,750
Over 10 years	-	-	-	-	- &	25,000	25,000
Total Agency Issues	-	-	(1,540,150)	-	(1,540,150)	684,550	2,224,700
Total System Account							
Incl. Matched Trans.	3,622,096,597	(3,580,272,240)	(3,536,060)	-	38,288,297	431,420,117	393,131,820
(Excl. Matched Trans.)	44,145,064	-	(3,536,060)	-	40,609,004	448,446,863	407,837,859
F.R.B. of New York							
Repurchase Agreements	970,894,000	(968,637,000)	-	-	2,257,000	23,840,000	21,583,000

@ Includes inflation compensation on inflation index notes of $22,963,500.
*** $350,000,000 Bills was exchanged for Inflation Index Notes on 02/06/97.**
Note: There were no customer related RP's passed through to the market for year ended 12/31/97.

 # and & does not incude the following maturity shifts:

		Within 1 year	1 to 5 years	5 to 10 years	over 10 years
Treasury Notes & Bonds	#	44,269,485	(40,540,826)	(1,953,995)	(1,774,664)
Federal Agenices issued	&	569,100	(367,000)	(202,100)	-

December 31, 1997 and 1996 the matched sale-purchase transaction was $17,026,746,000 and $14,706,039,000 respectively.
Loans of Treasury securities by the Federal Reserve Bank of New York to primary dealers for the year ended 12/31/97 were as follows.

F.R.B. of New York	Securities Loans	Maturities	Net Change	Loans Outstanding 12/31/97	Loans Outstanding 12/31/96
Loan Agreements	$25,456,165	$25,058,165	$398,000	$887,200	$489,200

APPENDIX C

Appendix C

U.S. TREASURY AND FEDERAL AGENCY SECURITY HOLDINGS
IN SYSTEM OPEN MARKET ACCOUNT

(Statement date basis, in thousands)

	Holdings 12/31/97	% of Total Outstanding	Net change since 12/31/96
Treasury Bills			
Issues outstanding:			
01/02/98	$6,966,430	30.4%	6,966,430
01/08/98 #	194,320	0.4%	194,320
01/15/98 #	4,920,114	21.0%	4,920,114
01/22/98	7,450,500	17.1%	7,450,500
01/29/98	6,812,815	30.0%	6,812,815
02/05/98	14,158,010	31.3%	14,158,010
02/12/98	7,324,485	30.9%	7,324,485
02/19/98	7,219,564	32.0%	7,219,564
02/26/98	6,793,180	30.1%	6,793,180
03/05/98	13,664,955	30.7%	13,664,955
03/12/98	7,371,780	31.8%	7,371,780
03/19/98	6,859,310	31.5%	6,859,310
03/26/98	6,129,235	29.3%	6,129,235
04/02/98	9,011,000	30.9%	9,011,000
04/09/98	3,235,000	30.1%	3,235,000
04/16/98	3,605,000	32.3%	3,605,000
04/23/98	3,165,000	29.6%	3,165,000
04/30/98	9,220,000	28.6%	9,220,000
05/07/98	3,445,000	31.4%	3,445,000
05/14/98	3,360,000	30.9%	3,360,000
05/21/98	3,425,000	31.7%	3,425,000
05/28/98	9,985,000	31.1%	9,985,000
06/04/98	3,090,000	28.2%	3,090,000
06/11/98	3,420,000	30.3%	3,420,000
06/18/98	3,365,000	29.8%	3,365,000
06/25/98	8,750,000	29.3%	8,750,000
07/23/98	5,695,000	30.3%	5,695,000
08/20/98	5,797,000	30.9%	5,797,000
09/17/98	5,545,000	30.3%	5,545,000
10/15/98	6,010,000	32.0%	6,010,000
11/12/98	5,475,000	29.7%	5,475,000
12/10/98	5,660,000	31.5%	5,660,000
Matured in 1997			(190,646,505)
Total	$197,122,698 #		$6,476,193
Treasury Notes			
Issues outstanding:			
7.875 % 01/15/98	$877,800	9.6%	-
5.000 01/31/98	1,094,730	5.7%	138,000
5.625 01/31/98	756,000	6.1%	110,000

Treasury Notes (Cont'd)

Rate	Maturity	Holdings 12/31/97	% of Total Outstanding	Net change since 12/31/96
8.125 %	02/15/98	$440,000	4.8%	-
7.250	02/15/98	3,837,560	18.4%	549,000
5.125	02/28/98	2,592,320	8.4%	1,235,000
5.125	03/31/98	1,295,000	9.9%	-
6.125	03/31/98	1,848,220	8.5%	250,000
7.875	04/15/98	634,500	7.2%	50,000
5.125	04/30/98	610,000	5.0%	115,000
5.875	04/30/98	951,000	4.5%	25,000
9.000	05/15/98	863,000	9.4%	385,000
6.125	05/15/98	4,092,117	19.3%	640,600
6.000	05/31/98	1,106,000	5.2%	435,000
5.375	05/31/98	855,000	6.9%	50,000
5.125	06/30/98	1,471,000	11.7%	-
6.250	06/30/98	1,177,000	5.4%	-
8.250	07/15/98	1,711,140	17.7%	436,000
6.250	07/31/98	1,156,750	5.4%	290,000
5.250	07/31/98	685,000	5.9%	213,000
5.875	08/15/98	4,489,808	20.1%	-
9.250	08/15/98	1,480,000	13.0%	469,000
6.125	08/31/98	1,970,300	9.0%	1,186,000
4.750	08/31/98	648,000	5.0%	57,000
4.750	09/30/98	972,500	7.7%	28,500
6.000	09/30/98	1,219,000	5.7%	288,000
7.125	10/15/98	1,001,593	9.8%	33,000
5.875	10/31/98	995,000	4.7%	170,000
4.750	10/31/98	937,900	7.2%	80,000
5.500	11/15/98	2,721,635	13.2%	202,000
8.875	11/15/98	546,000	5.5%	11,000
5.625	11/30/98	819,200	4.0%	534,200
5.125	11/30/98	929,000	7.7%	-
5.125	12/31/98	1,679,662	13.5%	100,000
5.750	12/31/98	875,000	4.3%	-
6.375	01/15/99	892,045	8.5%	-
5.875	01/31/99	745,000	3.8%	745,000
5.000	01/31/99	757,000	5.9%	380,000
5.000	02/15/99	3,644,140	16.6%	172,000
8.875	02/15/99	951,600	9.8%	106,600
5.875	02/28/99	1,199,000	6.0%	1,199,000
5.500	02/28/99	715,000	6.0%	280,000
5.875	03/31/99	1,875,000	14.7%	-
6.250	03/31/99	1,420,000	7.2%	1,420,000
7.000	04/15/99	1,073,700	10.6%	-
6.500	04/30/99	1,219,620	9.9%	-

Holdings were reduced by $13,600,000 of January 8, T/Bills and $3,426,746 of January 15, T/Bills that were sold under matched sale-purchase agreements which are returned the following day.

U.S. TREASURY AND FEDERAL AGENCY SECURITY HOLDINGS
IN SYSTEM OPEN MARKET ACCOUNT
(Statement date basis, in thousands)

		Holdings 12/31/97	% of Total Outstanding	Net change since 12/31/96
Treasury Notes (Cont'd)				
6.375 %	04/30/99	$1,225,000	6.4%	1,225,000
6.375	05/15/99	2,869,124	12.3%	267,000
9.125	05/15/99	1,637,500	16.3%	510,000
6.250	05/31/99	738,000	4.0%	738,000
6.750	05/31/99	686,990	5.6%	100,000
6.750	06/30/99	1,644,820	12.6%	-
6.000	06/30/99	644,435	3.6%	644,435
6.375	07/15/99	349,000	3.5%	-
6.875	07/31/99	1,531,400	12.4%	385,000
5.875	07/31/99	1,096,970	6.5%	1,096,970
6.000	08/15/99	2,232,110	9.8%	452,000
8.000	08/15/99	858,600	8.4%	61,000
5.875	08/31/99	1,304,630	7.6%	1,304,630
6.875	08/31/99	951,480	7.7%	250,000
7.125	09/30/99	1,078,752	7.4%	-
5.750	09/30/99	642,380	3.7%	642,380
6.000	10/15/99	406,115	3.9%	-
7.500	10/31/99	558,315	4.6%	50,000
5.625	10/31/99	502,000	3.0%	502,000
7.875	11/15/99	814,000	7.6%	127,000
5.875	11/15/99	2,790,968	12.2%	75,000
7.750	11/30/99	1,176,145	10.0%	764,000
5.625	11/30/99	548,175	3.2%	548,175
5.625	12/31/99	795,780	4.8%	795,780
7.750	12/31/99	1,379,665	11.1%	25,000
6.375	01/15/00	689,545	6.8%	-
7.750	01/31/00	864,440	7.1%	252,000
8.500	02/15/00	986,000	9.2%	154,000
5.875	02/15/00	846,796	4.2%	846,796
7.125	02/29/00	1,322,290	10.7%	387,000
6.875	03/31/00	1,341,510	10.2%	136,000
5.500	04/15/00	360,000	3.4%	-
6.750	04/30/00	1,024,250	8.3%	256,500
6.375	05/15/00	2,807,000	13.5%	2,807,000
8.875	05/15/00	480,000	4.6%	-
6.250	05/31/00	843,460	6.6%	201,000
5.875	06/30/00	740,100	5.9%	-
6.125	07/31/00	455,000	3.7%	70,000
6.000	08/15/00	1,309,945	7.3%	1,309,945
8.750	08/15/00	1,158,400	10.5%	314,000
6.250	08/31/00	650,000	5.5%	135,000
6.125	09/30/00	1,009,000	8.4%	285,000
5.750	10/31/00	537,430	4.5%	-
5.750	11/15/00	1,651,200	10.3%	1,651,200
8.500	11/15/00	881,000	7.7%	40,000
5.625	11/30/00	646,200	5.2%	266,200
5.500	12/31/00	891,000	7.0%	91,000
5.250	01/31/01	800,000	6.2%	-

		Holdings 12/31/97	% of Total Outstanding	Net change since 12/31/96
Treasury Notes (Cont'd)				
7.750 %	02/15/01	$929,500	8.2%	252,000
5.625	02/28/01	901,000	7.0%	101,000
6.375	03/31/01	1,600,000	11.3%	100,000
6.25	04/30/01	938,500	6.8%	73,500
8.000	05/15/01	1,157,000	9.4%	265,000
6.500	05/31/01	911,900	6.7%	256,900
6.625	06/30/01	1,175,000	8.2%	75,000
6.625	07/31/01	873,000	6.2%	173,000
7.875	08/15/01	1,375,000	1.1%	260,000
6.500	08/31/01	860,300	6.2%	335,300
6.375	09/30/01	1,037,000	7.2%	387,000
6.25	10/31/01	883,000	6.0%	313,000
7.500	11/15/01	2,441,000	10.1%	898,000
5.875	11/30/01	476,000	3.4%	286,000
6.125	12/31/01	625,000	4.5%	25,000
6.250	01/31/02	777,000	5.8%	777,000
6.250	02/28/02	803,000	5.8%	803,000
6.625	03/31/02	980,900	6.9%	980,900
6.625	04/30/02	1,035,000	7.2%	1,035,000
7.500	05/15/02	1,016,009	8.7%	35,000
6.500	05/31/02	949,000	7.0%	949,000
6.250	06/30/02	786,000	6.0%	786,000
6.000	07/31/02	295,000	2.4%	295,000
6.375	08/15/02	2,247,000	9.4%	57,000
6.250	08/31/02	701,000	5.5%	701,000
5.875	09/30/02	460,000	3.6%	460,000
5.750	10/31/02	390,000	3.3%	390,000
5.750	11/30/02	400,000	3.3%	400,000
5.625	12/31/02	585,000	4.9%	585,000
6.250	02/15/03	2,145,000	9.1%	50,000
5.750	08/15/03	3,685,000	13.2%	65,000
5.875	02/15/04	650,000	5.0%	100,000
7.250	05/15/04	1,905,550	13.2%	25,000
7.250	08/15/04	810,000	6.1%	-
7.875	11/15/04	1,753,040	12.3%	140,000
7.500	02/15/05	1,150,000	8.3%	-
6.500	05/15/05	2,000,000	13.6%	-
6.500	08/15/05	1,800,000	12.0%	-
5.875	11/15/05	1,700,000	11.2%	-
5.625	02/15/06	1,500,000	9.7%	-
6.875	05/15/06	2,075,000	13.0%	375,000
7.000	07/15/06	2,265,752	10.0%	645,000
6.500	10/15/06	2,432,800	10.8%	588,000
6.250	02/15/07	540,000	4.1%	540,000
6.625	05/15/07	1,750,000	12.5%	1,750,000
6.125	08/15/07	2,175,000	8.5%	2,175,000
Matured in 1997				(29,045,221)
Total Treasury Notes		$172,533,011		$21,611,290

U.S. TREASURY AND FEDERAL AGENCY SECURITY HOLDINGS IN SYSTEM OPEN MARKET ACCOUNT

(Statement date basis, in thousands)

		Holdings 12/31/97	% of Total Outstanding	Net change since 12/31/96
Treasury Inflation Index Notes (IIN)				
Issues outstanding:				
3.625 %	07/15/02	$900,000	5.4%	900,000
3.375	01/15/07	750,000	4.8%	750,000
Matured in 1997				-
Total Treasury IIN		$1,650,000		$1,650,000
Treasury Bonds				
Issues outstanding:				
3.500 %	11/15/98	$30,750	10.2%	-
11.750	02/15/01	160,803	10.7%	-
13.125	05/15/01	165,726	9.5%	-
13.375	08/15/01	256,092	14.6%	-
15.750	11/15/01	172,904	9.9%	-
14.250	02/15/02	159,800	9.1%	-
11.625	11/15/02	347,850	12.6%	-
10.750	02/15/03	739,250	24.6%	-
10.750	05/15/03	331,000	10.2%	75,000
11.125	08/15/03	514,300	14.7%	81,800
0.013	11/15/03	751,340	10.3%	246,100
12.375	05/15/04	769,786	20.5%	-
13.750	08/15/04	528,000	13.2%	161,000
11.625	11/15/04	947,200	11.4%	428,000
12.000	05/15/05	728,476	17.1%	514,000
8.250	05/15/05	1,513,660	35.8%	-
10.750	08/15/05	1,187,000	12.8%	305,000
9.375	02/15/06	20,000	0.4%	-
7.625	02/15/07	1,396,164	33.0%	-
7.875	11/15/07	378,500	25.3%	-
8.375	08/15/08	788,500	37.5%	-
8.750	11/15/08	1,588,500	30.4%	-
9.125	05/15/09	921,205	20.0%	30,000
10.375	11/15/09	1,075,939	25.6%	-
11.750	02/15/10	717,400	28.8%	-
10.000	05/15/10	1,176,556	39.4%	-
12.750	11/15/10	1,260,865	26.6%	-
13.875	05/15/11	1,073,542	23.3%	-
14.000	11/15/11	975,091	19.9%	90,000
10.375	11/15/12	1,611,741	14.6%	-
12.000	08/15/13	3,040,772	20.6%	-
13.250	05/15/14	869,450	17.4%	-
12.500	08/15/14	905,720	17.7%	-
11.750	11/15/14	1,195,000	19.9%	-
11.250	02/15/15	1,335,733	10.5%	-
10.625	08/15/15	1,167,400	16.3%	262,400
9.875	11/15/15	941,500	13.6%	440,000
9.250	02/15/16	880,000	12.1%	100,000
7.250	05/15/16	995,000	5.3%	-

		Holdings 12/31/97	% of Total Outstanding	Net change since 12/31/96
Treasury Bonds (Cont'd)				
7.500 %	11/15/16	$1,263,000	6.7%	78,000
8.750	05/15/17	1,450,000	8.0%	706,000
8.875	08/15/17	909,000	6.5%	89,000
9.125	05/15/18	496,900	5.7%	200,000
9.000	11/15/18	256,000	2.8%	-
8.875	02/15/19	933,000	4.8%	350,000
8.125	08/15/19	1,690,900	8.4%	116,000
8.500	02/15/20	960,879	9.4%	370,000
8.750	05/15/20	1,066,600	10.5%	461,600
8.750	08/15/20	1,366,600	12.5%	253,600
7.875	02/15/21	775,500	7.0%	312,500
8.125	05/15/21	938,000	7.8%	328,000
8.125	08/15/21	680,000	5.6%	320,000
8.000	11/15/21	1,150,000	3.5%	295,000
7.250	08/15/22	460,000	4.4%	15,000
7.625	11/15/22	660,000	6.2%	190,000
7.125	02/15/23	1,413,000	7.7%	431,000
6.250	08/15/23	1,035,000	4.5%	55,000
7.500	11/15/24	505,000	4.4%	55,000
7.625	02/15/25	815,000	7.0%	115,000
6.875	08/15/25	1,205,000	9.6%	105,000
6.000	02/15/26	934,000	7.2%	34,000
6.750	08/15/26	965,000	8.9%	65,000
6.500	11/15/26	1,470,000	12.8%	-
6.625	02/15/27	480,000	4.6%	480,000
6.375	08/15/27	730,000	6.8%	730,000
6.125	11/15/27	1,180,000	10.6%	1,180,000
Matured in 1997				-
Total Treasury Bonds		$59,406,894		$10,068,000
Total Treasury Notes, IIN, and Bonds		$233,589,905		
FHLB				
Issues outstanding:				
5.260 %	04/27/98	$14,000	4.7%	-
9.250	11/25/98	5,000	1.0%	-
9.300	01/25/99	2,000	0.4%	-
8.600	06/25/99	3,900	1.2%	-
8.450	07/26/99	5,000	1.4%	-
8.600	08/25/99	11,000	2.9%	-
8.375	10/25/99	10,000	2.7%	-
8.600	01/25/00	6,000	2.0%	-
Matured in 1997				(57,700)
Total		$56,900		($57,700)

@ Do not reflect $22,963 inflation compensation.

Appendix C (continued)

U.S. TREASURY AND FEDERAL AGENCY SECURITY HOLDINGS IN SYSTEM OPEN MARKET ACCOUNT

(Statement date basis, in thousands)

		Holdings 12/31/97	% of Total Outstanding	Net change since 12/31/96	
FNMA					
Issues outstanding:					
8.650 %	02/10/98	$10,000	1.5%	-	
5.300	03/11/98	50,000	6.3%	-	
9.150	04/10/98	30,000	5.0%	-	
9.400	08/10/98	50,000	10.0%	-	
7.850	09/10/98	48,000	7.4%	-	
5.300	12/10/98	15,000	1.5%	-	
7.050	12/10/98	30,000	4.1%	-	
9.550	03/10/99	25,000	3.6%	-	
8.700	06/10/99	23,000	2.7%	-	
8.450	07/12/99	5,000	0.7%	-	
7.000	08/11/99	-	-	(15,000)	*
6.450	10/14/99	-	-	(100,000)	*
8.350	11/10/99	7,000	0.4%	-	
6.100	02/10/00	25,000	5.0%	-	
9.050	04/10/00	10,000	1.3%	-	
9.200	09/11/00	10,000	2.5%	-	
7.200	01/10/02	-	-	(10,000)	*
7.900	04/10/02	-	-	(10,000)	*
7.800	06/10/02	-	-	(40,100)	*
7.300	07/10/02	-	-	(12,000)	*
6.950	09/10/02	-	-	(35,000)	*
6.625	04/10/03	30,000	4.3%	-	
6.450	06/10/03	25,000	5.0%	-	
6.200	07/10/03	15,000	3.0%	-	
5.800	12/10/03	10,000	1.3%	-	
7.600	04/14/04	-	-	(100,000)	*
7.550	06/10/04	24,650	3.1%	-	
8.050	07/14/04	-	-	(5,000)	*
8.250	10/12/04	30,000	7.5%	-	
6.850	09/12/05	20,000	5.0%	-	
6.700	11/10/05	100,000	25.0%	-	
10.350	12/10/15	10,000	4.0%	-	
8.200	03/10/16	15,000	3.8%	-	
Matured in 1997				(236,700)	
Total		$617,650		($563,800)	

		Holdings 12/31/97	% of Total Outstanding	Net change since 12/31/96
FCSB				
Issues outstanding:				
8.650 %	10/01/99	$10,000	2.3%	-
Matured in 1997				(902,000)
Total		$10,000		($902,000)
FLB				
Issues outstanding:				
Matured in 1997				(16,650)
Total		-		($16,650)
Total Agency Issues		$684,550		($1,540,150)
Total Treasury & Agency Issues		$431,397,153		$38,265,333

* Called issued