

## Chapter 7

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# The Conduct of Open Market Operations

### The Framework of Reserve Management

The Manager of the System Open Market Account, supported by other Trading Desk personnel, develops a strategy for bringing actual nonborrowed reserves in line with the nonborrowed reserve path over the two-week reserve maintenance period. Working out plans for adding or draining reserves to achieve the nonborrowed reserve path is partly an “art” requiring skill and experience in accounting for the many diverse factors affecting reserves. Desk personnel must assess the prospective as well as the current estimated reserve situation. To achieve bank reserve levels that balance reserve supplies with demands, Desk personnel focus both on the average nonborrowed reserve path over the two-week reserve maintenance period and on the day-to-day distribution of reserves.

In developing daily plans, the Manager must deal with both variability and uncertainty about bank reserves. Short-term variation in reserve supplies and demands from factors other than open market operations, described in Chapter 6, Box B, is substantial (Chart 1). In 1996, for example, the System’s securities portfolio rose an average of about \$700 million per two-week reserve maintenance period. (The increases supported currency, which expanded by an average of \$870 million per period. Nonborrowed reserves actually fell about \$300 million per period on average.) However, during the same year, the average absolute change in reserve availability attributable to operating factors (including currency) from one reserve maintenance period

to the next was, at \$2.5 billion, almost four times as large; the biggest change was \$9.1 billion. (“Absolute” means changes without regard to whether they are positive or negative.) A large portion of temporary open market operations served to offset this variability. The operations reduced average period-to-period changes in nonborrowed reserves to about \$1 billion. Much of the residual change in nonborrowed reserves accommodated seasonal variation in required reserves (Chart 1).

Further complicating open market strategy are the difficulties in estimating reserve factors and the inevitable forecast errors that result. Average absolute errors of operating factor estimates made at the start of each maintenance period were about \$930 million for 1996, with a peak one-period error of \$2.5 billion. Comparable errors for required reserve estimates averaged around \$350 million.<sup>1</sup>

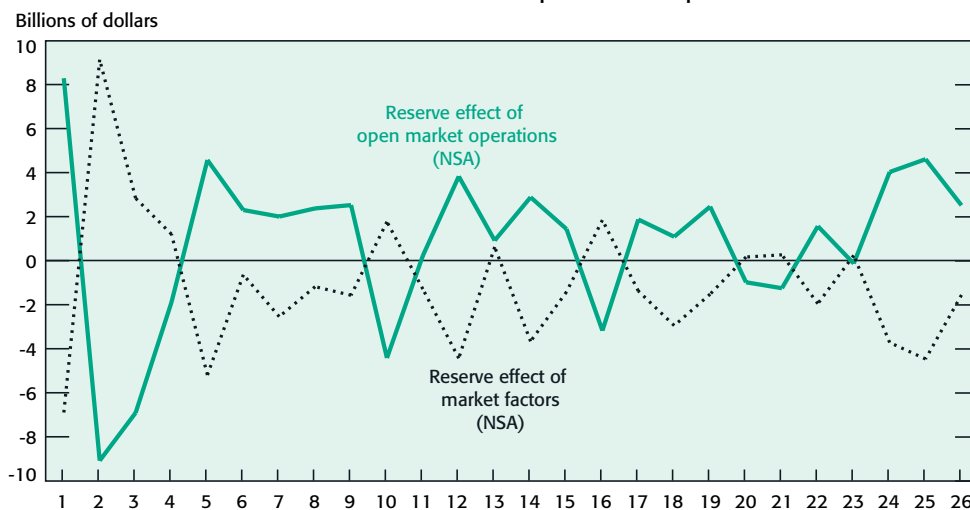
Each day the projections staff presents participating officers and staff with a summary of the reserve estimates and some indication of areas where the risk of revisions is high. The Manager or a designated officer must decide whether to add or drain reserves “permanently” by buying or selling securities outright or temporarily by providing or draining reserves through an operation that reverses itself in one or a few days. The reserve management strategies of depository institutions (banks) are also taken into consideration. For instance, banks may show a preference for excess reserves that are higher or lower than their regular patterns. These preferences will affect the relationship between the demand for reserves and the behavior of the Federal funds rate. In choosing each day’s operation, the Desk weighs both the action indicated by the reserve projections and the margins for error. The first concern is to achieve reserve levels consistent with the average nonborrowed reserve path for the maintenance period. The second concern is to make sure reserve levels do not get very far out of line with the objective on individual days during the period. The emergence of low average required reserve balances, discussed in Chapter 6, has increased the importance of the individual days’ balances.

## Tools of Open Market Operations

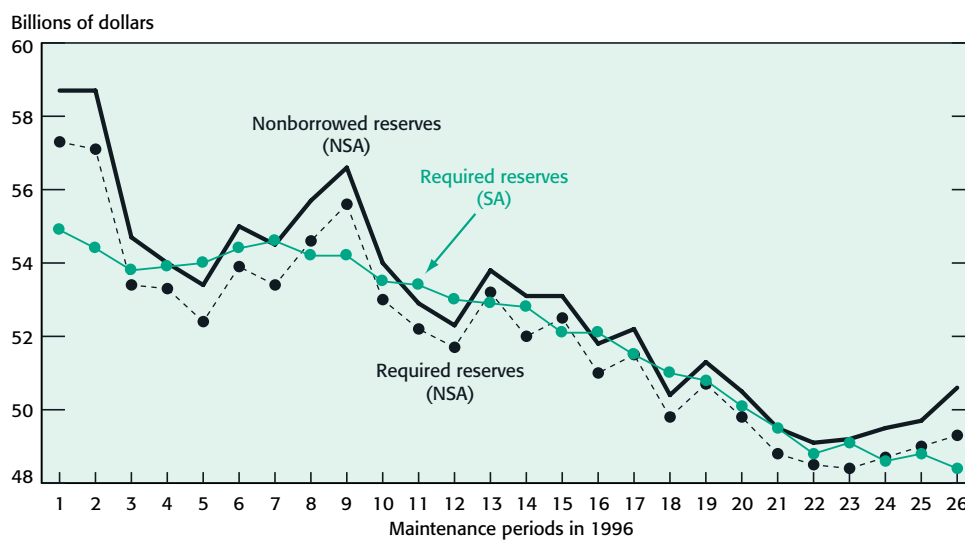
The Desk uses the System’s portfolio to achieve its reserve objectives. The Federal Open Market Committee (FOMC) spells out the Manager’s authority in a special directive, which is usually reviewed at the first FOMC meeting of the year and may be amended as necessary. (The authorization is published in the *Federal Reserve Bulletin* with the minutes for the FOMC meeting at which it is reviewed.) It authorizes outright transactions at

Chart 1. **Reserve Measures and Open Market Operations**  
By Reserve Maintenance Period

Panel A: Reserve Effects of Market Factors and Open Market Operations



Panel B: Selected Reserve Measures



Source: Board of Governors of the Federal Reserve System.

Notes: Reserve data are not adjusted for changes in reserve requirements. Nonborrowed reserves include extended credit borrowing.

market prices in Treasury and federal agency securities with securities dealers and with official foreign and international accounts maintained at the Federal Reserve Bank of New York. As Chapters 2 and 5 explained, the authorization includes a limit on the net change permitted in the System's outright portfolio in the interval between meetings—routinely \$8 billion during 1996. The Manager may request a temporarily expanded leeway if staff estimates of likely reserve movements over the upcoming inter-meeting period, prepared before each meeting, suggest the need. Because this leeway for portfolio changes between meetings has long since ceased to be the key indicator of Committee policy preferences, the Manager's requests for an increase are generally approved routinely by the FOMC. The FOMC also authorizes the Desk to make repurchase agreements (RPs) involving the same types of securities for periods of up to fifteen days for the New York Reserve Bank's account. When conducting RPs in the market on behalf of official foreign and international accounts, the Desk interposes the New York Reserve Bank's account between the foreign accounts and the market.<sup>2</sup>

### **1. Outright Purchases and Sales**

In buying and selling securities, the Manager of the System Open Market Account functions within a framework of Federal Reserve–Treasury relations that has evolved to keep monetary policy and debt management separate. Currently, the degree of separation between Treasury operations and the Federal Reserve far exceeds that of the early years of the System. As indicated in Chapter 2, the Treasury–Federal Reserve Accord of 1951 freed the Federal Reserve from the obligation to support prices in the secondary market and gave it the ability to use open market operations for its monetary policy objectives.

The Federal Reserve makes all additions to its portfolio through purchases of securities that are already outstanding. The Federal Reserve Act does not give the System the authority to purchase new Treasury issues for cash.<sup>3</sup> In a refunding, the System cannot subscribe for a larger amount of the issues offered than the amount of the maturing securities it holds. Because the portfolio has had an upward trend, the Manager has normally rolled over the System's maturing securities so as to avoid the drain that would occur if they matured without replacement. Securities are rolled over by submitting noncompetitive tenders at the auction. The System receives the average auction rate.<sup>4</sup>

The Manager can, however, reduce the System's portfolio by redeeming a part of the maturing holdings. To do so, the System bids competitively for the amount it wants to redeem at a higher

rate than the Treasury is likely to accept. The Trading Desk occasionally redeems a modest portion of its maturing three- and six-month Treasury bills as a means of absorbing reserves. The Desk has rarely run off coupon issues deliberately, although it did run off modest amounts in 1989, the only time since 1957 that the portfolio declined over the year. (The portfolio was reduced to offset reserve provision from heavy purchases of foreign exchange. At the time, the Desk had already cut back bill holdings considerably.) In some instances, the Treasury has changed its debt management procedures so that no replacement security has been issued at the time the old one matured. In these instances, the Desk has had to redeem securities.<sup>5</sup> Runoffs have also occurred when the Treasury has paid down maturing securities because legislative authority to issue new debt was temporarily exhausted. When such drains are inconsistent with the reserve picture, they are offset through purchases in the secondary market.

When arranging outright open market operations in the secondary market, the Manager faces key choices involving the timing, amounts, and types of securities to be bought or sold and the counterparties for the transactions. The timing of outright activity depends principally on the extended outlook for non-borrowed reserves. The Manager generally executes outright purchases (or sales) of Treasury debt in the market at times when the estimated need (or surplus) is expected to be large—at least several billion dollars in each upcoming maintenance period—and to extend a few periods into the future. A reluctance developed over the years to address small reserve shortages or excesses of brief duration with outright operations, which entail greater costs in terms of resource utilization to execute and can be affected by market price changes. Once a sustained need for a reserve adjustment is forecast, the precise timing of the operation must be chosen. The Desk has preferred to avoid operations when markets are thinner than usual. The recent decision to split Treasury coupon purchases into smaller operations (described below) reduced their potential to disrupt the markets and raised timing flexibility.

In arranging outright market transactions, the Manager chooses whether to operate in Treasury bills or Treasury coupon securities (notes and bonds). Both markets are sufficiently broad to accommodate Desk purchases.<sup>6</sup> In particular instances, one market may seem a better choice because of a special factor. For example, if the Treasury were retiring bills because of seasonally heavy receipts, market scarcities could develop, making coupon purchases appear preferable. The Desk has not sold coupons in the market but

has sold bills. With the portfolio generally rising, sales from the portfolio have been rare in the 1990s.<sup>7</sup>

In choosing which type of securities to buy, the Manager also considers the impact of the purchases on the structure of the System's portfolio. Chapter 2 reviewed some of the factors that have driven portfolio decisions. One concern is making sure that contingent needs for liquidity can be met. While the portfolio has rarely been reduced for extended periods or by large amounts since the 1951 Accord, a range of events, each with a low probability, could require substantial sales from the portfolio over a relatively short period. Such events include a banking crisis that involved heavy reserve provision by the discount window, a reflow of currency because of changed usage in the United States or abroad, or sizable intervention purchases of foreign exchange. Treasury bills, with their short maturities, can be easily sold or redeemed and provide such liquidity. Coupon issues can be redeemed, but market sales could prove difficult under some circumstances.

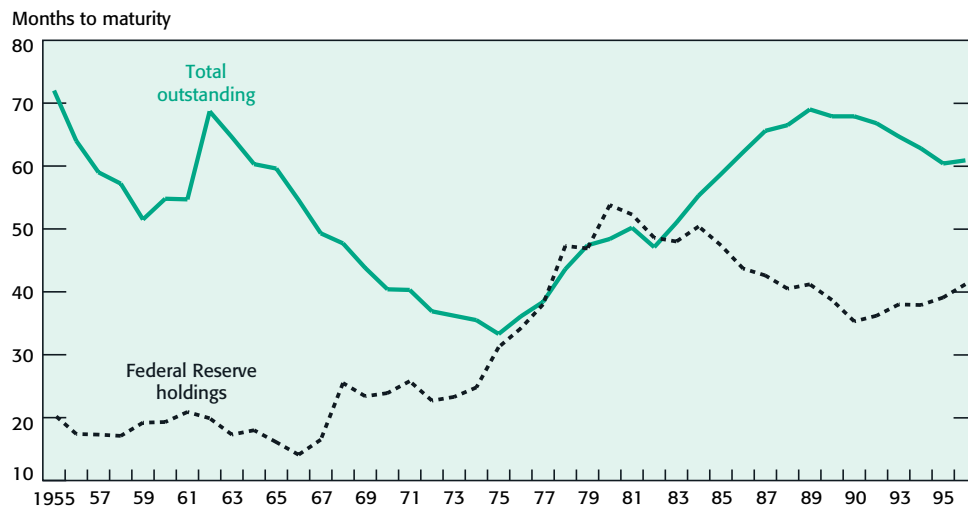
In addition to liquidity needs, another preference has been for the System portfolio to contain securities from the full range offered by the Treasury. Such an approach reduces the chances that the Federal Reserve's purchases of securities will work at cross purposes to the Treasury's debt management efforts. It also means that the Federal Reserve has a range of securities available that it could lend to dealers in a crisis (against collateral) to ease settlement problems that could otherwise disrupt the functioning of the securities markets.

The Continental Illinois National Bank crisis in 1984, described in Chapter 2, encouraged the FOMC to seek a gradual buildup in the liquidity of the portfolio through a modest leaning toward bills in its outright purchases and toward shorter term coupon issues in purchases and rollovers. In 1992, the FOMC decided that the degree of liquidity had risen to comfortable levels. Going forward, it preferred to see the average maturity of the System portfolio remain more or less steady, as long as that was consistent with retaining plentiful liquidity. Thereafter, the average maturity crept up slightly, to forty-one months by the end of 1996, at the same time that the Treasury was shrinking the average maturity of its debt outstanding. At year-end 1996, Treasury marketable debt outstanding had an average maturity of sixty-three months (Chart 2). The portfolio is large enough that the average maturity changes slowly. Outstanding issues shorten in maturity with the passage of time, although rapid rollovers of bills keep their average maturity fairly steady. With coupons, some effort is required to offset the shortening of existing holdings. Average maturities have been held

in a narrow range since 1992 in part by making close to half of outright purchases in coupon issues with a maturity mix that was fairly similar to those of the Treasury's outstanding securities.

When the Trading Desk executes outright purchases or sales in the market, it selects from among the dealers' offers or bids to achieve the highest or lowest yields to maturity in relation to the prevailing yield curve. The System tends to buy issues that are plentiful in the market since those are likely to be offered at the highest relative yields. When the Desk buys Treasury bills, it generally solicits offers for the full range of bills outstanding (fifty-two at the end of 1996). It used to follow that approach for Treasury coupon issues as well, but the huge number of coupon issues outstanding (208 at the end of 1996) made coupon purchases slow and cumbersome.<sup>8</sup> Because dealers are at risk from price changes that occur between the time they submit their offers and the time the Desk responds, the long processing time made dealers more cautious in their participation. In 1995, the Desk began making coupon purchases from small sections of the coupon curve at a time and was able to reduce processing time dramatically. The Desk still buys across the entire curve, but transactions could occur over an interval of days if, for example, the Desk were addressing a large need, or over a longer period if, for example, the reserve need built more gradually.

Chart 2. **Weighted-Average Maturity of Marketable Treasury Issues**



Sources: Federal Reserve holdings data are from the Board of Governors of the Federal Reserve System; total outstanding data are from the U.S. Treasury Department.

Because most of the operations occur at times of predictable seasonal swings in reserve needs, the dealers will often have anticipated and prepared for these operations in their positioning of securities. Occasionally, an operation may surprise the market if the reserve factor movements calling for it were atypical. Rate movements may be a bit larger than otherwise when there is an outright operation, but they are generally modest. A Desk bill purchase on a particular day may run around 10 to 15 percent of that day's market volume of bill trades with customers, although a large transaction may be above 20 percent.<sup>9</sup> Coupon operations generally represented similar shares when they were arranged as single operations.<sup>10</sup>

In addition to its transactions in the market, the Trading Desk has the option to buy Treasury securities from foreign official accounts on any day the accounts are selling or to sell issues from its own portfolio to meet the buy orders of such accounts. These trades give the Desk a means of adding or draining relatively modest amounts of reserves more gradually than with a market operation. The foreign orders are generally modest in size—from a few million dollars to several hundred million dollars—so purchasing (or selling) the whole order is usually consistent with reserve goals. When the market trading patterns show an issue to be in short supply or if System holdings of the issue are especially large, however, the Desk will generally skip that issue in its purchases. Transactions with foreign accounts are put through at the middle of the latest bid and asked rates in the market. Sometimes, foreign buy and sell orders may be arranged between two foreign accounts that have purchase and sale orders of matching maturities. The Desk will execute the balance of the orders in the market.

## 2. Temporary Transactions

In managing bank reserves, the Manager finds it very helpful to put reserves in or take them out in large volume for one day to a few days at a time. The Desk relies heavily on temporary reserve operations in dealing with the uncertainties that affect bank reserves. Even when the reserve forecasts on the first day of the maintenance period indicate no need for System action, reserves may actually turn out substantially higher or lower than projected. RPs and matched sale-purchase agreements (MSPs) enable the Desk to respond quickly when reserves fall short of desired levels or prove excessive. Furthermore, a need or an excess may be concentrated on certain days within the period, and temporary transactions can help to smooth the daily pattern of reserve positions.

An example can illustrate an advantage of RPs. Suppose that the forecast suggested that nonborrowed reserves would be in short supply for the next three days but would be close to their desired level for several days thereafter. The Desk could provide the needed reserves by buying Treasury bills outright for settlement on the day the need for reserves arose and selling bills from the portfolio when the additional reserves were no longer needed. However, such an approach on a regular basis would involve considerable transaction costs. The Desk could more easily accomplish a temporary reserve adjustment with a single RP operation rather than two outright transactions. The dealers would provide the Fed with their selection of eligible securities on the day the operation is undertaken and return the money to receive their securities again on the maturity date of the contract. Eligible collateral includes not just bills but Treasury coupon and federal agency securities held by both dealers and their customers.<sup>11</sup>

The large range of collateral and the low market risk mean that the RP market is huge, allowing the Desk to conveniently undertake bigger operations through RPs than through outright purchases.<sup>12</sup> To some extent, collateral offered to the Desk reflects the availability of securities being financed from day to day. This factor in turn depends partly on floating supplies from recent Treasury sales and on positioning strategies of dealers and others active in the RP markets. If market participants anticipate that interest rates will soon decline, they tend to add to their positions. Collateral becomes plentiful and the RP rate rises relative to the Federal funds rate. When higher rates are anticipated, dealer positions are cut back sharply and the RP rate may fall.

RPs may have maturities ranging from overnight to fifteen days.<sup>13</sup> Multiday RPs may be fixed for the full term of the agreement or may permit the parties to withdraw from the contract before the maturity date. Technically, both the Desk and the dealer may terminate a withdrawable RP early, but in practice, the Desk has not exercised its option. Withdrawable RPs used to be the dominant form of multiday RPs employed by the Desk, but since 1993, fixed contracts have been used more frequently. The early withdrawal option was long a standard feature of RPs, at first because RPs were undertaken at the dealers' initiative, as described in Chapter 2. The feature was retained when RPs became an active open market policy tool, partly because dealers liked the flexibility and were encouraged to participate in RP operations.

Withdrawals are permitted up to a specified time prior to the routine execution of temporary open market operations. Before 1997, open market operations were normally arranged at 11:30 a.m.

eastern time, and withdrawals could be made up to 11 a.m. But in 1997, the Desk's normal market entry time was advanced closer to 10:30 a.m., and the cutoff for withdrawals was moved to 10 a.m. Before 1990, withdrawals had been permitted until 1 p.m., which meant that the Desk did not know the total withdrawals before it had to decide on that day's open market operation.

In some cases, the dealers' early withdrawals have worked to the Desk's advantage. If during its term an RP turned out to have been too large, such that aggregate nonborrowed reserve levels exceeded bank demands, early withdrawals by the dealers could reduce or eliminate the surfeit. Plentiful reserve levels have generally encouraged the Federal funds rate to fall, a decline that in turn has encouraged a lower RP rate. Dealers would respond by arranging a new RP with another counterparty at the lower rate and withdrawing from the RP with the Federal Reserve.

Nevertheless, the withdrawal feature has sometimes made the job of maintaining desired reserve levels more difficult. Withdrawals have often been made even when reserves were scarce. The funds and RP rates may have dropped because a Treasury coupon delivery date has passed, or because some other factor has reduced financing pressures. Dealers sometimes withdraw to meet delivery commitments even though the RP rate may still be firm. Furthermore, as was indicated in Chapter 4, the spread between the RP rate and the Federal funds rate varies considerably. Hence, the RP rate could soften even when the funds rate was still firm. Thus, the Desk may prefer to use fixed-term RPs when the risk of over-adding reserves is small. The Desk has found that dealers have been willing participants in fixed-term operations.

As Chapter 6 indicated, many foreign official and international accounts place a portion of their dollar holdings in a daily RP investment facility provided by the Federal Reserve Bank of New York. The Desk's handling of these orders determines their reserve effect. The Desk has had the choice of arranging the RP orders internally, executing an overnight MSP using its portfolio, or passing the orders through to the market as a customer-related RP. The first option results in a reserve drain because the funds received by the foreign account from a commercial bank remain with the Fed. The reserve projections allow for this drain on the assumption that the investment orders will be arranged internally. Consequently, should some of the orders instead be passed through to the market as customer-related RPs, they would add reserves relative to the projected level.<sup>14</sup>

Through 1996, the choice between a System RP and a customer-related RP depended largely on the magnitude and

duration of the reserve injection that the Desk wanted to accomplish. Customer RPs were routinely arranged to mature on the next business day, since participation in the foreign RP pool changes each day. Customer RPs had to be limited in volume because they could not exceed the total funds available to foreign accounts for investment. The choice of customer-related RPs often indicated that the estimated reserve need was modest, a message that was conveyed to the market by including the intended size of these operations in the announcement to the dealers.<sup>15</sup> When the reserve need was large or likely to persist for a number of days, the Manager was more likely to choose System RPs. In December 1996, the Desk indicated that, beginning in 1997, customer RPs would no longer be used routinely to add reserves. In connection with this change, the Desk also indicated that it would begin to make public the par value of accepted propositions on all of its market operations immediately after the operations were completed.

When the Manager wants to absorb reserves for one or a few days, MSPs with dealers provide a convenient mechanism.<sup>16</sup> In an MSP, the Desk sells Treasury bills from the System Account for immediate delivery and simultaneously buys them back for delivery on the date specified. This procedure provides securities to be financed for one or a few days, making it unnecessary for dealers to increase their positions at risk of loss from a price drop. While MSPs are just the reverse of an RP in their effect on reserves, their form is different. Technically, they encompass two separate outright Treasury bill transactions. With the portfolio generally expanding in recent years, MSPs have been used less frequently than RPs. Typically, however, they have been helpful early in the year when reserves and currency have shown a temporary seasonal decline and for other short-lived events that cause an abundance of reserves. MSPs are not subject to withdrawal because they are literally matched outright transactions with specified delivery dates.

## A Day at the Trading Desk

The working day in the open market area has a regular rhythm. The morning is filled with information-gathering activities to prepare for the day's policy decisions. The forecasting staff analyze new information affecting the behavior of reserves. Trading room staff cover RP and Federal funds markets to get a sense of likely trading patterns and potential dealer partici-

pation in any Federal Reserve RP operation. Others follow the broader securities markets and develop a general understanding of forces at work, paying particular attention to any factors that might affect open market operations. By the time of the morning conference “call,” where the plan of action is presented to an FOMC member and senior Board staff members, the market information will have been synthesized and pulled together to explain price movements and sentiments. The reserve forecasts are presented to explain the Desk’s course of action. Then, if the Manager decides to arrange an open market operation, Trading Desk personnel carry it out. The afternoon is spent on more information gathering, telephone meetings with a couple of primary dealers, market analysis, and the preparation of written and oral reports.

### **1. Early Morning Activity**

At the Trading Desk, a staff member talks with contacts in Europe beginning around 7 a.m. eastern time. These conversations provide insights into how U.S. Treasury debt and other dollar-denominated debt have been trading in European markets. When speaking with the European contacts, the person also typically discusses trading activity in Asia that day. (Trading in Asia has ended by that time. When the European trading day begins, activity in Asia is in progress, allowing European traders to speak directly with their Asian counterparts.) Information from contacts about overseas developments in U.S. dollar instruments is supplemented by reviewing reports on the electronic news services. Trading in New York can begin at any time, but it generally starts around 7:30 a.m. Usually, most activity remains focused on European and Middle Eastern customers for a while, but the balance gradually shifts toward U.S.-based customers. The U.S. markets are fairly active around the time when economic data reports are released, often at 8:30 a.m. eastern time. A flurry of trading will follow any report that is significantly different from expectations, particularly if it changes perceptions about the future course of monetary policy.

Meanwhile, computer reports of factors affecting reserves arrive at the New York Bank from the other Federal Reserve Banks. The projections staff begins compiling and evaluating the material. The information is used to update forecasts of nonborrowed and required reserves.

### **2. Other Preparatory Activities**

As trading activity picks up over the morning in New York, trading room staff members speak about market developments

with the primary dealers and other active market participants. One or two traders will talk to dealers about financing conditions in the market. The Desk is interested in ascertaining the likely size of the dealers' participation in any RP operation that might be undertaken. The amount that dealers have left to finance, particularly in the context of a sense of typical behavior, may be helpful information.

Another trader talks with reserve position managers at most of the largest banks. The reserve managers report the banks' cumulative excesses or deficiencies for the maintenance period in progress and the amount they expect to borrow or lend in the overnight Federal funds market that day. These conversations give a sense of whether the Federal funds market may tighten or ease over the day. The reserve managers' reports provide a different perspective from that furnished by the estimates of aggregate supplies and demands for reserves.

The reserve projectors in New York will continue to gather data on factors that have affected bank reserve positions on earlier days and information about factors that may influence future reserve demands and supplies. They will consider whether to adjust their projections because of the new information. (Such information gathering and analysis are also going on at the Board of Governors in Washington, D.C., giving the Manager another perspective on the data.) As the aggregate data become available, the New York staff provides them electronically to the area's officers.

### **3. The Treasury's Balance and Foreign Official Investments**

A daily conversation with the Treasury takes place around mid-morning. Prior to this call, a projections staff member explains the data revisions to the open market staff member who will recommend the daily program of action to the Manager. The projector describes developments behind the staff's preliminary estimate of nonborrowed reserves for the maintenance period in progress. The estimate gives a sense of the operations that are likely to be needed to achieve the nonborrowed reserve path.

This estimate is refined by examining the assumptions about the Treasury balance at the Fed on that day and the next two days. As noted in Box B of Chapter 6, the Treasury balance is often the biggest source of uncertainty for daily reserve levels. After a review of the figures, a projections staff member telephones Treasury Department personnel who make their own estimates of Treasury cash flows. If the forecasts differ significantly, they will review their

respective assumptions. The Treasury makes adjustments to its balance at the Fed in an effort to keep it relatively steady so as to minimize its impact on bank reserves. When the two staffs' forecasts are significantly different, the Treasury official would normally give weight to each, being careful not to aim for a balance that was uncomfortably low on either forecast.<sup>17</sup>

When both the Treasury and New York staffs suggest that the balance is likely to move away from desired levels, the Treasury will, if possible, take action to bring the balance back in line by transferring funds to or from depository institutions' Treasury tax and loan (TT&L) note options accounts. The transfers are made through direct investments or calls. The Treasury tries to take its actions for the following business day so as to give the banks some advance notice that they will be gaining or losing funds. Large forecast errors sometimes lead to same-day adjustments. Typically, calls and direct investments are calculated as a fraction of an earlier day's TT&L balance. For instance, on a Wednesday, the Treasury might call 20 percent of the book balance of that Tuesday for payment on that Thursday. On rare occasions when the Treasury is very short of funds, same-day receipts may be called into the Federal Reserve. After the Treasury call, the projectors will revise their nonborrowed reserve estimates if the actual Treasury actions differed from their assumptions.

Another important item for completing reserve forecasts is the size of the foreign RP pool. That forecast is prepared from information provided by the New York Reserve Bank's central bank services area. That area receives payment and receipt instructions through numerous telegrams from the foreign central bank participants. A preliminary estimate is prepared around 9:30 a.m., but that estimate may be revised later in the morning if new information changes the picture. Revisions of several hundred million dollars to the estimate of that day's level compared with the previous day's estimate are not uncommon. Preliminary forecasts for later in the period may also undergo revisions.

#### **4. Formulating the Day's Program**

As the forecasts are being completed, staff in the open market area develop a plan of action for the day. At the beginning of the maintenance period, a general plan is considered, with the recognition that forecast revisions may call for modifications. The starting point is the estimates of the need to add or drain reserves, both for the current period and the next few periods. A telephone call to the Board will provide a preliminary reading on the Board

staff's reserve estimates as well as an opportunity to give senior Board staff an indication of what sort of action is being contemplated. New York and Board staff forecasts are given similar weight in the deliberations. When the forecasts suggest that non-borrowed reserves are not close to the path, the participants will discuss ways to bring them in line. They will consider whether to use outright operations, temporary operations, or some combination. (Tables 1 and 2 illustrate two situations the Desk might face.) As indicated above, outright operations are generally reserved for situations where forecasts show sizable needs that are persistently in one direction. (The need for an outright operation might have been addressed before the period started.) Transactions with foreign accounts may be considered either as a supplement to a market operation or when the adjustment need is modest. Allowing some bills to mature without replacing them may be discussed when an extended need to drain reserves is expected.

If temporary operations are considered—because the need to add or drain reserves is forecast to reverse soon or is not viewed as large enough to address with outright operations—the staff recommends the operation's timing and maturity. Multiday operations are well suited to address a need to add or drain reserves that is fairly evenly distributed over the maintenance period. Occasionally, the staff will recommend a fourteen-day operation covering the whole maintenance period. More commonly, it will favor a series of shorter operations because of the prospect of revisions to the reserve forecasts.

When the day-to-day needs to add or drain reserves are unevenly distributed, it may be preferable to choose a pattern of temporary operations that will smooth the reserve profile somewhat. A mix of multiday and overnight operations may be used. The operations will be designed to avoid leaving very large reserve shortages on any one day. Because reserve balances are used for settling interbank transactions, as described in Chapters 3 and 6, very low systemwide balances could leave a number of banks overdrawn as the end of the day approached, creating a sharp runup in the funds rate as the banks scrambled to cover their overdrafts. The staff would also want to avoid leaving banks with larger amounts of excess reserves than demanded early in the period because some banks might be unable to work off undesired excess positions without risking an overdraft.

After the first day, the discussions will include a review of the planned approach to see if it needs to be revised. Because reserve factors rarely behave exactly as expected, modifications are

**Table 1. Hypothetical Reserve Estimates as of Wednesday, March 29**  
Millions of Dollars

Reserve Period Ending	RR Estimate	ER Assumption	BR Assumption	NBR Objective	Projected Supply–NBR	Open Market Operations Need	Average ER to Date	Average BR to Date
3/29	58,000	1,000	100	58,900	NY 58,800	+100	900	100
					BD 59,000	-100		
4/12	58,100	1,000	100	59,000	NY 54,000	+5,000		
					BD 53,900	+5,100		
4/26	58,500	1,000	100	59,400	NY 54,400	+6,000		
					BD 54,200	+6,200		
5/10	57,500	1,000	100	58,400	NY 51,800	+6,600		
					BD 51,600	+6,800		

When Table 1 is presented to the Desk on Wednesday, March 29, it shows that estimates of nonborrowed reserves by both the New York and Board staffs closely surround the path in the maintenance period ending that day. Consequently, the Desk would most likely decide not to take any action to affect that period's reserve levels.

The Desk would then turn its attention to the three upcoming maintenance periods, spanning March 30 to May 10. Because the estimates continue to show large reserve deficiencies for those periods, it would probably decide to carry through with its tentative plans to address future needs with an outright purchase of Treasury bills—thus adding reserves on a permanent basis. (It might have chosen either bills or coupon securities.)

Guided by the reserve estimates from both staffs, the purchase amount could be up to \$4 billion or so. The possibility that the reserve needs could be lower than forecast would have been a factor in the decision to meet less than the entire estimated need with outright purchases prior to or at the onset of the period. With a delivery date of Thursday, March 30, the first day of the April 12 maintenance period, a \$4 billion purchase would increase the supply of nonborrowed reserves over that maintenance period by that full amount of the operation. The purchase will leave the desk the flexibility to make further moderate additions to reserves, as estimates are updated and revised. If the numbers underwent no revision, the Desk, in order to meet path estimates, would have to supply an additional \$1 billion to \$1.1 billion in the period ending April 12, \$2 billion to \$2.2 billion in the period ending April 26, and \$2.6 billion to \$2.8 billion in the period ending May 10. These additions would be easily achieved through RPs.

Two reserve factors account for most of the substantial estimated reserve needs in this interval. The first is currency: public demand climbs in the seasonally more robust spring and summer months. The second is Treasury balances at the Federal Reserve: tax receipts are large in mid-April and continue to be processed into early May. The daily swings in Treasury balances tend to be large and can produce notable day-to-day volatility in reserves. The Desk might not offset that part of the increase in reserve need resulting from an increase in the Treasury's balance with outright purchases since that increase is temporary.

**Table 2. Hypothetical Reserve Estimates as of Thursday, October 5**

Millions of Dollars

Reserve Period Ending	RR Estimate	ER Assumption	BR Assumption	NBR Objective	Projected Supply–NBR	Open Market Operations Need	Average ER to Date	Average BR to Date
10/11	55,900	1,000	300	56,600	NY 55,800	+ 800	700	300
					BD 55,600	+1,000		
10/25	56,300	1,000	300	57,000	NY 57,400	- 400		
					BD 57,200	- 200		
11/8	56,500	1,000	300	57,200	NY 55,400	+1,800		
					BD 55,100	+2,100		

A review of Table 2 shows that on Thursday, October 5, midway through the maintenance period ending on October 11, moderate open market operations of \$800 million to \$1 billion for the period as a whole are needed to raise the supply of reserves to the path level. Because the period is halfway over, it would take reserve additions of \$1.6 billion to \$2 billion a day—double the estimated average shortage—to raise average NBRs to the path level.

This period included a quarter end, when excess reserves and borrowing could have behaved unusually. However, on October 5, the quarter end has passed, and no unusual behavior was observed in either measure. The excess reserve position to date, at \$700 million, is modestly below the \$1 billion assumption and is more or less typical for this stage in the period. The remaining days of the maintenance period contain no other sources of particular uncertainty, although at any time, errors can occur. Under these conditions, the NBR path can probably be attained without causing an unduly high or low Federal funds rate.

To address the remaining need for the maintenance period, the Desk might execute a four-day System RP of about \$2 billion. That amount, in place from Thursday through the weekend, would raise the NBR projection average for the period by just under \$600 million, meeting a large part of the reserve need, based on New York figures. The amount would likely leave room for further reserve additions in the last three days of the maintenance period, in part because of the possibility that reserve needs might be revised downward after the weekend. The choice of a temporary operation recognizes that the reserve needs are short term. In the next period, the projected supply of reserves slightly exceeds the objective.

common. Major shifts in the outlook for reserves within a maintenance period generally occur a few times a year.

Trading Desk personnel will watch the Federal funds rate each day. The funds rate may move outside the anticipated range for a number of reasons. The clearest situation occurs when reserves are forecast to be scarce (or in excess) and the funds rate is high (or low) relative to the announced rate. If both the reserve projections and the funds rate suggest a need to add (or drain) reserves, the decision is usually straightforward. The picture is not always so clear, however. A number of situations may cause the funds rate to move in a way that is inconsistent with the reserve estimates. The funds rate may reflect expectations of an imminent policy change. If, for instance, banks expected the FOMC to lower the funds rate later in the maintenance period, they would try to keep their daily reserve balances as low as they could without risking an overdraft. Their actions would depress the rate. A poor distribution of reserves or heavy settlement days can leave banks unaware of their true reserve position. Desk staff would try to read the rate's meanings.

When the two measures give conflicting signals, the staff must decide how much weight to give to the reserve estimates as compared with the funds rate. With announcements of policy changes, the funds rate should not mislead the banks about the Fed's policy intentions. More reliance may be placed on the forecasts at times when confidence in them is relatively high. For example, during the late-year seasonal buildup of reserves and currency, there may be considerable confidence that additional reserves will be needed although the magnitude may remain uncertain. Reserves may be added even when the funds market does not confirm the shortage. If confidence is low because of particular uncertainty about reserve factors, the funds rate may play a relatively greater role in the decision.

Near the end of the maintenance period, the Desk will look closely at the behavior of borrowed and excess reserves to date to see if the path assumptions are likely to hold. Some unusual event, such as a major internal accounting difficulty, might have caused a large bank to borrow heavily at the discount window during the period. It might be mathematically impossible to achieve the borrowing level used in constructing the path because borrowing can never be less than zero. In practice, small banks always engage in some seasonal borrowing. If a large amount of borrowing has occurred, the Manager would normally decide to provide fewer reserves than called for to achieve the nonborrowed reserve path. Otherwise, total reserves would be high and consequently

excess reserves would be large relative to probable bank demands.

In evaluating excess reserve demands, the Desk staff will examine the reserve positions carried in by large banks to see if they will be trying to end with excesses or deficiencies. Reports of actual levels to date can also be helpful toward the latter part of the period. If small institutions have built up an above-average reserve excess, they will only work off a limited portion. Many of these institutions never run reserve deficiencies and others only run small ones because the reserve balances that they are required to hold at the Federal Reserve are modest to nonexistent. Large banks sometimes find they have excess reserve positions that they cannot eliminate without ending one of the remaining days with their accounts overdrawn, an outcome they would avoid. Because excess reserves are not a target in themselves, the Manager generally allows informally for expected deviations from the assumption used in the path. Not all of these issues must be readdressed at each day's morning strategy session. The actual conversation among the staff members and the presentation of the recommendation to the Manager or another officer usually take only ten to fifteen minutes.

As the discussion progresses toward a conclusion, a member of the money market staff will write a program indicating the action planned for the day. The program will describe the reserve situation and report the Federal funds rate, along with other considerations that have influenced the approach taken. On the first day of the maintenance period, the program will review the degree of reserve pressure being sought. If policy is changed during the period, that development will be reported and explained. Once the program is drafted, the Manager or another officer will review it. Meanwhile, in the trading room, people who follow the various markets will prepare notes so that they can cover market developments that morning during the conference call.

## 5. The Conference Call

The next step in the process is the morning conference call. For many years, the call took place around 11:15 a.m., but beginning in 1997 it was advanced to 10:20 a.m. The traders who will report on market developments will join the Manager and representatives from the areas that planned the action for the day. The call links the Trading Desk with the office of the Director of the Division of Monetary Affairs at the Board, where several Board staff members are assembled, and with one of the four Reserve Bank presidents (outside of New York) serving on the FOMC. The call enables the Desk to consult daily with one of the Committee

members concerning the Desk's execution of FOMC instructions. The Reserve Bank president on the call not only has an opportunity to comment daily on the Desk's approach, but also gets a sense of the circumstances, including uncertainties and difficulties, faced by the Desk between meetings.

The call usually runs about fifteen minutes. A trader will summarize the morning developments in the Treasury securities market. (Activity from the previous afternoon will already have been described in a daily recap distributed through electronic mail, so any review at the call is brief.) Generally, the commentary begins with market developments in Asia and Europe. The trader then reports on market reactions to releases of U.S. economic data and other factors affecting market activity. Commentary may also include analysis of market developments and sentiment as a result of traders' more in-depth coverage of particular market segments over a longer period of time.

A trader who follows the money markets may report on short-term financing in the Federal funds and RP markets. The trader may describe the state of the Federal funds market, indicating trading patterns and any information provided by the Federal funds brokers or the major banks that may help to explain its behavior. Someone who covers foreign exchange markets may review activity abroad and locally and report on any intervention by the Federal Reserve or foreign central banks. Noteworthy developments in equity markets will be reported. A member of the projections staff then discusses the reserve outlook and explains revisions to the figures. If the reserve forecasts of the Board and New York staffs differ significantly, the call provides an opportunity for discussing the discrepancies.

Finally, the author of the planned program of action reads it and asks the Reserve Bank president for comments. (Occasionally, a governor will sit in at the Board and will also be asked to comment.) Usually, the president will concur in the planned approach; occasionally, the president may ask whether an alternative approach has been considered. Such a question will elicit further elaboration of the reasoning behind the proposed program. After the call, a Board staff member condenses the information into a brief report that is given to each governor by early afternoon and wired to each Reserve Bank president.

The Chairman of the Board of Governors does not attend the call but is kept fully informed of all significant matters relating to open market operations. The Manager and Director make sure the Chairman knows in advance about large outright or other significant open market operations. If necessary, the Manager, the

Director, and the Chairman will discuss unfolding developments that may bear on how the Committee's directive is to be carried out—particularly whether a change in the desired degree of reserve pressure may be appropriate. The Chairman may decide that a consultation of the full Committee, or perhaps a formal telephone meeting, is in order.

## 6. Executing the Daily Program

Any temporary transactions authorized in the program are carried out directly after the conference call, generally shortly after 10:30 a.m.<sup>18</sup> In the operation, a message is sent electronically to all of the primary dealers using the Federal Reserve's Fedline terminals. At the same time, the public information area of the Federal Reserve Bank of New York is informed of the action to enable its staff to respond to inquiries from the news media.

When arranging RPs, the Desk sends out a standard message indicating the type of operation, its maturity date, and, if it is a multiday operation, whether it is fixed or withdrawable. The message includes a deadline, generally ten to fifteen minutes after the announcement. The computer sorts the offerings, displaying the amounts at each rate from the highest to the lowest rate. Once the deadline has passed, designated staff members will run some edit checks. When any discrepancies are reconciled, they will inform the officer or staff person in charge of the operation that the process is complete. That person will generally arrange an amount close to that specified in the program, but there is some flexibility, especially early in the period when there will be time for further reserve adjustments. A somewhat higher volume may be arranged if large offerings or a stringent Federal funds market suggests the possibility of a greater than forecast need for reserves. If offerings are skimpy or unattractively priced, a smaller volume than was contemplated initially may be executed. Once the officer decides the amount to accept, the designated trader will mark the stopout point on the computer screen and release the results. (A partial percentage may be arranged at the stopout rate if the volume at that rate is larger than the desired amount.) The dealers will read on their screens which propositions were accepted and which were rejected. Each accepted proposition will be arranged at the rate the dealer offered. The whole operation is over within a few minutes of the deadline for offers.

After an RP operation is completed, those dealers whose propositions were accepted use their Fedline terminals to notify the Desk of the specific securities that they or their customers are providing to the Federal Reserve under an RP. Because the issues

identified may trade significantly above or below par depending on whether their coupon interest rates are higher or lower than current rates, the collateral value of each security must be assessed. A price is set somewhat below the bid price currently being quoted in the market plus any accrued interest on the issue, a practice referred to as taking a haircut. The dealer receives that price in return for the securities. This procedure affords the Federal Reserve protection against declines in market prices during the term of the contract and against potential losses should the dealer not return the money when the contract matures.<sup>19</sup> Securities are valued using either prices that have been manually entered or an electronic price “feed” maintained by the Desk. Pricing information is transmitted to the dealer. It is also transmitted to the accounting area responsible for Desk activities and to the Bank’s securities clearance area, which will initiate the delivery process.

If the day’s action is an MSP, the entry time and announcement procedures are the same as for an RP, but some aspects of the operation are slightly different. The Desk indicates the specific Treasury bill it is selling from the System’s portfolio. (It will use additional bills if the operation is larger than the System’s holdings of the one bill.) In executing MSPs in the market, the message to the dealers indicates the market rate at which the System will sell the bill. Dealers are instructed to enter the amount they are willing to buy and the rate at which they will reoffer the security. The rate of discount set by the Desk determines the price realized by the System on its sale, while the competitively set reoffering rate determines the prices at which the System reacquires the same bill on the specified future day. Once the operation is complete, the procedures followed are similar to those after RPs. With an MSP, the Federal Reserve controls the delivery time for the bills, receiving its money when the securities deliveries are made.

When the Desk executes an outright transaction, delivery is generally the next day or two days forward. Outright operations are currently arranged at a variety of times. A message is sent to each primary dealer over the Fedline terminal indicating the maturity range and a deadline when the dealer’s response must have been entered into the computer. Choosing among the propositions is more complicated than with a temporary operation because a yield curve involves more choices than the single interest rate comparison for RPs and MSPs. To assist in the process, the computer sorts the bids or offers by yield and by issue and arranges them relative to a recent market yield curve. Once edit checks have been completed, the officers and senior staff members choose the best propositions (based on maximizing yield to maturity) from the

array before them, according to guidelines about the dollar volume to be chosen from each maturity range. Once the selections have been reviewed by another person, they are released to the dealers. Next, the successful dealers must provide the necessary information through their Fedline terminals to process the transactions. Fed purchases of a dealer's own securities generate payments to the dealer's clearing bank.

## 7. Daily Dealer Meetings

Each day, one or more members of the open market area who are involved in the daily process of implementing monetary policy hold two fifteen-minute telephone meetings with representatives of government securities dealer firms who have a trading relationship with the Federal Reserve. Through 1996, these meetings were held in the morning, generally at 9 and 9:15, but in 1997 the Desk began holding these meetings starting at 3:15 in the afternoon. Over a four-week period, representatives from each of the primary dealers have the opportunity to speak with open market personnel. These discussions help the people from the Desk keep abreast of the forces at work in the financial markets.

The conversations are free flowing, covering a wide range of subjects. The money market economist often begins by giving the firm's view of prospective monetary policy, indicating whether current policy seems appropriate in the face of the firm's outlook for the economy and prices. He or she outlines the key assumptions underlying the economic and interest rate forecasts that the firm is presenting to clients. A trader or salesperson generally comments on what the firm's customers have been doing in the market—perhaps taking no action or else favoring a particular maturity range when making purchases or sales. This information may help to explain recent market behavior.

Treasury financings provide a recurring theme for the meetings. Some firms' economists develop expertise in forecasting Treasury cash needs and debt management plans. They may discuss whether the federal deficit seems to be growing or shrinking and the impact of the estimate on the size of the Treasury's near-term cash needs. A trader or salesperson may report his or her perceptions of the degree of market interest in coming offerings. After an auction, a trader reports on progress in distributing recently sold issues. To dealers, bidding in Treasury auctions of bills and coupon securities is an extension of the task of making markets in outstanding issues.

Some dealers offer information on developments in other debt markets where their firms have a presence. Depending upon

whether there have been any recent noteworthy developments, they may comment on corporate, Eurodollar, mortgage-backed, or tax-exempt bond markets. While the Desk does not operate in any of those markets, developments may show through to the Treasury market, either from effects on general credit demands and supplies or as a result of some hedging strategy. For instance, dealers holding long positions while underwriting a new corporate bond may offset them with a short position in a Treasury issue of similar maturity. Equity market developments may also be mentioned on occasion.

## Communications within the System

One of the Trading Desk's functions is to keep others in the System informed about the implementation of the FOMC's monetary policy and related financial market developments. Regular Desk reports to the Committee and visits by System personnel to the Desk are important means of maintaining a clear understanding of these key aspects of the monetary policy process. As mentioned above, the Desk communicates with the rest of the System through an electronic mail summary of market developments sent at the end of each day, while the Board staff's wire describes the morning conference call.

In addition, a written report is prepared each Friday describing developments in both the domestic securities and foreign exchange markets and providing some explanation of the factors driving the market movements. Every other Friday, the report contains a section on open market operations for the maintenance period ended on the preceding Wednesday. This report describes the reasons for operations and provides tables and charts that track the behavior of the reserve measures in relation to the objectives. It also conveys the latest data and projections on the monetary aggregates.

Before each FOMC meeting, the various staffs prepare a summary report of operations and financial market developments since the last Committee meeting. The officers and staff most closely involved with the reports also prepare an annual report analyzing policy implementation for the year just ended. A modified version of this report is published.<sup>20</sup>

The Trading Desk also has occasional visitors from the Board and other Reserve Banks. They observe operations so that they can brief their principals and do research on monetary policy topics. Usually, visitors participate in the Desk's daily routines for a week, meet with staff members who describe the procedures, and visit firms in the markets.

## Adjunct Desk Responsibilities

Trading Desk officers and staff members perform a number of other duties. As mentioned above, they carry out securities transactions for customers, mostly for foreign official institutions but occasionally for Treasury trust funds. They gather information concerning government securities market practices that is made available to the market regulators: the Securities and Exchange Commission, the Commodities Futures Trading Commission, and the U.S. Treasury. In addition, officers and staff undertake a wide range of studies relating to monetary policy and other financial developments.

### 1. Activities for Foreign Official Institutions

Purchase or sale orders are executed for foreign official customers at the customers' initiative. The Bank's central bank services area keeps in contact with the more than 150 official foreign institutions maintaining accounts with the Fed and compiles their requests for transactions. The orders that the Desk does not choose to meet using the System Account as counterparty must be either crossed between foreign accounts, if buy and sell orders coincide, or arranged in the market. Generally, the Desk will seek competitive bids or offers from authorized trading counterparties. The bulk of customer operations are in Treasury bills and short-dated coupon issues. The Desk will also purchase or sell non-Treasury instruments such as bankers' acceptances and large certificates of deposit when asked to do so. Most of the excess foreign cash is placed in the foreign RP pool, but at day's end, a limited amount of uninvested funds that arrived too late to be arranged as RPs may be sold to banks as overnight Federal funds.

Officers and staff also meet with visitors from foreign official institutions who have traveled to New York to expand their understanding of monetary policy implementation, securities auctions, and secondary market activity. They run a seminar each fall for a group of central bankers.

### 2. Relationships with the U.S. Treasury Department

The Trading Desk's relationship with the Treasury has many facets. Treasury officials occasionally call open market officers or staff members when they are planning securities issues to get a sense of what offerings investors might find attractive. Treasury staff members observe the market directly through electronic news services and no longer look to the Federal Reserve for routine market information. Nonetheless, they may occasionally call the Desk to

ask for an explanation of unusual rate movements. Desk officers supervise the electronic processing of competitive auction tenders submitted in New York, which usually account for 80 percent or more of the national awards of new issues.

The Manager is sometimes consulted by Treasury officials responsible for debt management. They may discuss the Treasury's financing options. Once each quarter, Treasury officials come to New York to obtain suggestions from primary dealers on structuring the midquarter financing and on meeting remaining cash needs in the months ahead. In the following week, one or two Desk officials typically attend the briefing sessions held by the Treasury in Washington, D.C. There, the Treasury obtains financing recommendations from a special advisory committee of the Public Securities Association that includes representatives of government securities dealers and other market participants.

### **3. Relationships with Primary Dealers**

Dealers that seek a trading relationship with the Open Market Desk must demonstrate that they meet a series of criteria. These include adequate capital, the experience of management and trading personnel, and the capability to remain market makers.<sup>21</sup> The names of dealers that trade with the Federal Reserve are published in a list of reporting primary dealers. The number has varied depending on the perceived profitability and prestige associated with being a primary dealer. At the end of December 1996, the list included thirty-seven dealers. The firms' primary regulators are responsible for certifying that each dealer continues to meet the standards.

### **4. Specialized Reports and Research**

Open market personnel engage in a wide variety of reporting and analytical assignments. Beyond the regular reports to the FOMC, described above, special studies are undertaken. They may involve proposed modifications in the Committee's approach to reserve management, such as how to deal with reduced levels of required reserves. Open market staff may also examine issues of Treasury financing and the Treasury's tax and loan accounts to find ways to reduce the disruptive effects of Treasury cash flows on reserves. Staff also study market developments, such as relationships between derivative financial instruments and the underlying securities.