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# DOMESTIC OPEN MARKET OPERATIONS DURING 2004

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January 2005

**DOMESTIC OPEN MARKET OPERATIONS DURING 2004\***  
*FEDERAL RESERVE BANK OF NEW YORK, MARKETS GROUP*

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\* Revised May 4, 2005: This report was revised to incorporate an additional matched-sale purchase (MSP) in 2002 that was erroneously excluded from the original analysis. The annual reports for 2002 and 2003 have been revised accordingly. Additionally, the total amount of purchasable room for the SOMA portfolio at year-end 2004 was adjusted.

# DOMESTIC OPEN MARKET OPERATIONS DURING 2004

## I. IMPLEMENTATION OF MONETARY POLICY IN 2004

### A. Introduction

The Federal Open Market Committee's (FOMC) domestic policy directive prescribes that the Trading Desk (Desk) of the Federal Reserve Bank of New York (FRBNY) foster conditions in the reserves market consistent with maintaining the federal funds rate around a specified target rate on average. Accordingly, the Desk arranges open market operations to target the federal funds rate, while at the same time achieving other objectives that may affect the structure of Federal Reserve holdings of domestic financial assets.

This report reviews the conduct of open market operations during 2004. First, we review operating procedures used by the Desk to influence the federal funds rate and summarize key new developments in the policy implementation framework. Next, we describe demand for balances at the Federal Reserve and the behavior of autonomous factors (factors outside of the control of the Desk) that affect the supply of these balances. Then, we review different domestic financial assets held by the Federal Reserve and the various types of open market operations used to adjust them. Finally, we discuss the behavior of the federal funds rate and use of the discount window in 2004.

### B. Overview of Operational Procedures to Control the Federal Funds Rate

The federal funds target rate was increased on five occasions in 2004, from 1 percent to 2 ¼ percent (Table 1). In related moves, the primary and secondary credit rates were also raised by similar amounts to 3 ¼ and 3 ¾ percent, respectively. The first of these moves took place in June.

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**Table 1: Changes to the Federal Funds Target Rate and Borrowing Rates**  
(Percent)

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Effective Date of Change	Federal Funds Target Rate	Primary Credit Rate	Secondary Credit Rate
June 30, 2004	1.25	2.25	2.75
August 10, 2004	1.50	2.50	3.00
September 21, 2004	1.75	2.75	3.25
November 10, 2004	2.00	3.00	3.50
December 14, 2004	2.25	3.25	3.75

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*Adapted from a report to the Federal Open Market Committee by Dino Kos, Executive Vice President of the Federal Reserve Bank of New York and Manager of the System Open Market Account.*

To influence the federal funds rate, the Desk conducts open market operations to align the supply of balances held by depository institutions at the Federal Reserve—or Fed balances—with banks’ demand to hold balances at the target rate. Each morning, the Desk considers the need for open market operations based on estimates of the supply of and demand for Fed balances. The Desk aims to supply a level of Fed balances that is in line with its best estimate of demand. From time to time, the Desk’s provision of Fed balances may be guided by a deviation of the federal funds rate in the morning from its target rate.

The average level of Fed balances that banks demand over a two-week reserve maintenance period is in large part determined by banks’ requirements to hold Fed balances, with only a small level of additional, or excess, balances typically demanded. The federal funds rate can move above the target rate if Fed balances fall so low that some banks have difficulty finding sufficient funds to cover required balance deficiencies or potential overdrafts in their Fed accounts. Conversely, the federal funds rate can fall below the target rate if Fed balances are so high that some banks risk ending a maintenance period holding undesired excess balances. However, depository institutions average their holdings of Fed balances over the days within a maintenance period to meet requirements, which gives them considerable leeway in day-to-day account management. This flexibility absorbs some volatility in rates that can develop when the Desk misestimates either the supply of or demand for Fed balances.

### **C. New Developments in 2004**

#### *Changes to Calculation of Earnings Credits for Clearing Balances*

Beginning with the maintenance period starting January 8, 2004, the Federal Reserve implemented changes to its method of calculating earnings credits on clearing balances. In addition, it increased the frequency with which banks could change their clearing balance levels from once a month to each maintenance period.

#### *Changes to Authorization for Domestic Open Market Operations*

At its January 2004 meeting, the FOMC approved one change to the Authorization for Domestic Open Market Operations (Appendix A). The change, which pertained to paragraph 3 of the Authorization, widened eligible participation in the Federal Reserve’s short-term repurchase facility (the RP pool) to include accounts held at the FRBNY pursuant to fiscal agency instructions from the Secretary of the Treasury. Other investors already eligible for the RP pool include official foreign and international entities whose accounts are maintained at the Federal Reserve.

#### *“Actual Availability” Accounting Procedures Implemented in Federal Reserve Check Processing*

As of March 9, 2004, the Federal Reserve employed “actual availability” accounting procedures for certain categories of check collections (direct send and consolidated check shipments), a change from the previous

procedure of provisional credit accounting. This new procedure aligned the Federal Reserve with private sector procedures by granting credit for checks only after they are collected. It also reduced the level of Federal Reserve float. Sections II and III of this report provide more detail.

*Expedited Release of FOMC Meeting Minutes*

At the December 14, 2004 FOMC meeting, the FOMC announced that it would expedite the publication of the minutes of its regularly scheduled meetings. The FOMC decided to begin publishing the minutes three weeks after the date of the meeting, starting with the minutes for that meeting, which were published on January 4, 2005. The minutes of the December 14 meeting noted that an accelerated release schedule would help market participants interpret economic developments and would provide a more timely context for policymakers' public remarks. FOMC meeting minutes had previously been made available on the Thursday after the next regularly scheduled meeting.

## **II. BANKS' DEMAND FOR FED BALANCES**

In designing permanent and temporary open market operations, the Desk aims to satisfy banks' demand for holding Fed balances on both a daily and a maintenance period-average basis. Total demand can be broken down into two components: the portion needed to meet all balance requirements and the portion held in excess of requirements.

### **A. Total Balance Requirements**

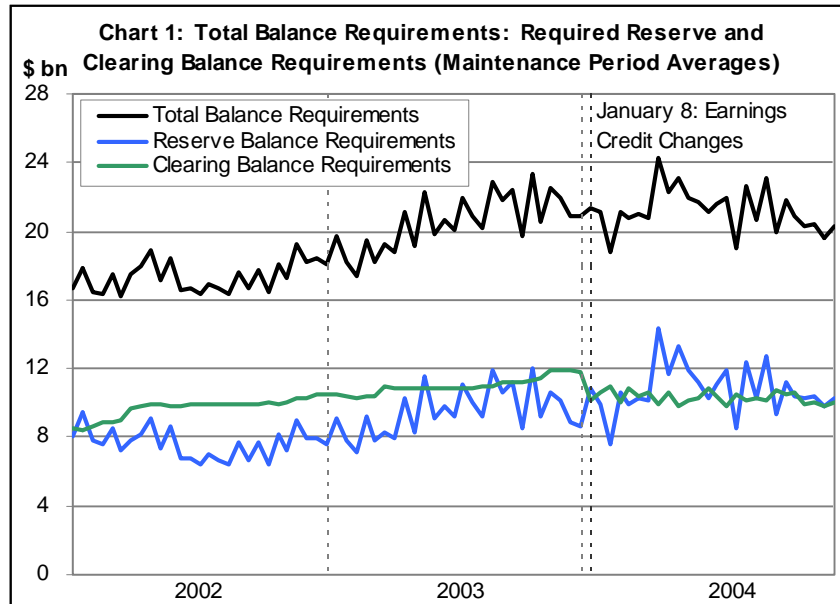
A bank's total balance requirement is the average level of balances it must hold at the Federal Reserve over a two-week maintenance period to meet regulatory and contractual obligations. The regulatory component is called the reserve balance requirement; it is the portion of reserve requirements not met with vault cash. As-of adjustments may also be applied to a bank's position to affect the actual level of Fed balances that an institution would need to maintain to fulfill its total balance requirement.<sup>2</sup> The contractual component of total balance requirements is called the clearing balance requirement. Reserve balance requirements, clearing balance requirements, and most as-of adjustments are known at the start of each maintenance period, which facilitates the Desk's estimation of the demand for Fed balances.<sup>3</sup>

Total balance requirements retreated slightly over the course of the year, with clearing balances and reserve balance requirements only modestly changed (Chart 1). The level of reservable deposits and thus reserve requirements rose early in the year against the backdrop of absolute low levels of short-term interest rates and an accordingly low nominal opportunity cost of holding funds in checking accounts.

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<sup>2</sup> An as-of adjustment is an off-balance-sheet adjustment to the reserve or clearing position of a depository institution (DI) to correct Reserve Bank accounting transaction errors, to correct DI errors (including deposit reporting errors), to recover float incurred by an institution, or to address other circumstances.

<sup>3</sup> Some as-of adjustments may arise and be applied during the maintenance period.



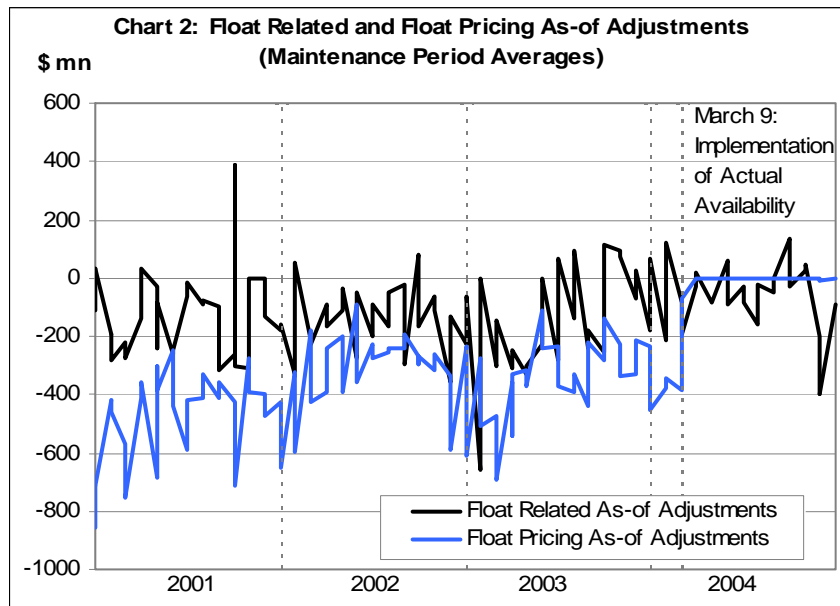
Effective January 8, 2004, the method for calculating earnings credits was changed, effectively reducing the earnings credit rate that banks received on contractual clearing balances.<sup>4</sup> In addition, the frequency with which banks could change their clearing balance levels was increased from once a month to once a maintenance period. As a result, the average level of clearing balance requirements decreased and their inter-period volatility increased. Hence, forecasting these requirements became more difficult, affecting medium-term planning of operations for the Desk. Another change in the formula for computing the earnings credit rate became effective on January 6, 2005, further reducing the earnings credit rate.

There is preliminary evidence that some banks may be adjusting clearing balances more frequently to better manage total balance requirements. Actively offsetting changes in required reserve balances with changes in contractual clearing balances would reduce fluctuations in total required balances. Though, wide swings in clearing balances would widen the Desk's forecasting band for the overall demand for balances.

A second change in 2004 that affected the demand for reserves to meet requirements was the System's move to a new accounting procedure in check processing referred to as "actual availability." Starting March 9, 2004, Federal Reserve District Banks began providing banks reserve balance credit for some categories of checks only after the checks had actually been collected. This change brought the System's practices more closely in line with those of the private sector. It also had the benefit of reducing the size of

<sup>4</sup> For more information on the change, see <http://www.frb services.org/Accounting/pdf/amg.pdf>, page IV-3. Also, the Board's announcements can be found at <http://www.federalreserve.gov/boarddocs/meetings/2003/20031022/FinalBoardMemo2004Repricing.pdf> and <http://www.federalreserve.gov/boarddocs/meetings/2004/20041104/2005RepricingMemo.pdf>.

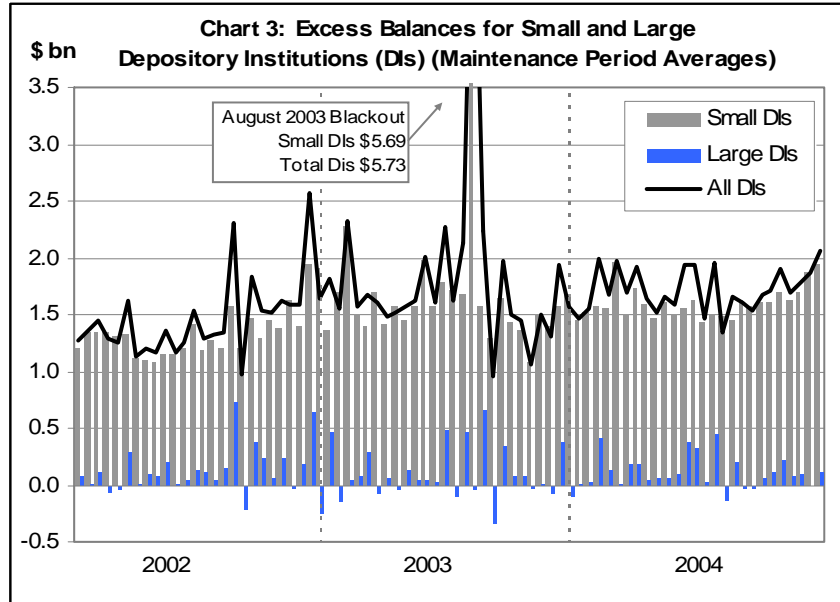
as-of adjustments associated with check processing, thereby reducing forecast uncertainties for this component of demand for balances (Chart 2).



## B. Excess Balances

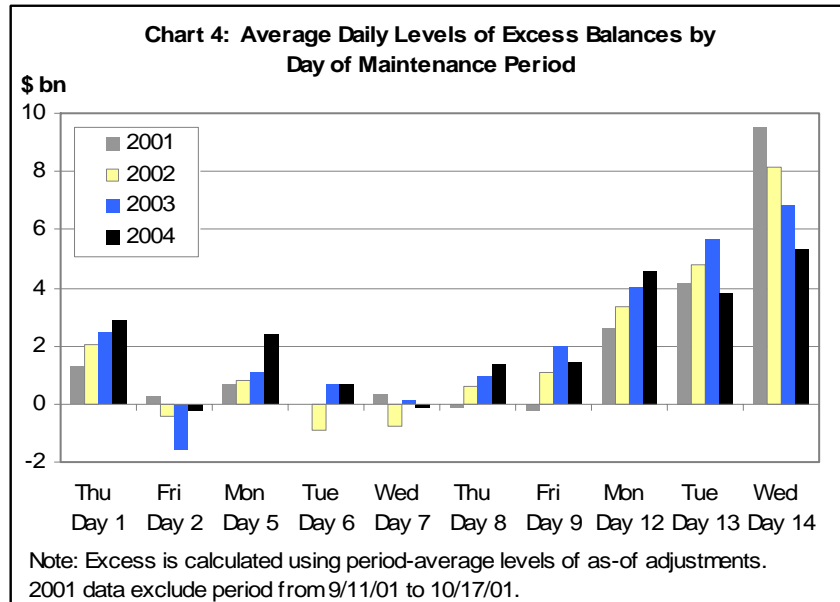
Excess balances are balances held above and beyond the total level of balances an institution is required to hold. Excess balances earn no interest and therefore represent a lost investment opportunity, but many institutions, especially the smaller ones, routinely hold them (Chart 3). Demand for excess, while a small fraction of total balance demand, nonetheless represents an important component of the total demand for Fed balances, particularly because it can vary considerably from day to day. The Desk accounts for the demand for excess balances—both on a daily and period-average basis—in its provision of balances.





The mean level of excess balances was nearly unchanged from its level in 2003. In general, there was less inter-period volatility in 2004 levels of period-average excess, partly accounted for by a decrease in the volatility of demand from large banks. The intra-period pattern of excess demand, however, was noticeably different in 2004 (Chart 4). In particular, some demand for reserves shifted from the final two days of the period to the initial days of the period. This shift was partly explained by the calendar configuration in 2004, showing a greater number of high-payment-flow days early in the maintenance period (Table 2).<sup>5</sup>

<sup>5</sup> High-payment-flow days are days on which banks are typically provided additional balances to meet their clearing demands, such as tax payment days, last business days of the month, and first business days of the month.



**Table 2: Distribution of High Payment Flow Days Within the 14-day Maintenance Period**

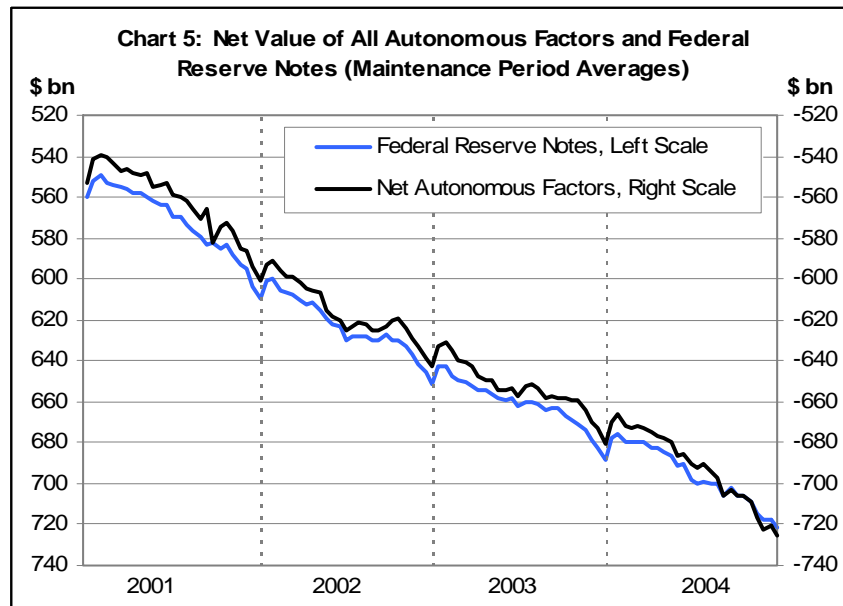
	2001	2002	2003	2004
Before First Weekend (Days 1 to 2)	7	7	6	10
Middle Week (Days 5 to 9)	21	21	18	19
After Second Weekend (Days 12 to 14)	14	14	18	13
First Half (Days 1 to 7)	20	17	17	21
Second Half (Days 8 to 14)	22	25	25	21
<b>Total</b>	<b>42</b>	<b>42</b>	<b>42</b>	<b>42</b>

Higher levels of excess balances held early in the period were also likely attributable to the series of widely anticipated increases in the federal funds target rate in the middle of the maintenance period. Overnight rates firmed and banks held higher-than-typical levels of balances in the days ahead of each expected target rate increase, evidencing banks' increased demand for balances ahead of the target rate changes (see Box on Federal Funds Rate Behavior in Section V for a detailed description).

Another change to the pattern of daily demand for balances was increased demand on the second Monday of the maintenance period, also evidenced by generally firmer rates on those days. A pullback in demand on the second Tuesday, coupled with still-elevated demand on settlement Wednesday created a "barbell" pattern of demand for balances in the final three days of the period. This shift forward in settlement day demand suggests that banks attempted to diminish their likelihood of holding unwanted excess balances by reducing their exposure to settlement day rate volatility.

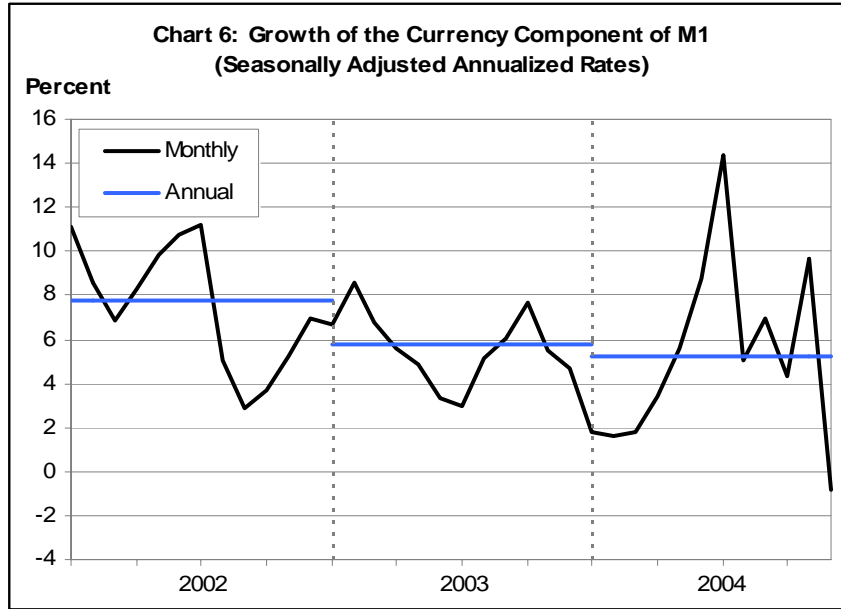
### III. AUTONOMOUS FACTORS AFFECTING THE SUPPLY OF FED BALANCES

The supply of Fed balances is determined by the size of domestic financial assets, discount window loans, and the levels of various autonomous factors on the Federal Reserve's balance sheet. Autonomous factors consist primarily of currency issued by the Federal Reserve (Federal Reserve notes) and also include assets and other liabilities on the Federal Reserve balance sheet over which the Desk has little or no control. In 2004, the net level of autonomous factors fell by \$44.8 billion, a significantly greater dollar decline than in the two prior years, which translated to an equivalent drain on Fed balances (Chart 5).



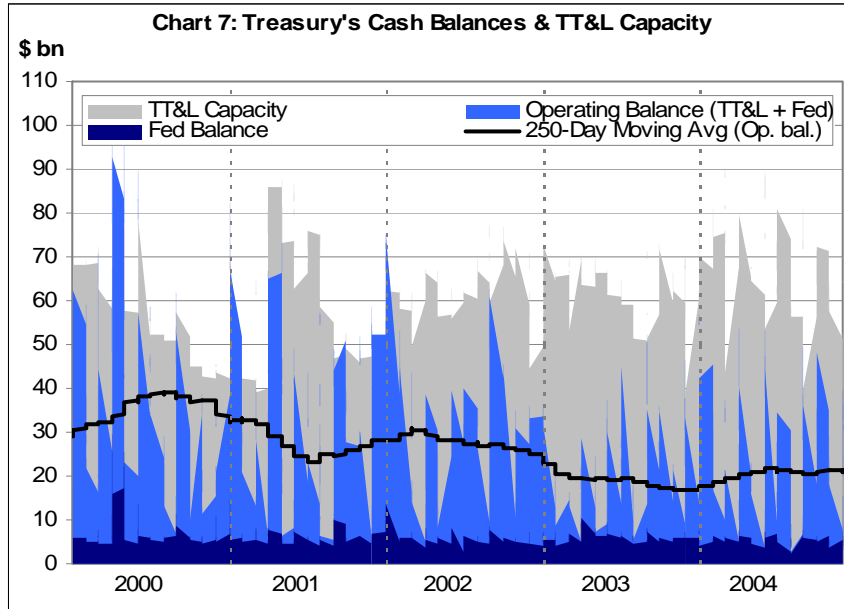
#### *Developments in Federal Reserve Notes*

At approximately 90 percent of Federal Reserve liabilities, Federal Reserve notes are the dominant component of autonomous factors. In 2004 Federal Reserve notes outstanding grew 4.8 percent, an increase of \$33.2 billion, somewhat less than in 2003, and substantially weaker than in prior years. As represented by the seasonally adjusted currency component of M1, currency growth was quite uneven over the year with very weak growth during the first quarter and at year-end, but with large gains in June and July (Chart 6). Variations in the net volume of currency shipments to foreign destinations contributed substantially to this pattern, with heavy net inflows of currency to the United States during the first quarter and exceptionally large shipments abroad in June.



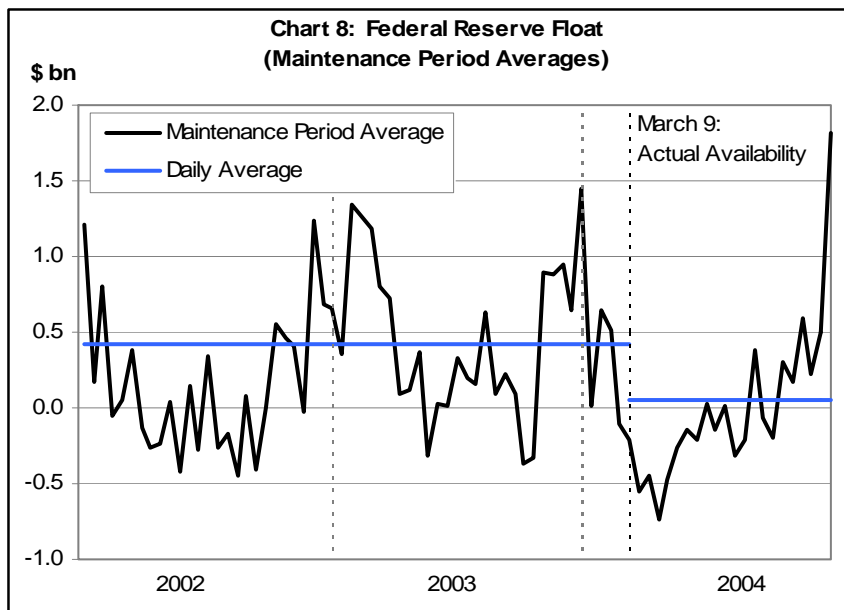
*Developments in the Treasury Balance*

In recent years, the Treasury's overall cash position, defined as funds held in the Treasury's account with the Federal Reserve (Fed account) plus balances held in Tax and Loan (TT&L) note accounts at commercial banks, has exhibited a downward trend (Chart 7). High TT&L capacity has largely removed the risk that the Treasury's Fed balance might exceed its normal target due to insufficient TT&L capacity. However, the lower overall cash position has led to more occasions when the Treasury was not able to call in sufficient funds to bring its Fed account up to the usual \$5 billion target. This situation occurred on 12 occasions in 2004, which was similar to 2003, but considerably more frequent than in prior years.



*Developments in Other Autonomous Factors*

Autonomous factors other than currency also absorbed significant quantities of balances during 2004. As noted in Section II, on March 9, Federal Reserve District Banks began to process some categories of check deposits using “actual availability” accounting procedures. Under this new process, credit for such checks was not granted until the checks were collected from the issuing bank. As a result, the quantity of check float on the Federal Reserve’s balance sheet declined sharply (Chart 8). The average level of float has been about \$50 million since the accounting change, compared with \$420 million over the preceding 26 months.



During 2004 there was a \$5.9 billion net increase in Federal Reserve capital accounts, which also drained balances. In large part this rise was due to the impact of several mergers of commercial banks. The mergers led to a revaluation of the acquired institution's assets due to goodwill (an excess of the purchase price over the book value of assets). The higher capital structure necessitated the purchase of additional Reserve Bank capital stock by acquiring banks, which was charged to the banks' Fed accounts, thereby draining balances. Moreover, at year-end the Federal Reserve raised its year-end level of surplus in parallel with the higher level of Federal Reserve paid-in capital. The increase in surplus was funded by reducing the Reserve Banks' earnings payments to the Treasury, which drained balances when the Treasury restored its balance with calls on commercial bank TT&L note accounts. Finally, funds invested on an overnight basis for foreign central banks in the Federal Reserve's RP pool increased sharply over the year, a gain of about \$8 billion.

*Volatility and Predictability of Key Autonomous Factors*

The variability of autonomous factors, as measured by average absolute daily changes, decreased from the prior year and was accompanied by a substantial improvement in overall forecast accuracy (Table 3). In particular, the variability of Federal Reserve float declined following the shift to "actual availability" accounting. Also, float forecast accuracy improved as actual availability eliminated a major cause of elevated float levels during periods of inclement weather. Variability of other autonomous factors during 2004 was similar to earlier years; nonetheless forecast errors for the Treasury balance diminished, as improvements in data collection and Treasury cash management techniques showed through.

**Table 3: Daily Changes and Forecast Misses in Autonomous Factors**

**Average and maximum of absolute values**

(millions of dollars)

	2002		2003		2004	
	Average	Max.	Average	Max.	Average	Max.
<b>Daily Change</b>						
Currency in circulation	874	3,015	858	3,128	890	3,510
Treasury balance	903	8,622	745	3,552	739	4,272
Foreign RP pool	500	3,502	629	4,325	584	5,219
Float	756	4,484	1,059	6,704	788	5,724
Net*	1,445	6,256	1,690	8,017	1,367	7,209
<b>Daily Forecast Miss</b>						
Currency in circulation	198	646	163	919	200	1,566
Treasury balance	481	3,629	489	2,224	415	2,353
Foreign RP pool	94	2,135	86	1,506	125	1,716
Float	411	2,028	551	4,020	374	2,811
Net*	721	2,557	803	3,805	654	3,920

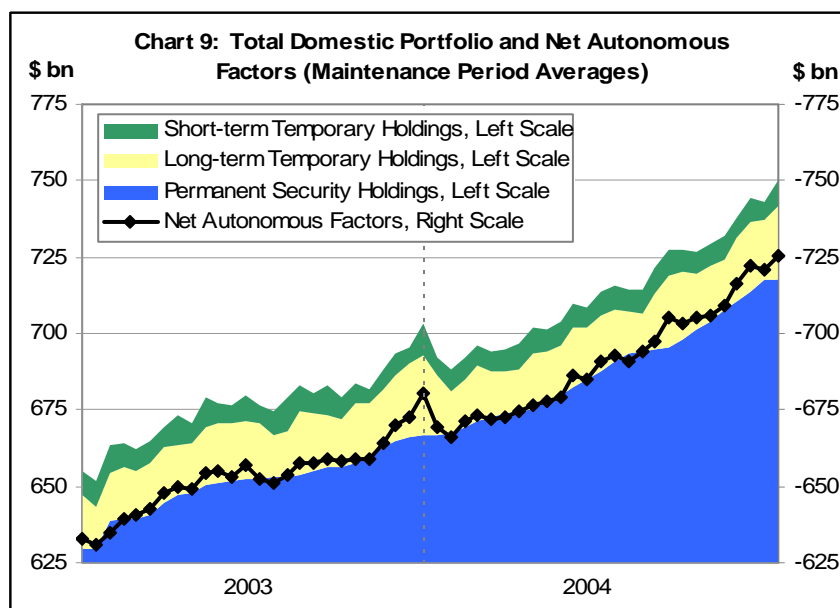
Notes:

\*Net reflects offsetting movements and forecast misses of all autonomous factors. Forecast misses are based on New York staff estimates.

#### IV. DOMESTIC FINANCIAL ASSETS & OPEN MARKET OPERATIONS

##### A. Use of Different Types of Open Market Operations

The Federal Reserve maintains a mix of domestic financial assets to implement its monetary policy objectives. The largest portion of the assets in its portfolio is composed of securities that are held outright for the purpose of matching longer-run movements in the level of net autonomous factor liabilities (discussed in Section III) over time (Chart 9). The Federal Reserve also holds temporary assets, repurchase agreements (RPs), or issues temporary liabilities, reverse repurchase agreements (RRPs), to manage shorter-term swings in the level of net autonomous factors and in the demand for Fed balances.



Short-term temporary operations are defined as those operations with an original maturity of less than 13 days. In general, the Desk structures its other domestic financial assets such that routine temporary operations can accomplish needed daily adjustments to Fed balances. Short-term RPs are arranged as needed (almost daily) to temporarily inject Fed balances. Less utilized, RRP are arranged when the level of Fed balances needs to be reduced temporarily, usually as a result of an unexpected reserve addition from unanticipated changes in the level of net autonomous factors.

Long-term RPs, defined as operations with original maturities of 13 days or more, are a flexible tool to address seasonal volatility in autonomous factors or swings in demands for operating balances that are

expected to last for a number of weeks or months.<sup>6</sup> Long-term RPs can also be used to bridge temporarily gaps between the level of net autonomous factors and the desired level of permanent holdings. Moreover, long-term RPs provide a base level of balances that can be lowered as an alternative to arranging RRP operations on a sustained basis or selling securities outright from the domestic portfolio. In 2004, routine long-term temporary operations continued to be arranged on a weekly basis, ordinarily on Thursdays, in the early morning when the financing market is more liquid.

Lastly, permanent changes in the System Open Market Account (SOMA), via outright operations, are designed to offset permanent changes in the level of net autonomous factor liabilities. Outright transactions are thus driven by long-term projections of the availability of balances. These operations are executed in a manner that is intended to minimize financial market disruption.

## **B. Temporary Holdings and Operations**

### *Short-Term Temporary Operations*

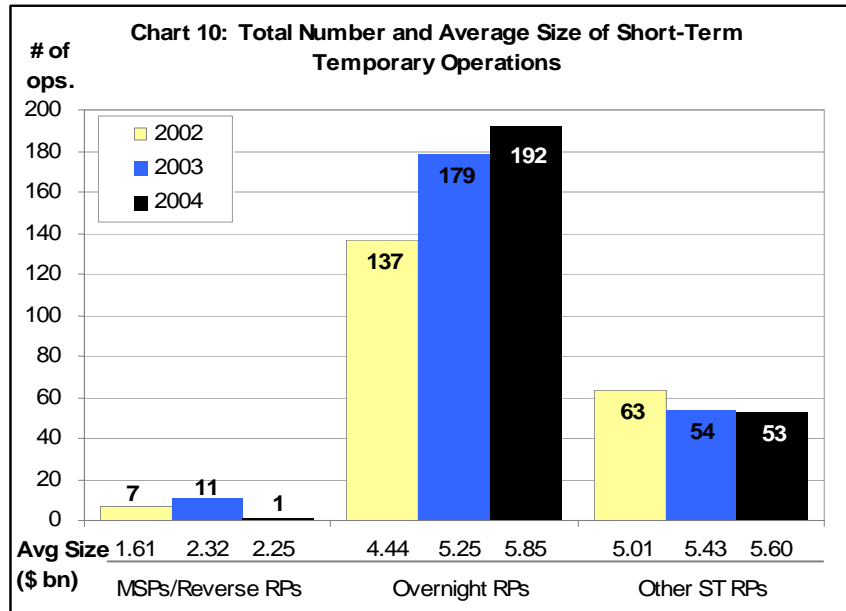
Financial assets in the domestic portfolio are structured to include a layer of short-term operations that facilitate frequent market entry to offset short-lived changes to net autonomous factors. As it has historically, the Desk determines the size of this layer after considering the System balance sheet's inherent structural deficit position – and the continued need to inject balances – as well as operational considerations related to potential limits on the level of primary dealer participation at open market auctions.

The desire for operational flexibility is reflected in the Desk's activity in recent years, notably the prominence of overnight RPs. A total of 192 overnight RPs were arranged in 2004 (including those spanning a holiday or a weekend) versus 179 in 2003 (Chart 10). The average transaction size rose slightly, to \$5.9 billion in 2004 from \$5.3 billion in 2003. This increase reflects the Desk's strategic aim to leave greater scope for routine balance-adding operations. Early in 2004, the Desk arranged its sole temporary draining operation of the year, combating seasonal softness in the federal funds rate. The use of only one RRP in 2004 was low relative to the frequency in previous years, consistent with Desk's strategy for short-term operations.

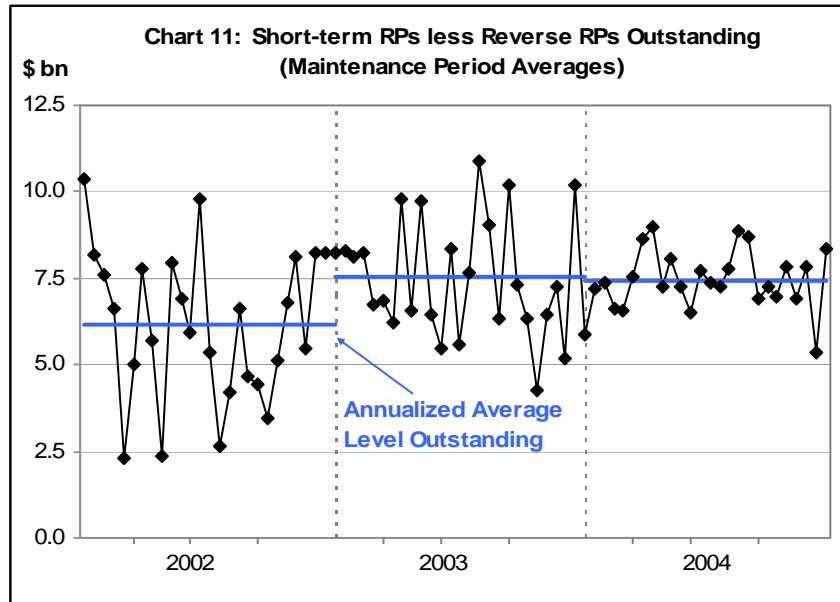
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<sup>6</sup> This definition has been in effect since late September 2003, when the maturity of regular weekly long-term RPs was reduced from 28 days to 14 days.





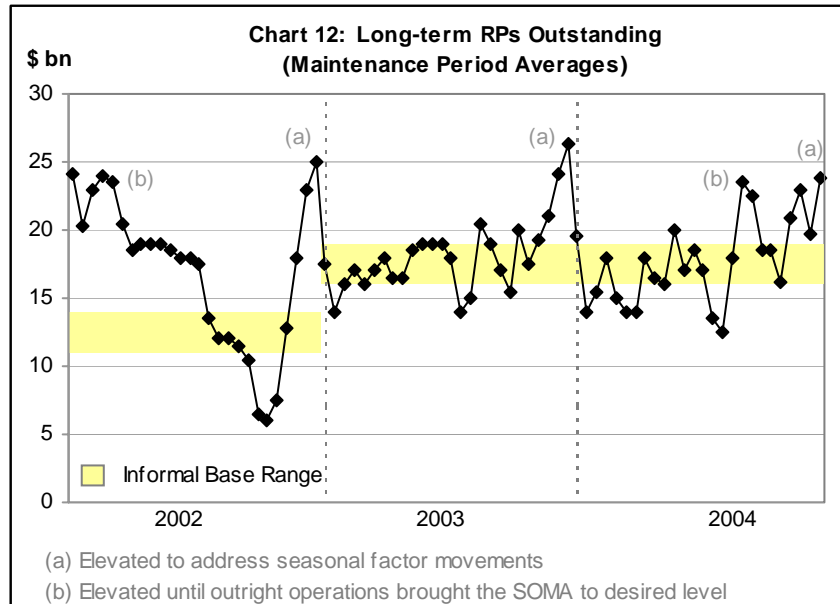
The daily level of net short-term operations outstanding (RPs minus RRP) ranged from -\$2.25 billion to \$22 billion. On a period-average basis, short-term operations outstanding ranged from \$5.3 billion to \$9 billion, and were most elevated during the maintenance periods spanning the Labor Day holiday and following the April tax date. By several measures, volatility in the level of short-term operations was reduced compared with the previous year, likely resulting from the Desk's shift to a 14-day maturity (from 28 days previously) for its long-term operations. The 14-day structure provided greater flexibility to change the level of outstanding long-term RPs from one maintenance period to the next in response to movements in autonomous factors that were expected to influence supply levels over shorter intervals. For the year as a whole, short-term temporary operations outstanding averaged \$7.5 billion, in line with the average level in 2003 (Chart 11).



*Long-Term Temporary Operations*

The Desk continued to aim informally for a base range of about \$16 billion or so in total outstanding long-term RPs. Over the first half of the year, levels surrounded the base range, as seasonal factor movements were muted. The Desk reduced long-term RP levels when drains on Fed balances attributable to movements in autonomous factors slowed considerably in the third quarter of 2004. The total level of long-term RPs reached a low of \$12 billion in 2004, similar to the low of \$13 billion in 2003.

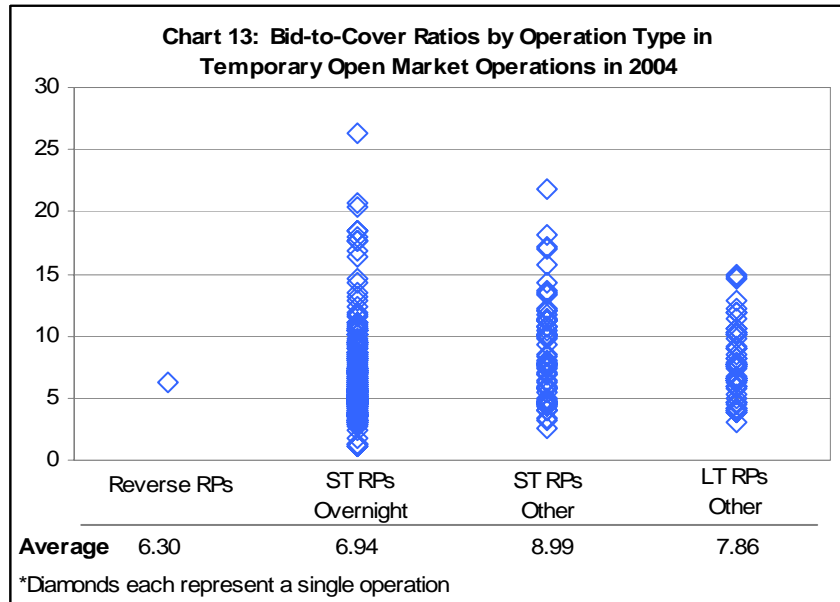
Long-term RP levels rose above their typical base range for a considerable stretch from late August to late October (Chart 12). Over that interval, a confluence of movements in autonomous factors, principally increases in the foreign RP pool and seasonal currency demand, contributed to elevated needs that were deemed temporary and also highly uncertain. Reduced confidence about longer run forecasts of balance supply contributed to a greater reliance on temporary assets during this time period. Only when the Desk had greater confidence about reserve supply and demand associated with its longer run forecasts, did it begin to replace temporary assets with outright holdings, thus reducing the level of long-term RPs to more typical levels ahead of the year-end currency cycle.



Similar to 2003, the Desk supplemented its regular weekly 14-day RPs with two additional long-term RPs (with 52-day and 13-day maturities) to help meet projected seasonal elevation in reserve needs around the year-end. These additional long-term operations also helped reduce rollover risks associated with sizable 14-day RP transactions. The daily level of long-term RPs peaked at \$24.25 billion around year-end, somewhat lower than \$28 and \$26 billion in 2003 and 2002, respectively, resulting from a less rapid pace of seasonal currency growth over the year-turn.

#### *Operational Performance*

Proposition levels for temporary operations were sufficient to cover the intended size of one-business-day transactions, often by a ratio around seven-to-one (Chart 13). The Desk routinely conducted a sequence of overlapping short-term operations to layer in balances ahead of high-payment-flow days (such as quarter-ends), when dealer participation on overnight RPs was anticipated to be low and balance needs were projected to be high. Nonetheless, there was one instance of a near shortfall in available propositions relative to the Desk's targeted amount for an overnight RP arranged on the eve of the November 10 FOMC meeting. On that day, dealers reported expectations for an intra-day decline in money market rates, following several days showing this intra-day pattern in rates, thereby reducing the demand for morning financing. Long-term RPs continued to be very heavily subscribed. In 2004, the levels of propositions offered for 14-day RPs, which averaged \$61 billion, were more than adequate to meet operational targets, averaging \$8.4 billion for such transactions.

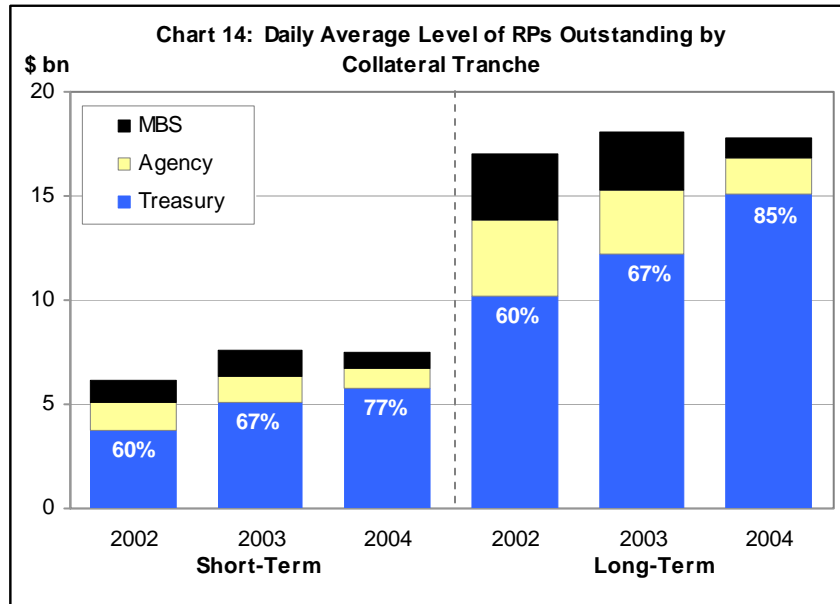


#### *Collateral Distribution of Repurchase Agreements*

The Desk solicited propositions across the entire pool of eligible collateral on all RPs arranged in 2004. All RPs were arranged as three separate simultaneous operations (tranches), differentiated by the type of collateral eligible. In the first tranche, only Treasury debt was accepted; in the second, direct federal agency obligations were also eligible; and, in the third, mortgage-backed debt was eligible in addition to the first two collateral types. The Desk selected from propositions across the three tranches according to the attractiveness of bids relative to current rates in the financing markets for each particular class of collateral. All RPs arranged in 2004 settled under the tri-party agreements established with two large clearing banks in 1999.

The collateral distribution of outstanding RPs was heavily weighted toward Treasury securities in 2004, continuing a trend of growth in the share of collateral represented by Treasuries observed in recent years (Chart 14).<sup>7</sup> On average, Treasuries as a share of total RP collateral on long-term operations jumped to 85 percent in 2004, compared with 67 percent in 2003 and 60 percent in 2002. Treasury collateral accepted on short-term operations also increased in 2004, but to a lesser extent. The upward trend in the share of Treasury propositions accepted reflects the primary dealers' propensity to bid relatively more aggressively on the Treasury tranche of each operation, in light of a rise in the level of Treasury securities outstanding. In fact, the median spread between the highest bid and the Desk's benchmark rate on the Treasury tranche was 3 basis points, versus a spread of 1 to 2 basis points for both the agency and mortgage-backed tranches.

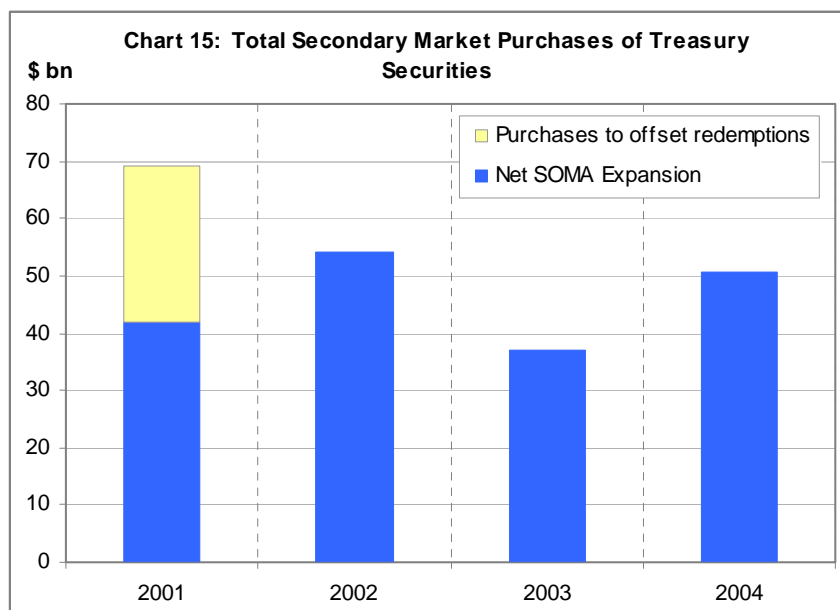
<sup>7</sup> The Desk gauges relative value via a daily survey of the primary dealers' costs of funding. Internal analysis showed that the Desk's survey was consistent with other available sources of prevailing market rates.



Occasional, temporary spikes in agency and mortgage-backed collateral as a share of total accepted collateral resulted largely from technical factors in the Treasury market, such as a heightened scarcity of Treasury collateral that occurs around financial statement dates.

**C. Permanent Holdings in the System Open Market Account and Outright Activity**

During 2004, the SOMA portfolio’s par value increased \$51 billion to \$717 billion, versus growth of \$37 billion in 2003 and \$54 billion in 2002 (Chart 15). Typically, growth in the SOMA’s domestic holdings has closely tracked that of Federal Reserve notes outstanding, the Federal Reserve’s largest liability. However, the portfolio’s growth in 2004 significantly exceeded that of Federal Reserve notes due to movements in other autonomous factors discussed in Section III.



To achieve a liquid and diversified portfolio structure without significantly distorting the pricing or liquidity of Treasury securities, SOMA purchases are conducted across the entire range of outstanding maturities, subject to the internal per-issue ownership limits set forth in July 2000.<sup>8</sup> The Desk continued to refrain from secondary market purchases of on-the-run Treasury securities, which have larger liquidity premia and are typically most susceptible to liquidity squeezes, so as to avoid adverse market impact.

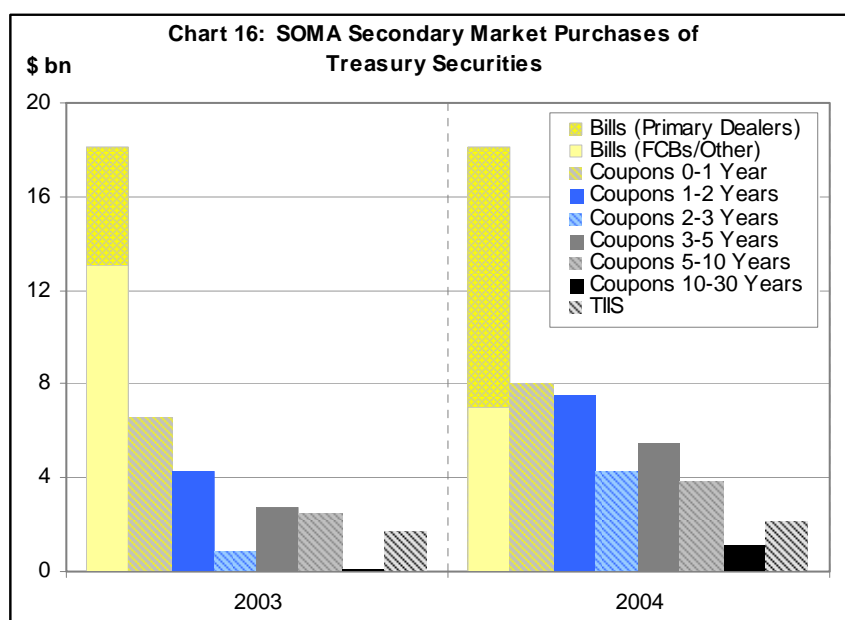
#### *Secondary Market Purchases*

Growth of permanent SOMA holdings is achieved via secondary market purchases of Treasury securities, either through outright purchases from the primary dealers or through purchases from foreign central banks and other institutions that hold accounts with the Federal Reserve. Outright operations with the primary dealers are designed to minimize disruptions to the market. They are typically conducted mid-morning to ensure adequate liquidity and are scheduled on dates that do not feature major economic data releases or Treasury auctions in the sector being purchased. Outright operations generally settle on the following business day, and therefore do not have a same-day impact on Fed balances. In contrast, purchases from foreign central banks and other institutions are typically arranged for same-day settlement. These purchases are notably smaller in size, and can occur on a daily basis when sell orders from these accounts are consistent with the SOMA portfolio guidelines and the need for Fed balances.

In 2004, the relatively large drain in Fed balances from autonomous factors increased the need to expand the SOMA portfolio, compared with the prior year. Additional holdings were purchased across the full range of maturity sectors in the secondary market, proportionate to portfolio holding limits. For the third

consecutive year, due to the upward trend in issuance, there were no redemptions at Treasury auctions, which would have necessitated additional secondary market purchases.

Increased Treasury supply and a greater frequency of outright operations resulted in a more even distribution of purchases across sectors in 2004 than had been the case in 2003. The Treasury Department's reintroduction of the 3-year note in the summer of 2003 and the increased frequency of 5-year note auctions (to monthly auctions) have increased the SOMA's capacity to purchase those maturities. SOMA portfolio investments remained concentrated in Treasury bills, which were purchased either from foreign central banks and other accounts or primary dealers. Though, the Desk sought to manage the investment process between direct purchases from foreign central banks and other accounts and purchases from the dealers more closely. As a result, only 39 percent of bill purchases came from foreign central banks and other accounts in 2004, a significant decrease from 72 percent in 2003 (Chart 16). All purchases outside of bills were conducted through the Desk's competitive bidding process with the primary dealers.

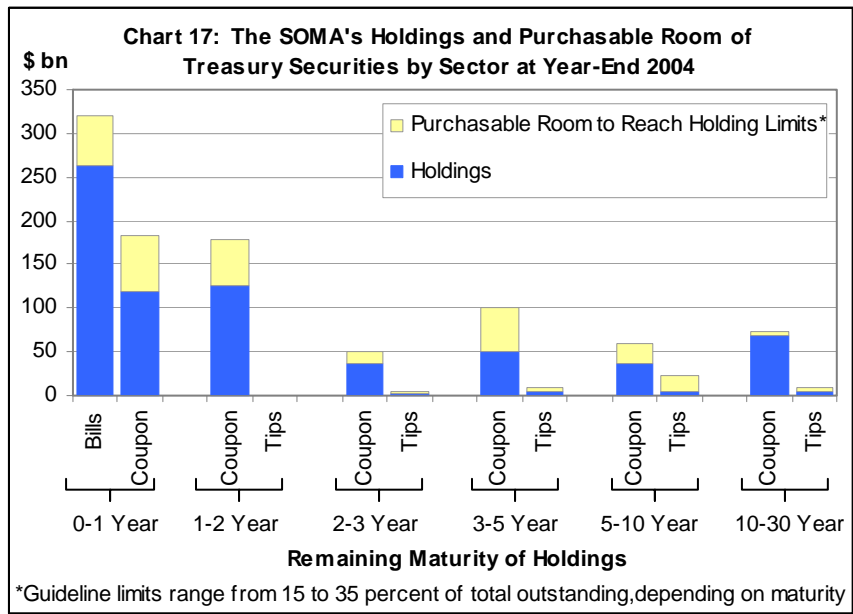


Purchases of Treasury notes and bonds continued to be segmented into separate tranches across different portions of the yield curve to facilitate efficient execution. The selection of specific issues in each operation was based on the relative attractiveness of propositions and portfolio considerations. In addition to remaining within the per-issue limits and avoiding on-the-run issues, the Desk avoided purchases that would be expected to cause a sizable redemption on any day within the foreseeable future, and it bought no issues in the secondary market that had less than five weeks remaining until maturity. The Desk also

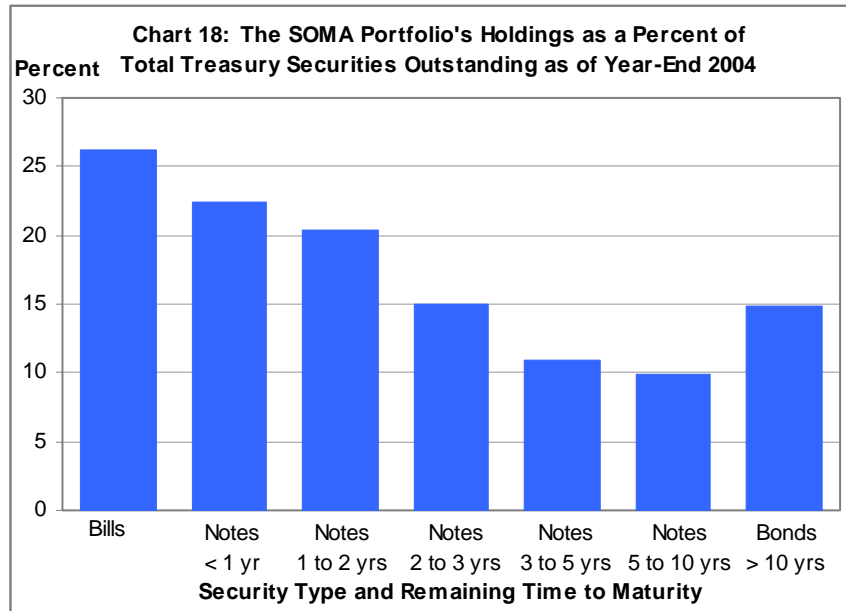
<sup>8</sup> For guidelines, please see <http://www.ny.frb.org/newsevents/news/markets/2000/an000705.html>.

refrained from purchasing issues that were trading with significant scarcity value in the RP market in order to avoid impairing the liquidity of individual securities that were in high demand at that time.

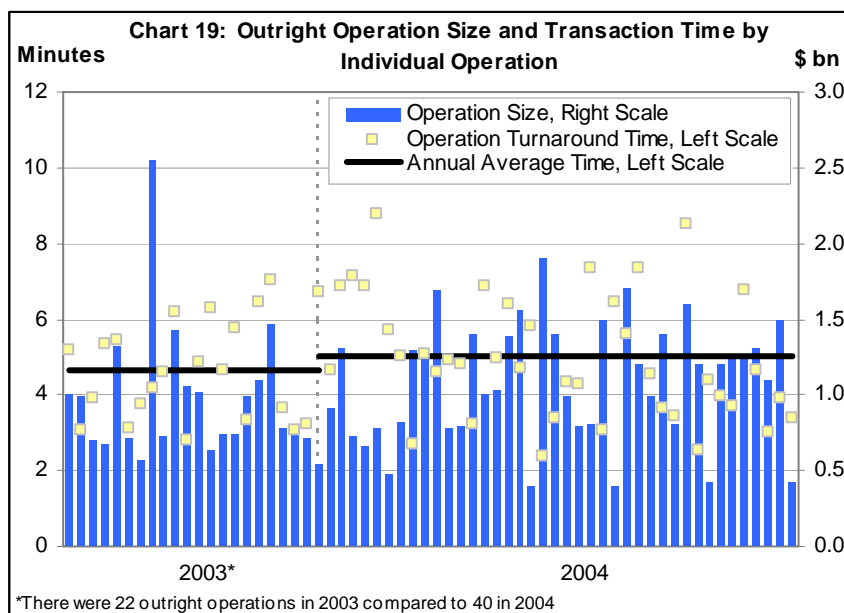
While the SOMA holds large absolute amounts of Treasury securities, SOMA Treasury holdings remain below the internal SOMA guideline limits (Chart 17). In total, the SOMA holds less than one quarter of the outstanding supply of Treasury securities (Chart 18). In the domestic inflation-indexed securities market, the SOMA holds only 6.6 percent of the total outstanding supply, compared with 7.9 percent in 2003. The decline in the SOMA's proportion of indexed debt held relative to total outstanding supply largely reflects increased issuance in this sector, relative to purchases.







The average outright operation size for the SOMA portfolio was little changed at \$1.07 billion from \$1.02 billion in 2003, and the number of outright operations rose to 40 in 2004 from 22 operations in 2003 (Chart 19). The increase in frequency of operations was a result of the need to offset net autonomous factor drains to Fed balances and the Desk's effort to better balance the relative amount of securities purchased between foreign central banks and other accounts and the dealers. Measures of dealer appetite and competitive bidding indicated that outright operations in 2004 were quite successful. The average par amount of propositions per outright operation was \$9.82 billion, up from \$8.1 billion in 2003, and the average proposition size increased to \$77 million from \$63 million last year. Competition among dealer propositions appeared to increase, as the average of the yield range of accepted propositions for each security declined from 1 basis point to 0.6 basis points. The Desk continued to maintain a low operation turnaround time, which encouraged more competitive bidding as it reduced price risk for dealers. The average turnaround time of 4 minutes and 53 seconds was roughly equal to the 2003 turnaround time.



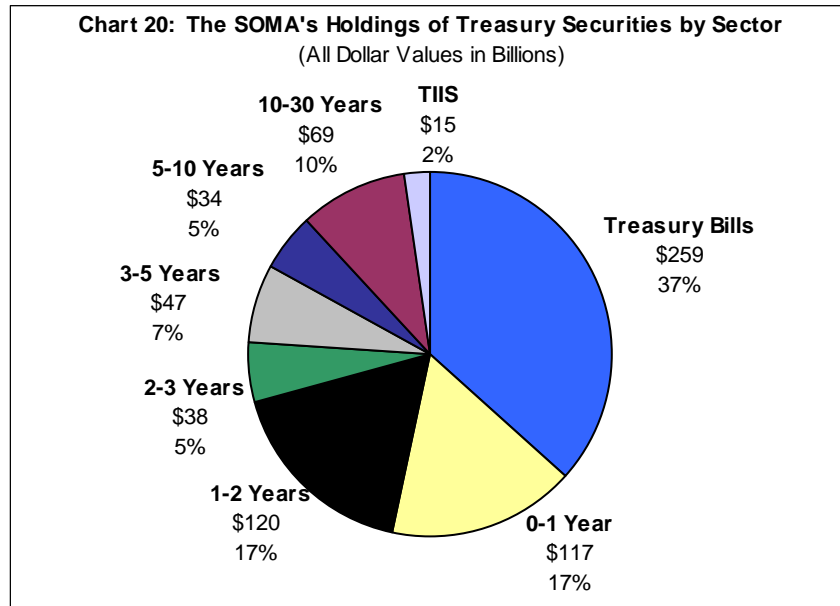
#### *Primary Market Activity*

At Treasury auctions in 2004, the Desk continued to replace maturing securities by placing add-on bids for the SOMA equal to the lesser of (a) its maturing holdings on the issue date of a new security or (b) the amount that would bring the SOMA holdings as a percentage of the issue to the percentage guideline limits. On days in which two or more securities were auctioned, funds were rolled over based on guidelines. There were no primary market Treasury inflation-indexed securities (TIIS) purchases during 2004 or 2003, because on the days in which TIIS auctions took place, the SOMA had no maturing funds. Also during 2004, the Treasury called two bonds: the 9.125% 15-May 2009 and the 10.375% 15-Nov 2009. The SOMA's holdings of these two bonds were \$1.405 billion and \$1.075 billion, respectively. The funds received from the callable Treasuries were reinvested according to portfolio guidelines at auction on the respective call dates.

#### *General Characteristics of Domestic Permanent SOMA Holdings at Year-End*

The average remaining maturity of the portfolio is kept relatively short under current guidelines, and holdings are laddered to guarantee a high degree of maturity liquidity over a one-year horizon (Chart 20). A combination of increased bill purchases and a concentration of coupon purchases in the shorter end of the curve yielded a decline in the average remaining maturity of the portfolio to 38.8 months at year-end from 42.6 months at the end of 2003. The SOMA portfolio's average remaining maturity was shorter than that of total Treasury debt outstanding, which decreased to 55.1 months in 2004 from 56.9 months in 2003.

Total purchasable room for the SOMA portfolio increased to \$293 billion from \$255 billion last year.<sup>9</sup> This was the first year that the SOMA held no Government agency obligations on an outright basis.<sup>10</sup>



#### *SOMA Securities Lending Activity*

The FRBNY provides a temporary source of securities to the Treasury financing market via a securities lending program, to promote smooth clearing of Treasury securities. The program offers securities for loan on an overnight basis from the SOMA portfolio in accordance with specified terms and conditions.<sup>11</sup> Securities loans are awarded to primary dealers based on competitive bidding in an auction held each business day at noon eastern standard time. To prevent securities lending operations from affecting overnight Fed balances, securities loans are collateralized with Treasury securities rather than cash.

Effective June 30, 2004, coincident with the 25 basis point increase in the federal funds target rate to 1.25 percent, the FRBNY raised the minimum fee for the SOMA securities lending program to 1.00 percent from 0.75 percent. As the FOMC increased the federal funds target rate in 25 basis point increments to 2.25 percent, the minimum fee was left unchanged at 1.00 percent.

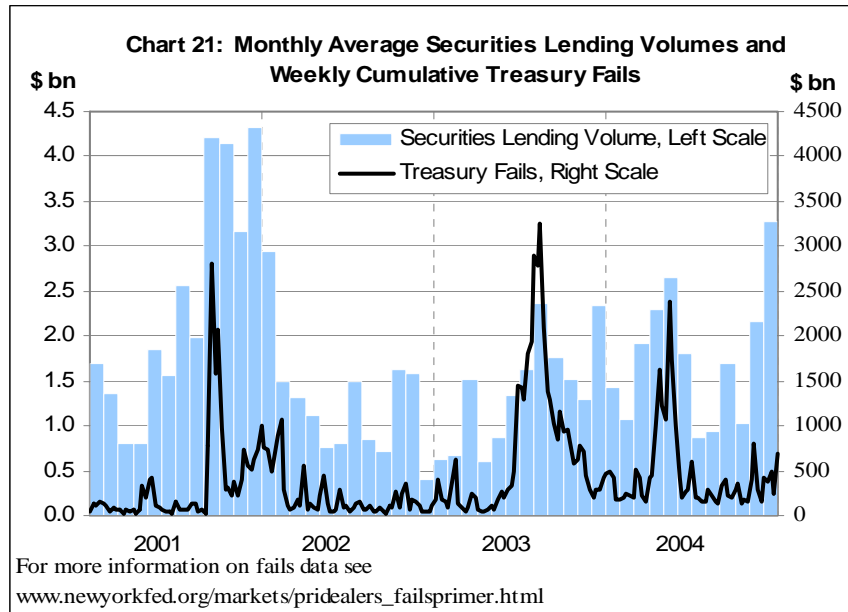
Average daily securities lending volume in 2004 increased \$393 million to \$1.8 billion. This increase in lending largely reflected escalated volumes during the second and fourth quarters when an increased

<sup>9</sup> Purchasable room is the maximum amount available for purchases without exceeding internal guidelines.

<sup>10</sup> The last agency security matured on 12/10/03.

<sup>11</sup> For terms and conditions of the Federal Reserve's securities lending program, see [http://www.newyorkfed.org/markets/sec\\_terms.html](http://www.newyorkfed.org/markets/sec_terms.html).

scarcity of supply across issues in the financing market resulted in elevated settlement failures in the Treasury market (Chart 21). The increase in volumes during the fourth quarter also might be partially attributable to the FRBNY's relatively attractive lending rate, as the spread between the minimum fee and federal funds target rate increased from 0.75 to 1.25 percent. Lending volume averaged \$2.2 billion during both the second and fourth quarters of 2004, compared with \$0.9 billion during the second quarter of 2003 and \$1.7 billion during the fourth quarter of 2003.



## V. THE FEDERAL FUNDS MARKET AND DISCOUNT WINDOW CREDIT

### A. Trading in the Federal Funds Market

The FOMC raised the target federal funds rate from 1 percent to 2.25 percent in 2004, with the first tightening occurring on June 30. Rate volatility in the federal funds market increased modestly in the second half of 2004, in contrast to the general downward trend that had been in place since 2001. The median and average intraday standard deviation of the federal funds rate rose, as did the median and average trading range (Table 4). Only 13 days showed 1 basis point of intraday standard deviation in the latter half of 2004 compared with 38 days in the first half of the year.<sup>12</sup>

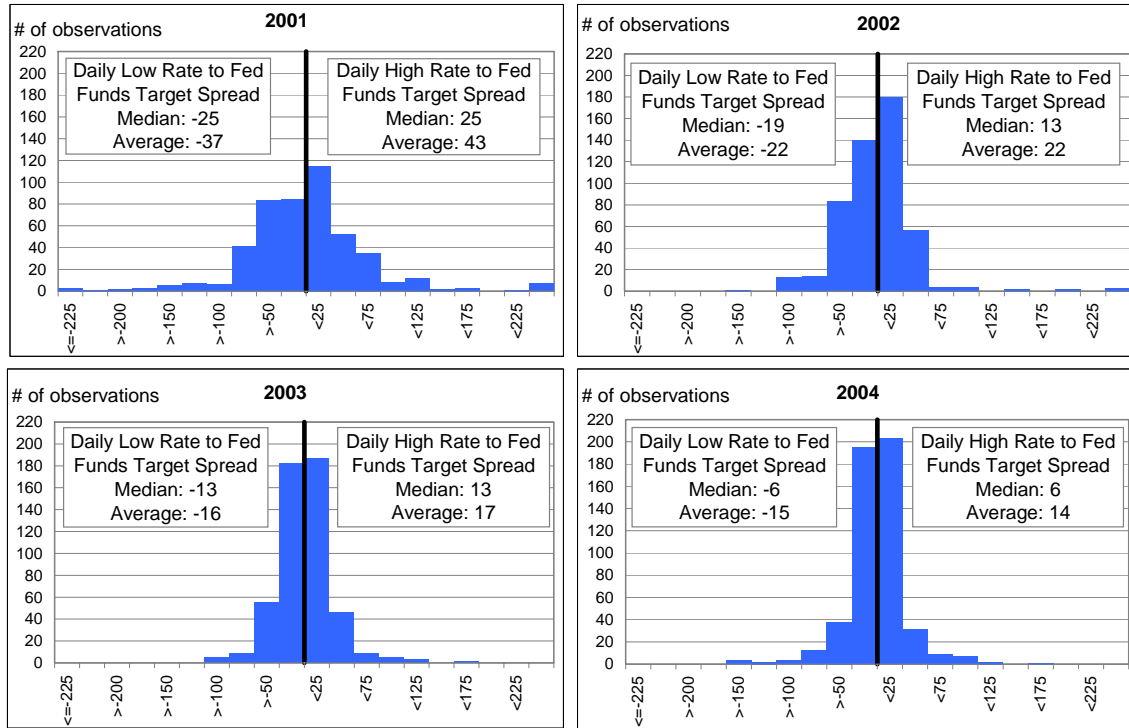
<b>Table 4: Fed Funds Rate Behavior</b>						
<b>Medians and Averages of Daily Values</b>						
(in basis points)	2001	2002	2003 H1	2003 H2	2004 H1	2004 H2
<b>Measures of Intraday Volatility</b>						
<i>Standard Deviation</i>						
Median	7	5	4	3	2	3
Average	9	6	5	5	3	6
<i>Range</i>						
Median	56	31	28	25	16	31
Average	80	44	36	31	22	38
<b>Deviations from Target</b>						
<i>Absolute Deviations of Effective Rate from Target</i>						
Median	5	3	3	2	1	2
Average	7	4	4	4	2	4
<i>Absolute Deviations of Morning Rate from Target</i>						
Median	0	-1	0	0	0	1
Average	1	0	1	1	1	1
<i>Inter-day Volatility of the Effective -Target Rate Spread</i>						
Standard Deviation	9	5	1	1	3	6
<b>Fed Funds Rate Behavior on High Payment Flow Days</b>						
<i>Deviations of Effective Rate from Target</i>						
Median	11	8	7	4	3	4
Average	12	6	9	7	4	4
<i>Deviations of Morning Rate from Target</i>						
Median	16	9	9	9	5	7
Average	15	10	11	9	5	7
<i>Standard Deviation</i>						
Median	8	7	6	8	4	5
Average	12	9	7	8	4	10

Note: High payment flow days include the first and last business days of the month, the settlement day of the U.S. Treasury's mid-quarter refundings, and tax dates; 2001 statistics exclude data from September 11 to October 3.

<sup>12</sup> Intraday standard deviation is rounded to the nearest basis point.

Other measures of rate volatility likewise showed some increase in the latter half of 2004. The median absolute deviation of the effective and morning rates from the federal funds target rate increased in the second half of the year. The same general pattern in rate volatility was also seen on high-payment-flow days. However, the volatility of the federal funds rate, measured in any of these ways, remained quite low by historical standards. For the year as a whole, the range between the daily high and low rates remained fairly narrow (Chart 25).

**Chart 22: Distributions of Daily Low and High Rate Deviations from the Federal Funds Target Rate**



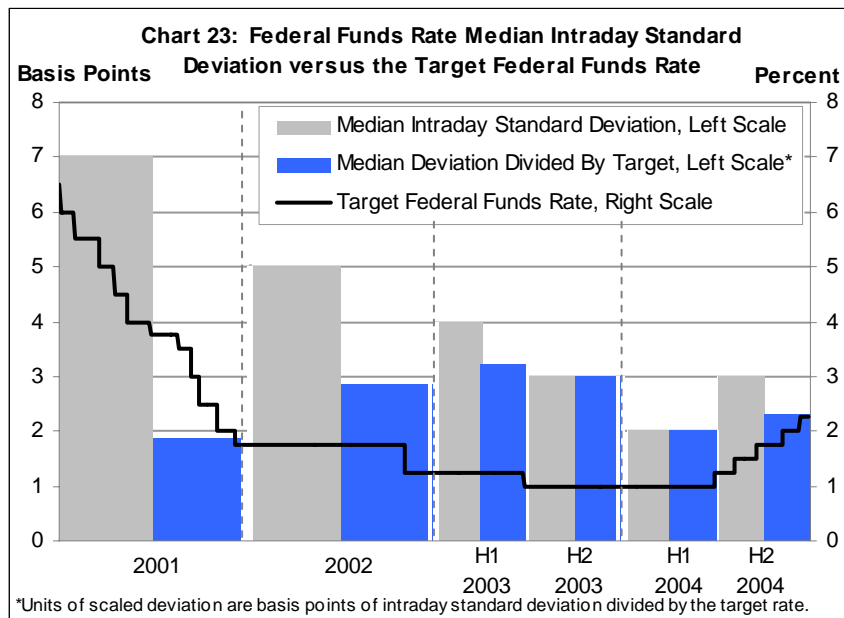
Several factors have led to a secular downward trend in volatility in the funds market over the last few years. The low target federal funds rate level lowered overall rate volatility as it led banks to have higher total balance requirements, as described in Section II.<sup>13</sup> Additionally, the historically low level of the target federal funds rate curtailed the potential for abrupt downward movements in the federal funds rate, while the primary credit facility reduced the likelihood of spikes higher. Moreover, the Desk has steadily expanded the set of banking institutions for which reserve positions are collected, allowing for more precise estimation of period-average demand for excess Fed balances.

<sup>13</sup> A higher federal funds rate raises the opportunity cost of holding contractual clearing balances and lowers the demand for deposits that are subject to reserve requirements.

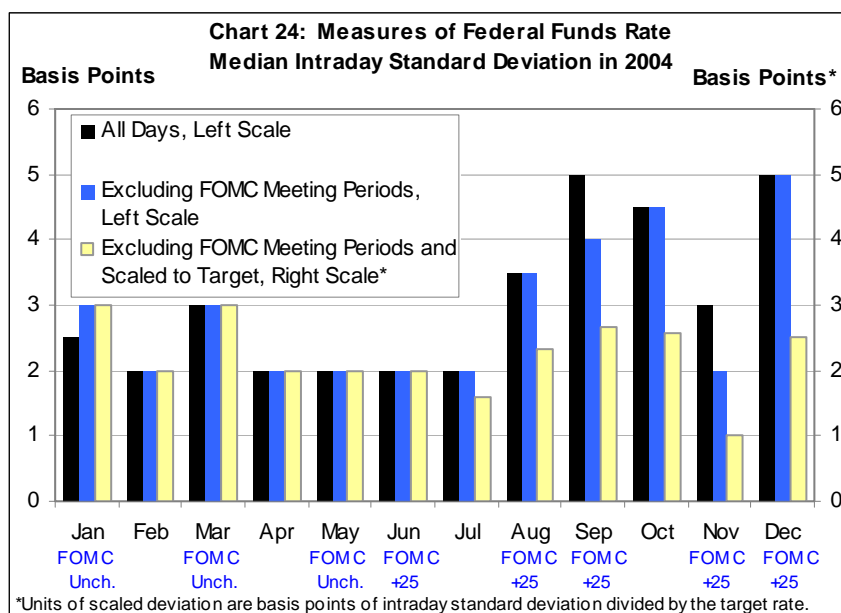
Conversations with market participants and other anecdotal evidence point to three primary explanations for the moderate increase in federal funds rate volatility in the latter half of 2004.

1. The level of the target federal funds rate has risen from 1 percent before the June FOMC meeting to 2.25 percent at year-end.
2. Unusual patterns in funding demand occurred in maintenance periods that included FOMC meetings with widely anticipated rate changes (as described later in the Box on Federal Funds Rate Behavior). The five target rate increases this year were the first increases since December 1999 (and the first target rate changes since June 2003).
3. Market participants quoted federal funds rates more frequently in fractions (such as 1/16<sup>th</sup> and 1/32<sup>nd</sup> of a percentage point), as decimal trading (transactions occurring in hundredths of a percentage point) retraced a bit once the federal funds rate rose from its recent low of 1 percent, which might have contributed slightly to higher rate volatility.

The median intraday standard deviation of the federal funds rate appears to have been strongly associated with the level of the target federal funds rate, declining until the second half of 2004 before turning around just as target rate increases began. Even a scaled measure of federal funds rate volatility (the median intraday standard deviation divided by the target rate) rose in the second half of 2004, indicating that volatility actually increased more than proportionally with the rise in the target rate level (Chart 23).



Analysis of measures of volatility over each month in 2004 sheds some more light on the source of the rise in rate volatility (Chart 24). The rise in rate volatility was less pronounced when maintenance periods during which there were target rate changes were excluded. There were 11 days in 2004 with an intraday standard deviation greater than ten basis points; 8 of these occurred in maintenance periods in which target rate changes were announced. Even excluding these maintenance periods, volatility has however increased—the increase has been roughly proportional with the rise in the target federal funds rate. Measured relative to the target rate and excluding maintenance periods during which there were target rate changes, volatility was little changed in the second half of the year.



The Desk aims to contain unusual volatility during maintenance periods that span FOMC meetings with widely anticipated rate changes. The Desk has strived to balance its pace of provision of reserve balances against the risk of unusual volatility later in the maintenance period (further explained in the Box on Federal Funds Rate Behavior). Banks may also have gained some experience in balancing a higher level of demand for reserve balances against the risk of unwanted excess reserve balances that could ultimately be more costly to them than the potential gain from expectational arbitrage.



### **Box: Federal Funds Rate Behavior around Target Rate Changes**

Against the backdrop of improved FOMC communication with markets, policy announcements have become more fully anticipated. All five of the federal funds target rate increases in 2004 were broadly expected by market participants, and four of these changes occurred in the middle of reserve maintenance periods.<sup>10</sup> Before 2004, there were only a few mid-maintenance period target rate changes that could be characterized as widely anticipated.<sup>11</sup> Dynamics in demand for Fed balances and associated federal funds rate behavior around expected mid-period rate changes have posed challenges in the management of Fed balances to both the Desk and to market participants.

The Desk broadly aims to diminish deviations in the federal funds rate from the target rate. In balance management terms, the Desk aims to provide just enough total balances to allow banks to meet all of their requirements and precautionary demand for excess balances at a pace that addresses the daily pattern of demand. If policy is expected to be tightened at a mid-period FOMC meeting, other things being equal, reserve managers have an incentive to buy or hold more balances in their Fed accounts earlier in the maintenance period, before any rate increase takes effect. Faced with this shift in demand for Fed balances, the Desk has three general options for reserve management strategy.

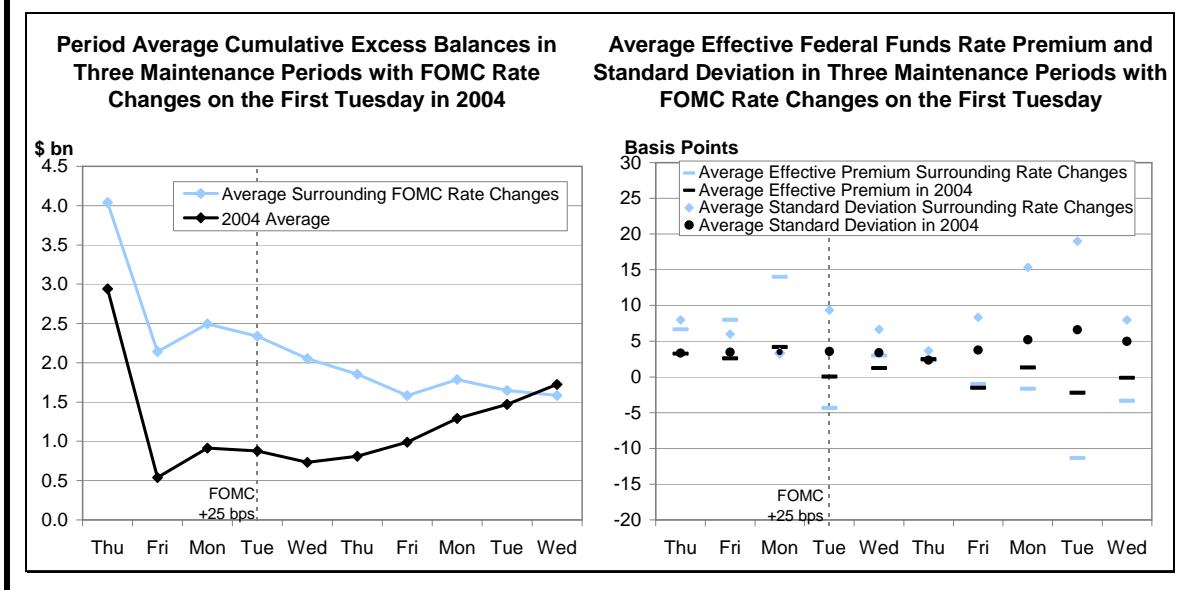
- (1) The Desk could provide balances at a “typical” pace. The shift forward in demand for balances will allow policy expectations to show through to trading more fully in the federal funds market. Rates will move in the direction of the new target rate on the days in the maintenance period preceding the FOMC announcement.
- (2) The Desk could supply an extremely high level of cumulative excess balances in the first week of the maintenance period, aiming to keep the federal funds rate at the old target. This may imply satisfying a large share of banks’ period-need for reserve balances relatively early in the period and raises the odds that banks will end the period holding unwanted excess balances. Following the FOMC meeting, the Desk would need to leave relatively low levels of daily balances, thereby raising the risk of banks being overdrawn and possibly borrowing from the discount window. Thus, this strategy could engender considerable volatility later in the maintenance period.
- (3) The Desk could adopt a middle course, stepping up the pace of the provision of balances to mitigate the rise in the effective federal funds rate ahead of the FOMC meeting, but balancing this against the objective of limiting the subsequent rise in rate volatility. The Desk has in fact leaned toward this “balanced” approach in the latter part of 2004.

The daily effective federal funds rate moved partly toward the expected new target rate on the days in the maintenance periods preceding the FOMC announcement for all four mid-period target rate increases in 2004. Meanwhile, the days following these mid-period rate changes were characterized by somewhat elevated rate volatility, but probably less than would have been the case had the Desk aggressively acted to keep the federal funds rate precisely at the target ahead of the FOMC meeting.

<sup>10</sup> FOMC meetings typically occur on Tuesdays or Wednesdays, so it is most likely that a rate change occurs in the middle of a maintenance period or at the end.

<sup>11</sup> The unexpected component of a federal funds target rate change can be roughly measured by the change in the current month federal funds futures contract before and after a rate change is announced. The next month contract can be used instead if the federal funds target rate change occurs late in the month.

Box continued



**B. Discount Window Credit**

The year 2004 marked the second full year of operation for the primary and secondary credit facilities as sources of temporary liquidity for depository institutions. The seasonal lending program remained unchanged. The rates on the primary and secondary credit facilities were maintained at 100 and 150 basis points, respectively, above the federal funds target rate.

The volume of borrowing remained low. In 2004, primary credit borrowing averaged \$42 million, compared with \$35 million in prior year (Table 5). Instances of borrowing remained low. There were 5 occurrences of primary credit borrowing in excess of \$500 million in 2004 compared with 2 instances in 2003.

**Table 5: Borrowing Trends**

	2001	*2001	2002	2003	2004
<i>Daily averages in \$ billions</i>					
Seasonal borrowing	73	73	92	63	110
Adjustment/Primary borrowing	323	78	54	35	42
<i>Number of instances in which Adjustment/Primary borrowing exceeded...</i>					
\$100 million	21	18	13	6	5
\$500 million	11	8	6	2	5

\* Excluding the period from 9/11/01 to 9/13/01

There was only one case where trading in the brokered federal funds market occurred more than 100 basis points above the target rate in 2004 (due to a wire problem at a depository institution); thus there was little need for primary credit facility borrowing. There was likewise only one instance in 2003 when the

brokered federal funds rate rose more than 100 basis points above the target rate (following the power blackout), while in 2002 and 2001, there were 7 and 15 occasions, respectively. Low levels of primary credit borrowing suggest that the Desk is continuing to meet banks' demand with sufficient supply of Fed balances through open market operations.

## **APPENDIX A: AUTHORIZATION FOR DOMESTIC OPEN MARKET OPERATIONS**

At the January meeting the FOMC voted unanimously to amend the domestic authorization that would allow the Federal Reserve Bank of New York to place in the RP pool funds that are held pursuant to fiscal agency instructions from the Secretary of the Treasury. The amendment involves additions to paragraph 3 of the domestic authorization.

Open market operations were conducted under the Authorization for Domestic Open Market Operations. The Authorization in effect at the end of 2004 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 \$12.0 billion during the period commencing with the opening of business on the day following such a meeting and ending with the close of business on the day of the next such meeting;

(b) 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, from dealers for the account of the Federal Reserve Bank of New York under agreements for repurchase of such securities or obligations in 65 business 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.

(c) To sell U.S. Government securities and obligations that are direct obligations of, or fully guaranteed as to principal and interest by, any agency of the United States to dealers for System Open Market Account under agreements for the resale by dealers of such securities or obligations in 65 business 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.

2. In order to ensure the effective conduct of open market operations, the Federal Open Market Committee authorizes the Federal Reserve Bank of New York to lend on an overnight basis U.S. Government securities held in the System Open Market Account to dealers at rates that shall be determined by competitive bidding. The Federal Reserve Bank of New York shall set a minimum lending fee consistent with the objectives of the program and apply reasonable limitations on the total amount of a specific issue that may be auctioned and on the amount of securities that each dealer may borrow. The Federal Reserve

Bank of New York may reject bids which could facilitate a dealer's ability to control a single issue as determined solely by the Federal Reserve Bank of New York.

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 and accounts maintained at the Federal Reserve Bank of New York as fiscal agent of the United States pursuant to Section 15 of the Federal Reserve Act, 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 accounts on the bases set forth in paragraph 1(a) under agreements providing for the resale by such accounts of those securities in 65 business days or less 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(b), repurchase agreements in U.S. Government and agency securities, and to arrange corresponding sale and repurchase agreements between its own account and such foreign, international, and fiscal agency accounts maintained at the Bank. Transactions undertaken with such accounts under the provisions of this paragraph may provide for a service fee when appropriate.

4. In the execution of the Committee's decision regarding policy during any intermeeting period, the Committee authorizes and directs the Federal Reserve Bank of New York, upon the instruction of the Chairman of the Committee, to adjust somewhat in exceptional circumstances the degree of pressure on reserve positions and hence the intended federal funds rate. Any such adjustment shall be made in the context of the Committee's discussion and decision at its most recent meeting and the Committee's long-run objectives for price stability and sustainable economic growth, and shall be based on economic, financial, and monetary developments during the intermeeting period. Consistent with Committee practice, the Chairman, if feasible, will consult with the Committee before making any adjustment.

**APPENDIX B: GUIDELINES FOR THE CONDUCT OF SYSTEM OPEN MARKET OPERATIONS IN FEDERAL AGENCY ISSUES**

The FOMC has established specific guidelines for operations in agency securities to ensure that Federal Reserve operations do not have undue market effects and do not serve to support individual issuers. The guidelines are reprinted below.

*Guidelines for the Conduct of System Operations in Federal Agency Issues*

1. System open market operations in Federal agency issues are an integral part of total System open market operations designed to influence bank reserves, money market conditions, and monetary aggregates.
2. System open market operations in Federal agency issues are not designed to support individual sectors of the market or to channel funds into issues of particular agencies.