Monetary Policy and Open Market Operations during 1993

Overview

During 1993, monetary policy continued to be directed toward sustaining the economic expansion while encouraging progress toward stable prices. In the preceding few years, the pace of economic activity had been held back by several forces, including business and household efforts to improve financial positions, cutbacks in defense spending, a struggling real estate sector, and concerns about employment opportunities. To counter these influences, the Federal Open Market Committee had substantially eased reserve pressures between 1989 and 1992 in a series of gradual steps Although the factors that had restrained economic activity in these years continued to be felt in 1993, their intensity appeared to diminish as the year progressed Meanwhile, the stimulus provided by an accommodative monetary policy and declining long-term interest rates was becoming increasingly apparent, and the expansion in economic activity steadily improved over 1993 after falling back sharply in the first quarter. Chairman Greenspan indicated during the year that policy at some stage would have to move toward a more neutral position as the economy overcame the "headwinds" that had been impeding its advance. But with the underlying momentum of the expansion still in doubt during much of the past year, monetary policy, as measured by the prevailing degree of pressure on reserve positions, remained unchanged

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Long-term interest rates fell dramatically in 1993, driven by disinflationary trends, a moderate pace of economic expansion, and improved prospects for credible fiscal restraint. These yields declined intermittently over the first three quarters of the year, reaching their lowest levels in two decades by mid-October. Declines in short-term rates during this time were tempered by the steady stance of monetary policy. Over the final months of the year, most interest rates retraced a portion of their earlier declines in response to a steady stream of statistics indicating that economic growth was accelerating and unused productive capacity diminishing. Even with this partial backup in yields, however, the net decline in longer term interest rates over the year was substantial, resulting in a significant flattening of the yield curve.

Falling interest rates had far-reaching effects on investment flows and credit market conditions. Corporate and municipal borrowers issued record amounts of new debt to lock in reduced funding costs. The combination of lower yields and an improving economy further eased lingering financial market strains. Debt-servicing burdens of borrowers were directly alleviated, and corporate profitability rose. The trend toward improved financial conditions was particularly apparent in the banking sector. Also during the year, the Treasury took steps to realize savings in its borrowing costs by shortening the average maturity of its debt.

The performance of the monetary aggregates in 1993 followed trends established over the preceding few years. The broader measures of money again grew very slowly during the year, lagging far behind income growth. The Federal Open Market Committee (FOMC) placed reduced emphasis on M2 as a monetary policy guide because of the uncertain relationship between this measure of money and income. Meanwhile, M1, boosted by rapid currency growth and the effects of record levels of mortgage refinancing activity, posted its third consecutive strong yearly advance

The FOMC continued to express its formal policy objectives in terms of "the desired degree of reserve pressure," specifying an amount of seasonal and adjustment borrowing from the discount window believed to be consistent with federal funds trading around a given level. In practice, the relationship between borrowing and the federal funds rate had not been very dependable in recent years, and the Trading Desk had treated the borrowing allowance very flexibly While banks in 1993 appeared to have become less reluctant to tap the discount facility because of their improving financial condition, routine borrowing remained very low. Sufficient reserves were generally provided to meet demands, and the spread between the federal funds rate and the discount rate was usually slight. Consequently, banks had little need or incentive to borrow.

The Desk continued to face large needs to add reserves in 1993, primarily because of the rapid growth of currency and transactions deposits. Thus, the Desk purchased a record $37 billion of securities during the year while selling none and redeeming $2 billion. The purchases were about equally divided between Treasury coupon securities and Treasury bills. The Desk also arranged a substantial volume of repurchase agreements (RPs) during the year to address short-term variations in reserve availability.

In formulating its reserve strategy within two-week maintenance periods, the Desk sometimes faced inconsistencies between forecasts of the reserve need, based on staff estimates of required reserves and the net reserve effects of operating factors, and the behavior of the federal funds rate. In these circumstances, it had to judge which indicator more reliably reflected the reserve picture. On those occasions when the Desk had reasonable confidence that a reserve need existed, it preferred to meet at least a portion of the estimated need, even without confirmation from the federal funds rate. For instance, reserve management practices at banks often caused the funds rate to be soft early in a maintenance period and on Fridays, although reserves were sometimes scarce Banks attempted to avoid building up large excess reserve positions before the final days of a period for fear that they might not be able to eliminate them without risking an overnight overdraft in their account and the stiff associated penalties. When the Desk anticipated that the funds rate might fall below the expected level on a subsequent day despite a reserve shortage, it often executed fixed-term multiday repurchase agreements, rather than the standard withdrawable type, to ensure that the reserves stayed in place.

At times when the forecasts were believed to be less reliable than usual, the Desk gave more weight to the federal funds rate in planning its operations. Operating factors affecting reserves were especially difficult to forecast following major Treasury tax collection dates or in periods of exceptionally inclement weather. The Desk also tended to respond to the behavior of the funds rate if a failure to do so could have misled observers about the stance of Federal Reserve policy. That risk was mitigated somewhat in 1993, however, because market participants generally did not expect an imminent policy move.

The setting for policy

Economic activity and inflation

In 1993, many of the factors that had restrained the economic expansion during the preceding few years remained influential, but their intensity diminished over the year Defense cutbacks, an overbuilt commercial real estate sector, and business and household efforts to restore financial health remained a drag on the economy Moreover, a relatively slow pace of job formation, partially the outgrowth of ongoing corporate restructuring efforts, continued to weigh on consumer attitudes and to dampen household spending. As the year progressed, however, the impact of these restraining elements seemed to fade, while lower interest rates and the more accommodative monetary policy of the preceding few years were having a clear effect When the pace of activity quickened over the second half of the year, the economic expansion appeared to have gained more solid footing.

For the year as a whole, real GDP grew just over 3 percent, about 3/4 of a percentage point less than in the previous year [1] In the first quarter of 1993, economic growth fell back to less than 1 percent following a burst of activity in the final quarter of the preceding year (Table 1). Consumer spending almost came to a standstill, and net exports deteriorated sharply as the economies of many of the country's major trading partners remained mired in recession In the following quarter, household spending rebounded, but net exports continued to shrink and businesses aggressively pared their inventories, leaving GDP growth at just under 2 percent. In the final two quarters of the year, consumer spending—particularly for more durable items—continued to climb, residential construction boomed as mortgage rates sank, and investment in equipment remained robust A slight improvement in the U.S. net export position was also registered in the final quarter. As a result of these developments, GDP growth rose to about 3 percent in the third quarter and then surged to 7 percent in the fourth quarter.[2]

[1] This growth rate, and all annual increases reported in this section, are measured from the fourth quarter of 1992 to the fourth quarter of 1993 Reports of quarterly growth in this section are seasonally adjusted annualized rates

[2] The recorded third-quarter growth rate was reduced modestly by the effects of summer flooding in the Midwest and drought in the Southeast

While economic activity steadily improved over the year, inflation as measured by most aggregate price indicators continued to subside (Table 2). Excluding the more volatile food and energy components, consumer price inflation slipped in 1993, and the level of producer prices was nearly unchanged on balance [3] Nevertheless, the monthly performance of these price measures was uneven. Several discomforting price increases were reported early in 1993, followed by generally modest rises, and, at the producer price level, several declines.[4]

The improvement in inflation in 1993 partly reflected the persistence of unutilized productive resources in the economy Still, evidence accumulated over the year that upward pressures on prices could be building. For one thing, increases in employment compensation showed no tendency toward further moderation Moreover, when faster output growth spurred greater hiring over the second half of the year, the slack in labor markets diminished, as reflected in a falling unemployment rate Excess capacity in product markets also dwindled, and by the end of the year capacity utilization rates in industry were nearing levels historically associated with firming price pressures

Monetary aggregates

The broader monetary aggregates in 1993 lagged behind total spending growth in the economy, continuing the pattern set over the previous three years Both M2 and M3 fell in the early months of the year, spurted briefly in the spring, then lapsed into a sluggish growth pattern over the remainder of the year For the year as a whole, M2 increased only 1 4 percent, and M3 advanced a mere 0 6 percent (Charts 1A and 1B).[5] Ongoing structural adjustments at depository institutions, changes in attitudes toward debt, and the expanding array of borrowing and investment options avail-

[3] Movements in the total consumer and producer price series were affected by extreme weather in various agricultural areas, which distorted some commodity prices, and by falling energy prices late in the year

[4] Several analysts felt this uneven pattern partly reflected measurement problems, including faulty seasonal adjustment factors, that exaggerated the reported increases early in the year, particularly at the consumer price level

[5] The data on all the monetary aggregates are as of January 27, 1994, before the annual seasonal and benchmark revisions of February 3 The earlier data better represent the information available to the Committee when it was deliberating The revisions available as of February 3 had little impact on total growth over the year On balance, the revisions for all the aggregates tended to redistribute some of the growth from the last three quarters of the year into the first quarter All annual changes of the monetary aggregates reported in this section are measured on a fourth quarter-to-fourth quarter basis

Table 1

Real Gross Domestic Product and Its Components

Seasonally Adjusted Annual Rates of Change, Except as Noted

	1992-IV	1993 I	1993 II	1993 III	1993 IV	1991-IV to 1992-IV	1992-IV to 1993-IV
Real GDP	5 7	0 8	1 9	2 9	7 0	3 9	3 1
Change in inventory accumulation†	-0 9	20 6	-16 3	-6 5	2 0	1 6	-0 2
Final sales	5 8	-0 8	3.2	3 4	6 8	3 8	3 1
Consumption	5 6	0 8	3 4	4 4	4 4	4 0	3 2
Durables	13 2	-1 3	10 8	7 6	15 2	9 7	7 9
Nondurables	7 3	-2 1	2 7	3 7	2 7	3 6	1 7
Services	2 9	3 1	2 1	3 9	2 6	2 8	2 9
Producers' durable equipment	11 5	19 9	19 8	10 0	26.0	11 4	18 8
Nonresidential structures	-2 1	0 5	8 1	0 3	12 2	-2 0	5 1
Residential construction	32 8	1 5	-9 5	11 9	31 7	17 6	7 9
Change in net exports†	3 7	-21 1	-15 3	-11 1	1 8	-22 4	-45 7
Government purchases	-1 4	-6 4	4 2	0 3	0 0	1 1	-0 5
Addenda							
Saving rate (percent of disposable income)	6 0	3 9	4 4	3 8	4 0	1 1‡	-2 0‡
Industrial production	6 3	5 4	2 2	2 9	6 6	3 2	4 3
Capacity utilization rate (level)	80 4	81 1	81 2	81 4	82 3	1 1‡	1 9‡
Civilian unemployment rate (level)	7 3	7 0	6 9	6 7	6 5	0 3‡	-0 8‡
Change in nonfarm payroll employment (thousands)	298	517	547	389	503	786	1955
Change in manufacturing payrolls	-91	28	-121	-95	2	-358	-186

Note Data are as of April 11, 1994

† Billions of 1987 dollars

‡ Change in rate

able to businesses and consumers contributed to the persistent weakness in the broader aggregates.[6] The Committee took the potential impact of these factors into account when it set relatively low growth ranges for M2 and M3 at the beginning of 1993 [7] By the time of the midyear review of the aggregates, the strength of the forces depressing M2 and M3 appeared to have been underestimated somewhat, and staff analysis suggested that velocity would continue to grow strongly over the balance of the year In particular, stock and bond mutual funds, widely viewed as a readily available investment alternative to these aggregates, experienced robust growth [8] Responding to these developments, the Committee lowered the ranges in July, a purely technical adjustment.[9] It turned out that both aggregates finished the year within the reduced ranges [10] In July, the Chairman also indicated that M2 had been downgraded for use in guiding monetary policy because of the breakdown of the historical relationships between this measure of money and income.

In sharp contrast to the performance of the broader aggregates, M1 grew rapidly in 1993 for a third consecutive year M1 rose 10 5 percent during 1993, and all the major components increased significantly (Chart 1C) [11] The extraordinary pace at which households refinanced mortgages in response to plunging mortgage rates, captured in Chart 2, led to rapid growth in demand deposits in many months and explains some of the strength in demand deposits over the year.[12] For currency, shipments abroad were again an important source of growth

Financial developments

Yield movements. In 1993, a powerful rally in securities markets drove interest rates on intermediate- and long-term debt to levels not seen in twenty years A sustained downward move in these yields began late in 1992 and extended into the final quarter of this past year, although it was punctuated by periods of consolidation and some backup in rates (Chart 3) By mid-October, yields on many longer term Treasury coupon securities had fallen 150

[6] These financial market developments have been described in some detail in previous editions of this report The weakness in M2 before 1993 came despite a decline in conventional measures of the opportunity cost of holding these deposits In 1993, the opportunity cost of holding M2 deposits turned up, a shift that could explain some of the continued weakness in that aggregate during the year

[7] The range for M2 set in February was 2 to 6 percent, and the range for M3 was 1/2 to 4 1/2 percent Both ranges were 1/2 percentage point lower than the provisional ranges for 1993 set the previous July

[8] The popularity of these mutual funds was enhanced by the steepness of the yield curve and by hopes that capital gains in the bond and stock markets could be sustained For 1993 as a whole, M2 plus stock and bond mutual funds grew by an estimated 5 1/2 percent

[9] The range for M2 was reduced by 1 percentage point, and the M3 range was lowered by 1/2 percentage point

[10] For total domestic nonfinancial debt, the Committee retained the monitoring range of 4 1/2 to 8 1/2 percent in February that it had selected the previous year, but it lowered the range by 1/2 percentage point at the July meeting As shown in Chart 1D, this measure finished the year within its reduced range Data are as of April 7, 1994

[11] The strength in demand and other checkable deposits came despite a slight increase in the opportunity cost of holding these deposits following several years of decline The effective rate paid on interest-bearing checkable accounts slipped in 1993, while market rates on other short-term instruments were fairly flat

[12] Prepayment activity raises demand deposits with a short lag because servicers of refinanced mortgages typically hold the prepayments in these accounts before disbursing funds to holders of mortgage-backed securities The effect on M1 is eventually reversed, however The fact that refinancing was heavy in the final quarter of 1992 as well as in the last quarter of 1993 suggests that the impact of this activity on M1 growth for the entire year was limited Staff estimates indicate that prepayment activity elevated M1 growth by about 3/4 of a percentage point

Table 2
Price Information
Seasonally Adjusted Annual Rates of Change

	1992-IV	1993 I	1993 II	1993 III	1993 IV	1991-IV to 1992-IV	1992-IV to 1993-IV
Consumer price index							
Total	3 3	3 0	3 1	1 9	3 0	3 1	2 8
Excluding food and energy	3 5	3 6	3 4	2 5	2 9	3 5	3 1
Producer price index							
Total	1 6	1 4	3 7	-3 7	-0 1	1 6	0 3
Excluding food and energy	4 6	2 6	1 2	-4 7	2 2	2 0	0 3
Implicit GDP deflator	3 3	3 6	2 3	1 6	1 3	2 8	2 2
Fixed-weight GDP index	3 3	4 3	2 6	2 3	2 2	3 4	2 8
Employment cost index†	3 9	3.8	3 5	3 4	3 4	3 4	3 5

Note Data are as of April 11, 1994
† This index covers civilian workers and is computed for the final month of each quarter The growth rates represent annualized changes from the final month of the previous quarter

Chart 1A

M2: Levels and Target Ranges

Cones and Parallel Bands

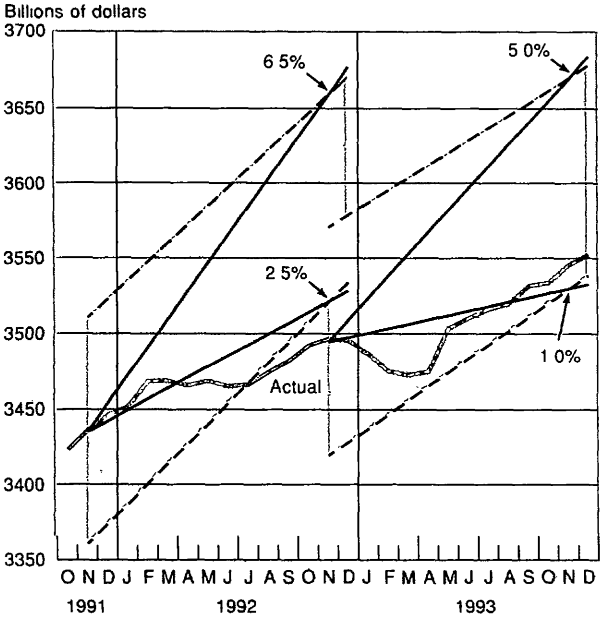


Chart 1C

M1: Levels and Growth Rates

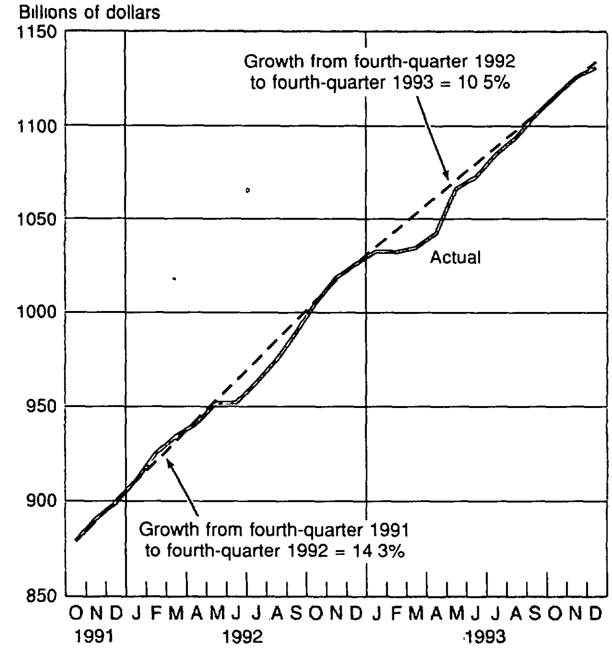


Chart 1B

M3: Levels and Target Ranges

Cones and Parallel Bands

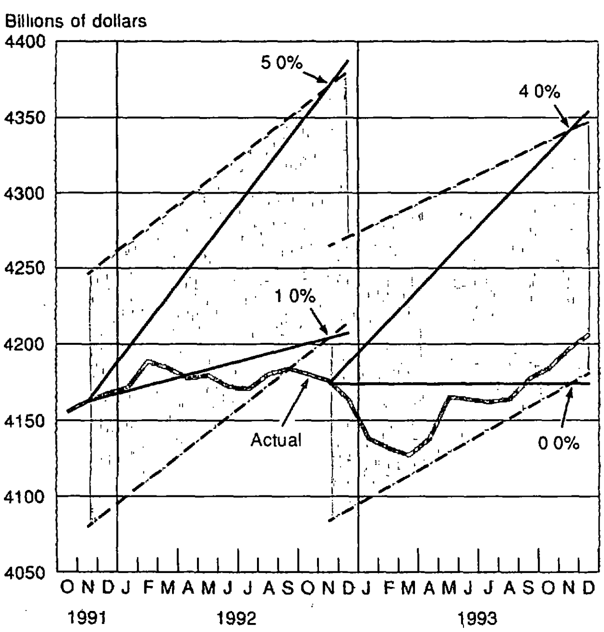
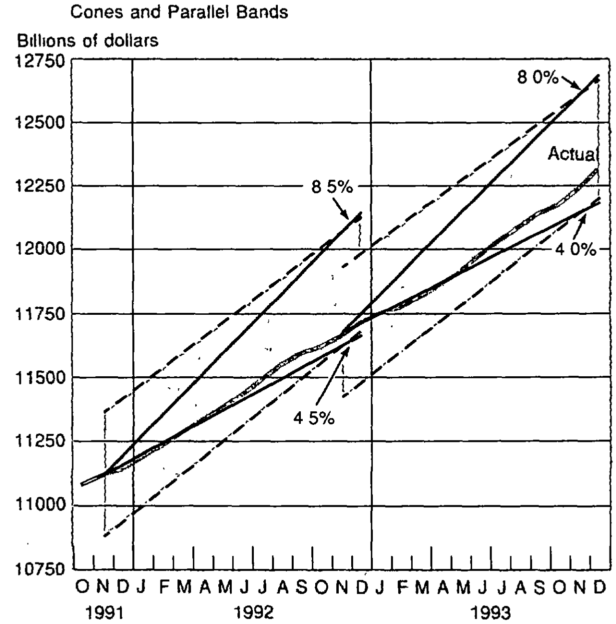


Chart 1D

Total Domestic Nonfinancial Debt: Levels and Monitoring Ranges

Cones and Parallel Bands



basis points from where they stood at the start of 1993.[13]

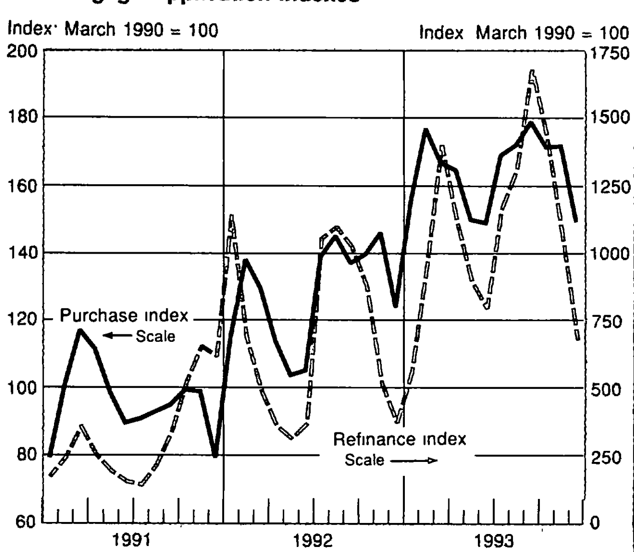
Several developments supported this market rally. Disinflationary trends in product and labor markets, together with perceptions that the underlying pace of economic expansion remained subdued, dampened inflationary expectations. Negotiation and passage of what was perceived as a credible package of fiscal restraint measures also played a part. In addition, some analysts felt that the Treasury's decision to reduce its reliance on longer term debt, a development discussed below, may have been a contributing factor. Declines in short-term interest rates were limited by the steady stance of monetary policy that effectively anchored these yields, so the yield curve flattened substantially (Chart 4).

[13] Between the end of 1992 and mid-October, the yield on the newest thirty-year bond fell more than 160 basis points, reaching 5 78 percent on October 15, the lowest yield since the Treasury began its regular issuance of thirty-year bonds in 1977

Bond yields had been much lower before a legal prohibition of Treasury bonds with coupons above 4 1/4 percent forced the Treasury to discontinue bond issuance in the mid-1960s For instance, in the 1940s, the Treasury sold a number of long-term bonds at yields of 2 50 percent In the early to mid-1950s, yields set on the handful of long-term bonds sold were between 3 and 3 25 percent Between 1958 and 1963, the Treasury sold long-term bonds at yields of 3 25 to 4 25 percent The Treasury gained a partial exemption from the 4 1/4 percent ceiling in 1971 Bonds sold between that date and 1976—mostly with maturities of about twenty to twenty-five years—had yields ranging from about 6 8 to 8 6 percent

Chart 2

Mortgage Application Indexes



Source Mortgage Bankers Association of America.
Note: Purchase index is seasonally adjusted; refinance index is not seasonally adjusted.

Most interest rates rose abruptly early in the fourth quarter as evidence accumulated that an upsurge in economic activity was under way. Participants questioned whether the lower yields reached during the extended market rally were justified by economic fundamentals, and many investors took steps to protect accrued profits, these actions added upward momentum to the backup in rates. Yields then moved erratically over the final month or two of the year as investors reassessed economic and policy prospects.

Despite the partial turnabout late in the year, yields on intermediate- and long-term Treasury securities still fell some 80 to 100 basis points over the year as a whole.[14] The two- to thirty-year coupon yield curve flattened by about 75 basis points on balance, although it still remained relatively steep by historical standards

Financial market conditions. Borrowers responded to lower interest rates by flooding the major credit markets with debt in 1993. Investment-grade corporate offerings jumped about 25 percent to a record $314 billion.[15] Below-investment-grade issuance climbed by more than 50 percent to $50 billion, surpassing even the highest yearly levels reached in the 1980s. Municipalities also sold an unprecedented amount of tax-exempt debt—$290 billion, or about 25 percent more than the preceding year's figure—with two-thirds of it intended to refinance outstanding issues The defeasance-related purchases of Treasury securities generated by this refinancing activity were an important source of demand in the Treasury debt market at times during the year Falling mortgage rates induced homeowners to refinance mortgages at an extraordinary pace This prepayment activity, which came in several waves during the year, made mortgage-backed instruments less attractive to investors and reportedly led many investors to divert funds at least temporarily from the mortgage-backed market into longer dated Treasury issues.

The lower yield environment in 1993, combined with the continued forward momentum in the economy, helped improve the financial condition of many businesses, including depository institutions. Corporate profitability was up substantially, and corporate debt upgrades outnumbered downgrades for the first time in nearly a decade [16] These positive developments were pronounced in the bank hold-

[14] At the end of 1993, the yield on the latest bond was 6 35 percent, compared with a rate of 7 39 percent on the most recent bond outstanding one year earlier But as the section on Treasury finance notes, scarcity considerations may have exaggerated the implied decline in thirty-year yields

[15] This total excludes all mortgage-backed, asset-backed, and convertible debt

[16] According to Moody's Investor Service, upgrades in 1993 exceeded downgrades for the first time in nine years, by 163 to 154 According to Standard and Poor's, corporate upgrades exceeded downgrades for the first time since 1980, by 343 to 263

ing company sector Many banks reported sharply higher profits in 1993, and ratings upgrades far exceeded downgrades [17] Despite the improved financial health of many banks and their borrowers, depository lending showed few signs of revitalization.[18] Lending to consumers did pick up over the year, but borrowing by businesses remained flat The continued restrained pace of lending by depositories reflected borrowers' changed attitudes toward debt, bankers' lingering caution, and the availability of alternative sources of business credit.

As a direct result of lower interest rates, the debt-servicing capabilities of consumers and businesses improved markedly in 1993, easing the financial burdens that had weighed on the economy in earlier years. Households began to take on new debt at a somewhat accelerated pace in the latter half of 1993, so their ratio of debt to income actually edged higher on balance over the year. In contrast, net business indebtedness was little changed as corporations continued to hold the line on new borrowing by defer-

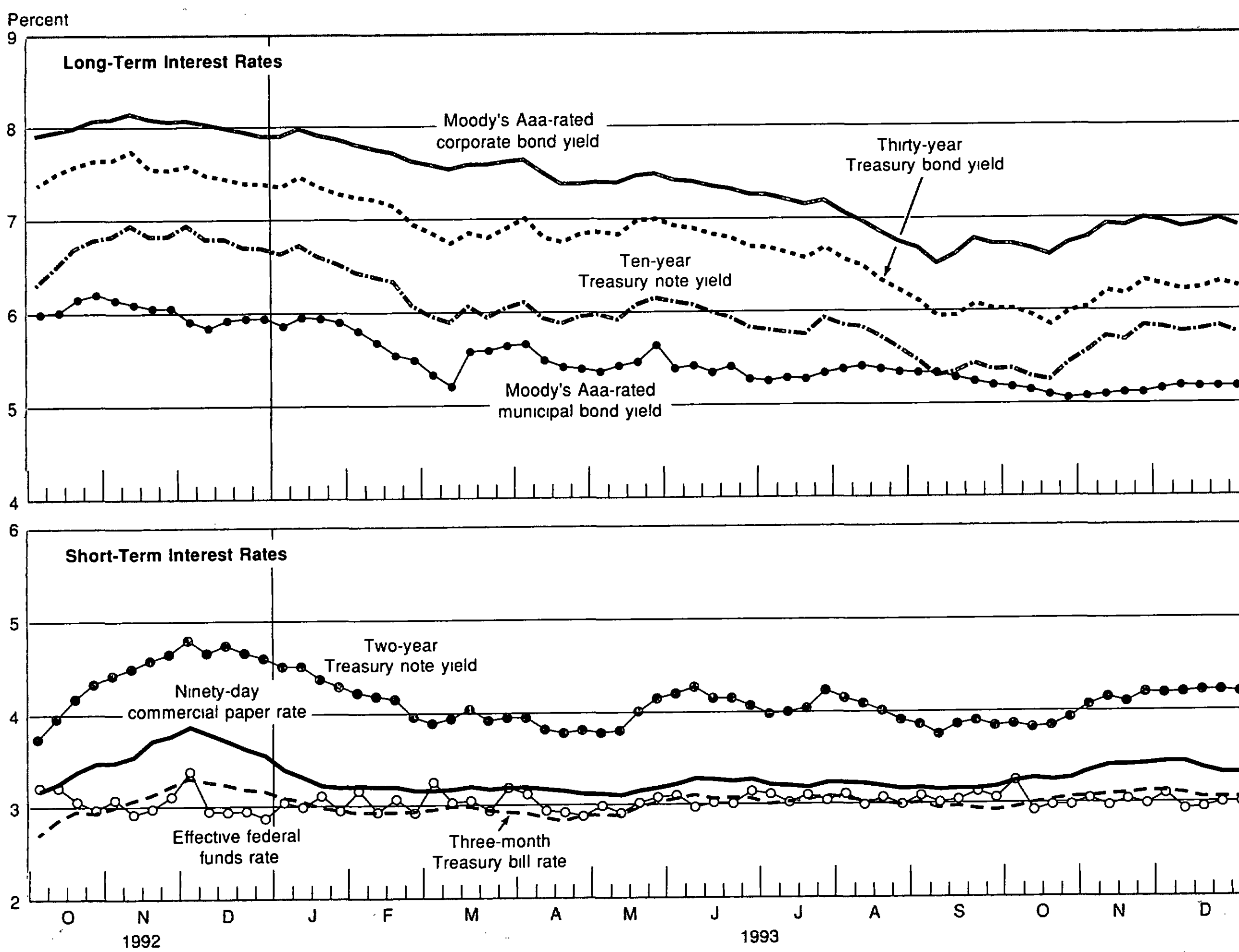
[17] Moody's upgraded 50 banks and downgraded only 4, while Standard and Poor's upgraded 36 banks and downgraded 5

[18] Total depository lending rose about 2 3/4 percent on a fourth quarter-over-fourth quarter basis

Chart 3

Long-Term and Short-Term Interest Rates

Weekly Averages



Notes Moody's Aaa-rated corporate bond yield and Aaa-rated municipal bond yield are based on issues with an average maturity of twenty years The discount rate was 3 percent over the interval ring spending, financing a greater portion of purchases with improved cash flow, or issuing equity. For the economy as a whole, growth of private domestic nonfinancial debt accelerated moderately to about 3 3/4 percent in 1993.

Treasury finance. In May, the Treasury announced an important shift in the pattern of its borrowing. After a review of the issue, the Treasury concluded that it would reduce its real interest costs over time by modestly shortening the average maturity of its debt. The Treasury indicated that it would henceforth issue thirty-year debt semiannually, rather than quarterly, with bonds to be sold only in February and August.[19] Moreover, the quarterly issuance of seven-year notes was discontinued. The Treasury planned to offer more bills and coupon securities with maturities of three years or less to make up for reduced issuance of longer term debt[20]

This modification of the Treasury's borrowing cycle influenced trading in the secondary market in 1993 In the view of some analysts, the decision to pare issuance of bonds may have contributed to the flattening of the yield curve In addition, the change in the Treasury's financing pattern clearly affected the trading of specific issues. Most notably, the August 2023 bond, the last bond issued in 1993, traded at an unusually large premium relative to other long-term debt[21] This issue was relatively scarce in the financing market soon after it was first issued, and it became much more so following the midquarter refunding auctions in November, the first to exclude a thirty-year bond under the Treasury's new financing regime.[22] Many market participants viewed the February 2023 bond as a better indicator of long-term debt yields than the August bond and continued to use it as the benchmark for comparing yields in other markets.

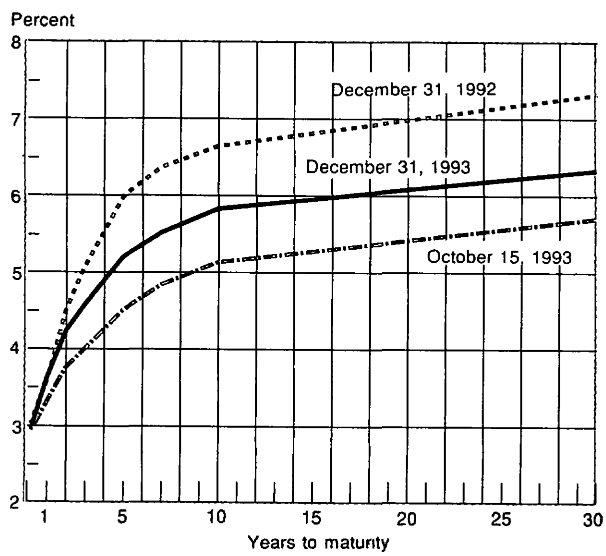
In other Treasury auction developments, the Treasury decided to extend for a second year, through August 1994, its experiment with a uniform-price auction format for its monthly two- and five-year note sales In April, the Treasury began using the Treasury Automated Auction Processing System, an electronic bidding system. Since that time, most major market participants have been using the automated system routinely to bid at Treasury auctions Further enhancements to the system are under way.

[19] Although the frequency of bond issuance was halved, the amount of bonds to be sold was cut somewhat less, about 40 percent

[20] Partly reflecting this development, the average maturity of the Treasury's total outstanding debt slipped by two months in 1993 to end the year at sixty months (see Table A2 of the appendix)

Chart 4

Yield Curves for Selected U.S. Treasury Securities



Notes. Treasury bill yields are on a bond-equivalent basis Coupon yields are constant maturity values

The course of policy

The degree of reserve pressure was not changed in 1993, although the Committee responded to inflation worries by adopting directives biased toward tightening in May and July. During the rest of the year, directives were unbiased, or "symmetric," because inflation pressures were contained and the economy appeared to be on a path of sustained growth. In the latter part of the year, a firming move was considered the probable next step, but it was not thought to be imminent

As the year began, evidence suggested that a moderate expansion was in progress and that inflation was still trending lower. Against this background, the Committee initially left reserve pressures unchanged and retained a symmetric directive with no presumption about the likely direction of any adjustment to policy over the intermeeting period (Table 3) During the first few months of the year, evidence accumulated that the expansion was slowing somewhat, while consumer and producer price indexes showed larger increases than those reported for most months of 1992. Nonetheless, continuing favorable trends in labor costs tempered concerns. Most Committee members felt that

[21] The spread in interest rates between this issue and the February 2023 bond, the previously issued bond, widened to 28 basis points at one point At year-end, the yield on the older issue was 6 49 percent, 14 basis points above the rate on the newest issue

[22] There were other notable instances when certain Treasury issues were scarce in the financing market The February 2023 bond and 2003 ten-year note were very scarce until both issues were reopened at the May refunding The August 2003 ten-year note was also very scarce until reopened in November All three issues were close enough to par at the time they were reopened to make special tax considerations unnecessary

maintaining the existing degree of reserve pressure most appropriately balanced the opposing risks of faltering economic expansion and a resurgence of inflation

During the second quarter, evidence of both a slowing expansion and a pickup in inflation continued to build. Although temporary anomalies, including distorted seasonal factors and measurement problems, helped explain the increases in various price measures, the Committee became concerned that inflationary expectations might be reemerging. At the May meeting, the majority of Committee members felt that recent developments warranted positioning policy for a move toward restraint if signs of intensifying inflation continued to multiply. Consequently, the Committee adopted an "asymmetric" directive with a bias toward tightening. In view of the special nature of the inflation concerns and the attendant uncertainties, it decided that an intermeeting discussion would be appropriate before making a tightening move

Table 3

Specifications from Directives of the Federal Open Market Committee and Related Information

Date of Meeting	Anticipated Short-Term Growth of M2 and M3	Discount Rate (Percent)	Borrowing Assumption for Deriving Nonborrowed Reserve Path (Millions of Dollars)	Associated Federal Funds Rate† (Percent)	Effect on Degree of Reserve Pressure	Guidelines for Modifying Reserve Pressure between Meetings‡
12/22/92	M2 growth of 1½ percent and M3 about unchanged from November through March	3	50	3	Maintain	Slightly greater reserve restraint or slightly lesser reserve restraint *would* be acceptable
2/2 to 2/3/93	Little change from January to March	3	50	3	Maintain	Slightly greater reserve restraint or slightly lesser reserve restraint *would* be acceptable
3/23/93	Moderate growth over the second quarter	3	50 75 on 4/22§ 100 on 5/13§	3	Maintain	Slightly greater reserve restraint or slightly lesser reserve restraint *would* be acceptable
5/18/93	Appreciable growth over the second quarter	3	100 125 on 5/20§ 150 on 6/10§ 200 on 6/24§	3	Maintain	Slightly greater reserve restraint *would* be acceptable or slightly lesser reserve restraint *might* be acceptable
7/6 to 7/7/93	Modest growth over the third quarter	3	200 225 on 7/8§ 250 on 7/22§	3	Maintain	Slightly greater reserve restraint *would* be acceptable or slightly lesser reserve restraint *might* be acceptable
8/17/93	Modest growth in M2 and little net change in M3 over the balance of the third quarter	3	250	3	Maintain	Slightly greater reserve restraint or slightly lesser reserve restraint *might* be acceptable
9/21/93	Modest growth over the balance of the year	3	250 225 on 10/14§ 200 on 10/28§ 150 on 11/4§ 100 on 11/11§	3	Maintain	Slightly greater reserve restraint or slightly lesser reserve restraint *might* be acceptable
11/16/93	Modest growth over coming months	3	100 75 on 11/26§ 50 on 12/9§	3	Maintain	Slightly greater reserve restraint or slightly lesser reserve restraint *might* be acceptable
12/21/93	Moderate growth over coming months	3	50	3	Maintain	Slightly greater reserve restraint or slightly lesser reserve restraint *might* be acceptable

† The federal funds rate trading area that is expected to be consistent with the borrowing assumption

‡ Modifications to reserve pressures are evaluated "in the context of the Committee's long-run objectives for price stability and sustainable economic growth, and giving careful consideration to economic, financial, and monetary developments "

§ Change in borrowing assumption reflects technical adjustment to account for actual or prospective behavior of seasonal borrowing

Inflation reports for May, released near midyear, were more encouraging, although the impression remained that progress toward price stability had been at least interrupted. Consequently, at the July meeting, the Committee retained the bias toward tightening adopted at the previous meeting because the next move was more likely to be in that direction. Moreover, a return to symmetry could have been misinterpreted in these circumstances as an indication of worries about the sustainability of the expansion or as a wavering in the commitment to fight inflation. Chairman Greenspan, in his semiannual Humphrey-Hawkins testimony before Congress later in July, characterized current monetary policy as accommodative, especially when judged by the low level of real short-term interest rates. But he indicated that this posture, while appropriate in recent years in helping the economy overcome its "headwinds," would need to change as the recovery progressed.

Later in the summer, a combination of influences, including the relatively slow rate of expansion in the first half of the year, the impression that the deficit-reduction legislation would continue to restrain the economy, and the release of more favorable inflation data, weakened the case for a near-term policy adjustment While the FOMC continued to view a firming move as the likely next step, it no longer considered such a move probable in the near term. The Committee's position was reflected in its return to an unbiased directive at the August meeting. Over the remainder of the third quarter, the economy appeared to be expanding at a moderate pace, price developments remained favorable, and the Committee left reserve pressures unchanged.

During the final months of the year, evidence mounted that the pace of economic expansion was accelerating. Numerous reports indicated robust economic growth during the fourth quarter. Nevertheless, a return to more moderate growth seemed likely in early 1994 and beyond as taxpayers began to adjust to retroactive tax law changes and as economic weakness continued abroad.

In the discussion at the December meeting, the Committee again recognized the likelihood that containing inflation and providing a sound basis for sustained economic expansion would at some point require a shift in policy from an accommodative stance to a more neutral stance. Although it was felt that such a move might have to be made sooner rather than later, sufficient slack remained in the economy and enough uncertainties surrounded the outlook to make existing policy acceptable Furthermore, since any tightening would represent a turn in policy following a long period of declining and steady interest rates, Committee members were concerned that it might have a greater than usual effect on financial markets. This prospect argued for implementing a change at a meeting, where there would be a full Committee review, rather than acting on an asymmetric directive between meetings Consequently, the FOMC voted to maintain its symmetric posture.

Implementation of policy

Operating procedures

Borrowed reserves and the federal funds rate In 1993, the FOMC continued to frame its formal policy objectives in terms of the desired degree of reserve pressure, specifying an assumed amount of adjustment plus seasonal borrowing from the discount window. (These anticipated levels of borrowing and other reserve measures for 1993 are presented in Table 4.) A stable relationship between the level of borrowing and the spread of the federal funds rate over the discount rate would lead the borrowing allowance to be associated with federal funds trading within a limited band surrounding an expected level For a number of years, however, the demand for borrowed reserves had not been sufficiently dependable to serve as a primary guide to reserve pressures Consequently, the Desk, in its day-to-day implementation of policy, used staff estimates of the demand for and supply of reserves, along with the behavior of the federal funds rate, as guides to determining the reserves needed to achieve the desired degree of reserve pressure

A series of developments beginning around the middle of the 1980s made the relationship between borrowing and the federal funds rate less reliable. As earlier issues of this report explained in detail, increases in financial stress in the banking system sometimes led the public to interpret a bank's use of the discount window as a sign that it was experiencing difficulties.[23] Banks responded by making extraordinary efforts to avoid borrowing at the discount window. They often bid the interbank federal funds rate to very high levels when reserves were scarce.[24] In the last two years, this unusual reluctance of banks to borrow eased somewhat, in part because of the improved financial condition of U.S. banking institutions. Accordingly, on those occasions in 1993 when reserves were scarce relative to bank demands, the spikes in the federal funds rate required to encourage the necessary increase in borrowing were somewhat more modest than they had been a few years earlier.

Nonetheless, other factors continued to keep routine borrowing at relatively low levels Banks had less need to borrow in 1993: On most days, reserve levels were sufficient to keep the federal funds rate very close to the 3 percent dis-

[23] See especially the reports on monetary policy and open market operations in the spring 1991 and spring 1992 issues of the Federal Reserve Bank of New York *Quarterly Review*

[24] If aggregate reserve levels are insufficient to meet the demand for reserves, eventually some banks have to borrow because the banking system as a whole cannot create reserves in other ways For more information, see Ann-Marie Meulendyke, *U S Monetary Policy and Financial Markets*, Federal Reserve Bank of New York, 1990, chap 6, pp 124-39

count rate, whereas for several years before September 1992 the funds rate routinely exceeded the discount rate.[25] In addition, plentiful deposit funds in a period of continuing low loan demand kept many banks very liquid during the year Furthermore, improved monitoring of reserve balances by banks continued to reduce the risk that a bank would discover that it had a reserve shortage only after the federal funds wire closed, when the discount window would be the only remaining source of reserves

These factors combined to make adjustment borrowing in 1993 very low on most days It averaged only $72 million for the year, slightly below the 1992 level. Total reserves averaged $57 8 billion over the year, making adjustment borrowing a very small fraction of reserves. The "frictional" levels of adjustment borrowing—a range typically experienced when banks had no interest rate incentive to borrow and large banks had no unusual internal or wire problems—seemed to be in the range of $10 million to $20 million, somewhat lower than during 1992 Some exceptionally low levels of adjustment borrowing occurred during the year. In the period ended November 24, adjustment borrowing averaged only $6 million, its lowest level since two-week maintenance periods were introduced in 1984 (and the lowest level since the $5 million average for the one-week maintenance period ended April 9, 1975) For the week ended December 8, adjustment borrowing averaged $1 million, a record low for any post-World War II week [26] (Actual levels of borrowing and the effective federal funds and discount rates are presented in Chart 5.)

The pattern and level of seasonal borrowing are related primarily to changing demands for agricultural credit rather than to the degree of reserve pressure. The change in early 1992 from the basic discount rate to a market-based rate

[25] The effective federal funds rate averaged 3 02 percent for the year

[26] Borrowing also averaged $1 million in the week ended January 13, 1943

Table 4
1993 Reserve Levels
Millions of Dollars

Period Ended	Required Reserves (Current)	Required Reserves (First Published)	Excess Reserves (Current)	Excess Reserves (First Published)	Total Reserves	Adjustment and Seasonal Borrowing	Nonborrowed Reserves plus Extended Credit Borrowing (Current)	Nonborrowed Reserves plus Extended Credit Borrowing (First Published)	Nonborrowed Reserves Interim Objective	Initial Anticipated Adjustment and Seasonal Borrowing	Final Anticipated Adjustment and Seasonal Borrowing	Assumed Excess Reserves	Extended Credit Borrowing
1993													
Jan 6	56289	56253	1385	1437	57674	269	57405	57422	57254	50	50	1000	0
20	55657	55675	1229	1188	56886	202	56685	56662	56704	50	50	1000	1
Feb 3	52740	52749	1230	1250	53970	62	53906	53938	53752	50	50	1000	3
17	52875	52895	1495	1585	54370	33	54337	54447	53956	50	50	1000	0
Mar 3	52666	52546	571	748	53237	56	53181	53238	53451	50	50	1000	0
17	53683	53656	1290	1334	54973	93	54880	54896	54594	50	50	1000	0
31	52572	52630	1273	1280	53845	98	53747	53811	53600	50	50	1000	0
Apr 14	55763	55789	844	832	56607	38	56569	56584	56761	50	50	1000	0
28	55160	55147	1387	1386	56546	99	56447	56435	56111	50	75	1000	1
May 12	55217	55203	828	919	56044	142	55902	55981	56133	75	75	1000	1
26	54649	54659	1202	1181	55851	105	55746	55736	55596	100	125	1000	0
June 9	56109	56098	824	911	56933	118	56815	56890	56985	125	125	1000	0
23	56477	56467	772	791	57248	158	57091	57100	57241	150	150	1000	0
July 7	56311	56497	1299	1244	57610	311	57300	57430	57159	200	200	1000	0
21	57294	57219	967	1040	58260	220	58041	58039	57998	225	225	1000	0
Aug 4	56021	56022	1112	1115	57133	232	56902	56906	56729	250	250	1000	0
18	57673	57741	750	712	58422	431	57992	58023	58420	250	250	1000	0
Sept 1	56136	56181	1121	1080	57257	305	56952	56956	56945	250	250	1000	0
15	58845	58827	874	878	59718	544	59175	59162	59579	250	250	1000	0
29	57318	57362	1300	1344	58618	322	58297	58386	58101	250	250	1000	0
Oct 13	58985	59053	1137	1089	60121	420	59702	59723	59900	250	250	1000	0
27	58692	58705	1052	1061	59744	205	59539	59563	59510	225	225	1000	0
Nov 10	59722	59754	1062	1031	60783	132	60652	60654	60610	200	150	1000	0
24	60205	60215	1102	1027	61307	74	61233	61169	61102	100	100	1000	0
Dec 8	60962	60902	1162	1211	62123	56	62068	62057	61838	75	75	1000	0
22	61880	61928	891	838	62771	60	62712	62706	62815	50	50	1000	0
1994													
Jan 5	62405	62403	1241	1301	63646	142	63505	63563	63401	50	50	1000	0

that is not permitted to fall below the basic discount rate has reduced the incentive for banks to use seasonal credit from the discount window to meet the enlarged loan demand during the crop-growing season. In most maintenance periods in 1993, seasonal borrowing remained close to its 1992 levels (Chart 5). An exception occurred in October, when seasonal borrowing fell more slowly than at this time in earlier years; severe summer floods in the Midwest delayed crop planting and harvesting and consequently pushed some needs for seasonal credit further into the autumn

For the year, seasonal borrowing averaged $109 million, compared with $97 million in 1992 It peaked at $246 million in the periods ended September 1 and 29, and it reached its lowest average level of $10 million in the periods ended January 20 and February 3. To keep pace with the movements in seasonal borrowing, the Desk made seven upward technical adjustments to the borrowing allowance between April and July, and afterwards made six technical reductions to the allowance.

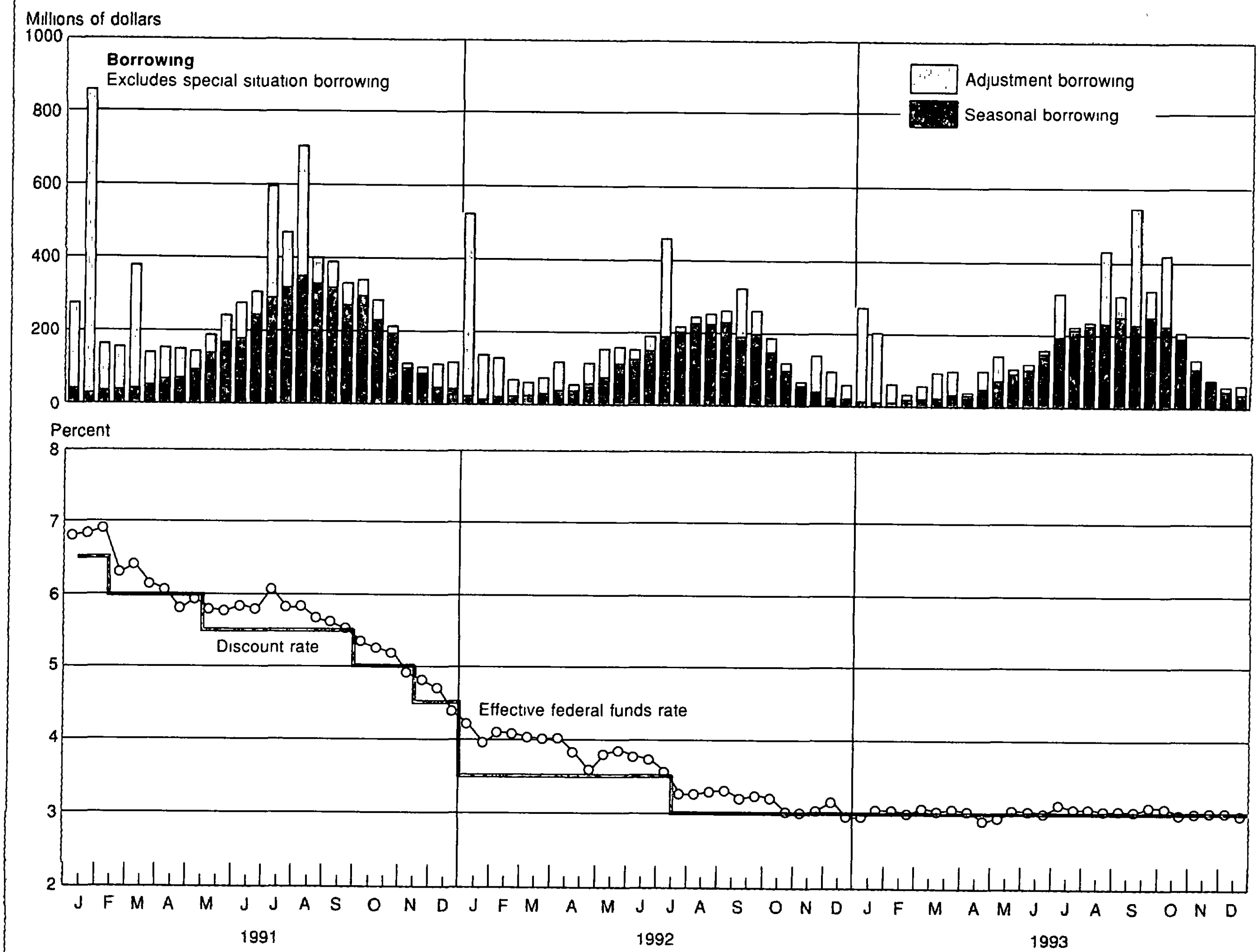
The Desk's approach to reserve management

During the year, the Desk often faced sizable reserve needs, which it addressed with a mix of outright and tempo-

Chart 5

Borrowing and the Behavior of the Federal Funds Rate and the Discount Rate

Maintenance Period Averages



Note: Discount rate reflects Federal Reserve Bank of New York daily rate rary transactions. Outright market purchases were made when staff forecasts suggested that a large need for reserves would persist for several maintenance periods. Temporary transactions addressed remaining reserve needs and were used to deal with shorter term variability and uncertainty about the reserve picture.

Outright operations. The System's portfolio of U S. government securities expanded by a record $35 3 billion in 1993 (on a commitment basis), primarily because of the rapid growth in currency and required reserves against transactions deposits described above.[27] Other operating factors combined to add a modest amount of reserves.[28] As is typical, the Desk's outright purchases were concentrated in the market, although the Desk also purchased a sizable amount of securities from foreign accounts. No securities were sold in 1993, although $1.7 billion of securities were redeemed.[29]

In 1992, following a review of the System's portfolio management strategy, the Committee had concluded that the desired increase in the liquidity of the System's holdings had been achieved.[30] Consequently, the Desk's outright operations during 1993 were designed to maintain or lengthen slightly the portfolio's average maturity. About half of the increase in the portfolio over the year reflected purchases of Treasury coupon issues, and the weighted average maturity of the Federal Reserve's holdings of marketable Treasury debt rose roughly two months.

Temporary operations. Because reserve needs were growing over most of the year and were usually permitted to run ahead of the outright purchases, most temporary transactions consisted of RPs. The Desk arranged $510 5 billion of RPs over the year in operations for the System Account and another $117.1 billion in customer-related operations. The Desk relied to a greater degree than in many past years on multiday System operations. Operations to drain reserves were rare, with only $10.9 billion of matched sale-purchase agreements arranged in five market entries during the year

Managing reserves within a maintenance period. For each two-week reserve maintenance period, the Trading Desk developed a strategy to bring the estimated supply of nonborrowed reserves into line with the estimated demand for reserves in order to achieve the desired degree of reserve pressure. Recognizing banks' general desire to smooth reserve holdings within the period, the Desk also gave some attention to day-to-day reserve excesses or shortages. Moreover, it took into account bank strategies for managing reserves and allowed for potential revisions to operating factors and required reserves as the period progressed.

In meeting the estimated reserve need, the Desk looked to conditions in the money market for confirmation of its reserve estimates. On many occasions, the money market reflected the size of the reserve need or surplus, with tight conditions accompanying a large need and softness a surplus. On some occasions, however, discrepancies arose between reserve estimates and conditions in the federal funds market. These differences usually stemmed from the reserve management strategies of depositories, as explained below, or from incorrect estimates of the reserve need on the part of the Desk or bank reserve managers

In earlier years, market expectations of an imminent change in policy had also influenced reserve demands. But because expectations of such a change were largely absent in 1993, the Desk was better able to deal with discrepancies between the federal funds rate and estimated reserve needs With an easing move regarded as unlikely, market participants were less inclined than in earlier years to interpret a soft funds rate as a potential sign of easing. When the funds rate was slightly to the soft side, the Desk was able to refrain from draining reserves and even to add reserves on a number of occasions [31]

Strategies used by depository institutions to meet reserve requirements on a two-week average basis and to avoid overnight overdrafts in their accounts at the Federal Reserve often contributed to discrepancies between reserve estimates and conditions in the money market in 1993 Depository institutions continued to use techniques similar to those adopted following the cuts in reserve requirements in 1990 and 1992, despite what appeared to be a reduced need for them.[32] By lowering required reserve balances at the Fed, the cuts had increased the risk that a depository institution, while working off excess reserves accumulated early in a period, would run an overnight overdraft [33] To minimize that risk, depositories often concen-

[27] Details of outright and temporary transactions in 1993 are presented in the appendix

[28] Specifically, growth in the demand for currency in circulation drained almost $32 billion of reserves during 1993 All other operating factors combined to add about $1 billion of reserves Required reserves rose about $6 billion for the year

[29] The Desk redeemed securities only when there were no suitable replacement securities for a maturing Treasury or agency issue or when issues were called

[30] The review had been prompted in part by the Treasury's discussion during 1992 of the merits of shortening the average maturity of its debt Both Treasury debt management and the composition of the System portfolio were discussed in "Monetary Policy and Open Market Operations during 1992," Federal Reserve Bank of New York *Quarterly Review*, Spring 1992

[31] For example, in the maintenance period ended January 20, the Desk arranged three customer-related RPs with the funds rate at 2 15/16 percent On May 20, the Desk arranged a four-day RP with the funds rate again at this level

[32] The effects of the reserve requirement cuts on reserve management practices were discussed in detail in the 1990, 1991, and 1992 reports

[33] Overnight overdrafts are costly because the Fed imposes a steep penalty charge The cost of holding excess reserves is the loss of interest that could have been earned if the reserves had been invested

trated more of their reserve holdings late in the period.

By 1993, reserve balances had risen considerably above the levels that prevailed shortly after the cuts in reserve requirements. Two developments in 1991 and 1992 contributed to this rise: rapid growth in transactions deposits raised required reserves, and large banks opened and expanded required clearing balances.[34] In 1993, strong expansion in transactions deposits continued to lift required reserves. By December, required operating balances—a measure consisting of required clearing balances and the portion of required reserves that must be met with reserve balances—averaged about $34 billion, a level similar to the one prevailing in December 1990, when reserve requirement ratios had not yet been reduced (Chart 6).

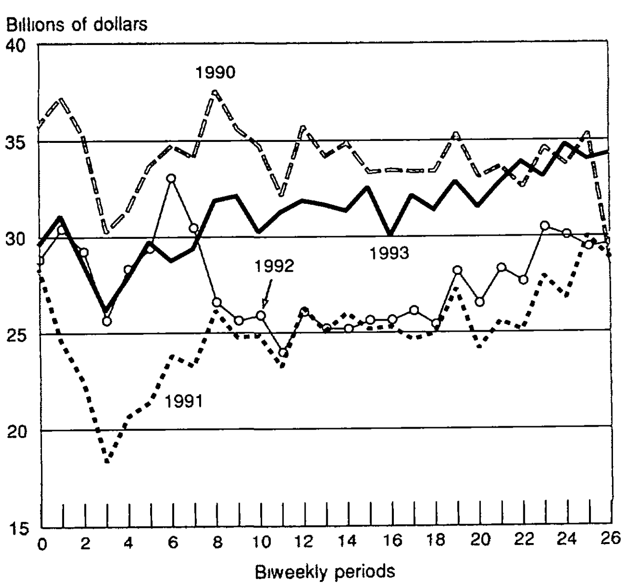
The growth in required operating balances would suggest that the pressures leading banks to avoid a buildup in reserve levels early in the period should have dissipated somewhat. Yet in 1993, depositories continued to concentrate their demand for reserves late in the period.[35] One reason for the persistence of this behavior was that the volume of daily transactions between banks has risen somewhat since 1990, increasing the need for reserve balances for processing daily transactions. Because depositories remained reluctant to accumulate reserves early in the period, reserve needs often failed to show through to the federal funds market until after the second weekend. To some degree, the Desk accommodated this intra-maintenance-period pattern in the banking system's demand for reserves by keeping cumulative excess reserves low during the early part of the period.

The federal funds market was especially likely to be soft on Fridays, even when reserve needs were substantial, because banks were cautious about holding excess reserves over the weekend, when they would count for three days. If the Desk arranged its standard type of multiday RP on Thursday, permitting the dealers to withdraw their collateral each morning during the period of the RP, it would often face heavy early withdrawals when the funds rate softened on Friday. The RP rate usually moved with the funds rate, and lower RP rates gave the dealers an incentive to withdraw their collateral and to finance it elsewhere. The Desk could not easily replace all of the reserves withdrawn on Friday if the funds rate were below the level associated with the desired degree of reserve pressure, although a small reserve injection was sometimes feasible.

The Desk often found it advantageous during 1993 to prevent early withdrawals by making use of fixed-term multiday RPs. It arranged thirty-one such operations during the year, a significant increase from the nine fixed-term multiday RPs that had been arranged in 1992. Of those arranged in 1993, twenty-three extended over a weekend.[36] When fixed-term RPs were put in place on a Thursday to span the weekend, the Desk no longer had to worry that the RPs would be withdrawn, diminishing reserve supplies on Friday.[37]

Chart 6

Required Operating Balances



Notes: Data are maintenance period averages. For each set of annual observations, period 1 covers the year-end, and period 0 is equal to period 26 from the preceding year.

[34] A depository can establish a clearing balance by specifying an average level of reserves that it will hold at the Federal Reserve for clearing purposes. In exchange, it receives credits that it can use to pay for priced services provided by the Federal Reserve at a rate determined by the effective funds rate. At the end of 1992, total required clearing balances had reached $5.9 billion, an increase from $1.8 billion in December 1990. The level of clearing balances rose only slightly during 1993, ending the year at $6.3 billion.

[35] As explained in the 1992 report, the distribution of excess reserves within the maintenance period was reasonably uniform until December 1990. Thereafter, the distribution became decidedly skewed toward the second week of the maintenance period. After the second round of reserve requirement cuts in April 1992, the average levels in the first and second weeks of periods from that month through December 1992 were $280 million and $1,740 million, respectively. During 1993, the corresponding averages were $170 million and $1,980 million.

[36] For example, in the maintenance period ended July 21, the Desk arranged three fixed-term multiday RPs. Two were arranged on Thursdays and extended over the two weekends of the period. The funds market did in fact display its characteristic softness on both Fridays, suggesting that dealers would likely have withdrawn collateral early if the option had been available.

[37] The pricing of fixed-term RPs appeared to incorporate the expected course of overnight RP rates over the full term of the contract.

The Desk also remained alert in 1993 to the possibility that an inconsistency between reserve estimates and the funds rate could reflect an error in the estimates of the demand for or the supply of reserves Forecasts of the demand for reserves are based on estimates of required reserves and the projected demand for excess reserves Projections of the supply of reserves depend upon forecasts of the various operating factors At times in 1993, revisions were large[38] When a large error seemed especially likely—for example, around tax dates, when the Treasury's deposits at the Federal Reserve were particularly uncertain, or when bad weather made Federal Reserve float difficult to forecast—the Desk allowed itself to be guided to an increased extent by conditions in the funds market.

[38] The appendix reviews the accuracy of the available forecasts for reserve supply and demand

Appendix: Desk Activity for the System Open Market Account

The appendix reviews the Trading Desk's activities on behalf of the System Open Market Account during 1993 The first section details outright changes in the portfolio and the reasons for these changes Temporary transactions arranged during the year are discussed in the second section, and the accuracy of staff estimates of the supply of and demand for reserves is examined in the third

Outright changes in the System portfolio

Total System holdings of U S government securities expanded by a record $35.3 billion during 1993, an increase exceeding the $30 2 billion rise in 1992 and the previous record increase of $31 0 billion in 1991 (Table A1) At the end of the year, the total par value of the System's holdings was just above $344 billion The System's holdings made up a slightly larger share of the Treasury's total marketable debt at year-end than they had at the previous three year-ends About half of the increase in the System portfolio occurred in bills and about half in coupons, with the five-to-ten-year sector experiencing the strongest rate of growth. As a consequence, the weighted average maturity of the System's holdings was lengthened by about two months (Table A2)

Bank reserve behavior

The expansion of the portfolio was prompted primarily by changes in operating factors, which drained almost $30 billion of reserves between the maintenance periods ended January 6, 1993, and January 5, 1994 (Table A3) Currency growth of $31 5 billion accounted for more than the full amount of the reserve drain from factors Rapid growth in transactions deposits also led to a $6 1 billion expansion of required reserves during the year Average excess reserves were $1,080 million for the year, modestly above the $1 billion formal allowance but close to the previous year's average level

A few other operating factors also influenced reserves over the year Reflecting the general downtrend in interest rates in recent years, net premia on the securities purchased outright in the market over the year increased and added $2 5 billion to the level of reserves Required clearing balances, which are included as a drain on reserves in the "other items" category when they expand, rose by only $430 million in 1993 after jumping sharply in the previous year The net reserve impact of all foreign currency operations in 1993 added a modest $0 8 billion † Several other factors, including the Treasury balance, had sizable impacts on reserves in individual maintenance periods but had no effect on the trends

Adjustment borrowing at the end of 1993 was well below the elevated level of the previous year-end, while seasonal borrowing was little changed. Very little extended credit or special situation borrowing occurred during the year

Table A1

System Portfolio: Summary of Holdings

Billions of Dollars

	Year-End 1993	Change during 1993	Change during 1992
Total holdings	344 1	35 3	30 2
Bills	167 9	17 7	11 5
Coupons	171 6	18 4	19 4
Agency issues	4 5	-0 9	-0 6

Notes Values are on a commitment basis Changes in holdings are from year-end to year-end Figures may not add to totals because of rounding

Outright transactions

The Trading Desk conducted outright operations at those times when reserve projections showed a large, persistent need to add reserves The overall volume of outright operations in 1993 was slightly higher than in 1992 as increased purchases more than offset decreased sales Purchases of Treasury bills were about $3 billion above the previous year's total, and there were no outright sales of securities during 1993 (Table A4). On four of the six occasions when the Desk entered the market to conduct outright purchases,

† Interest earnings on foreign currency assets added a bit more than $1 25 billion over the year, and currency revaluations added another $0 25 billion Sales of Japanese yen through five rounds of intervention drained just over $0 7 billion of reserves

it purchased Treasury coupon securities ‡ In 1992, three of the six outright market operations had been purchases of coupon securities, while in 1991, only one such operation involved coupon securities. The Desk had to redeem about $800 million of coupon securities on two occasions in 1993 when the Treasury did not sell replacement issues for maturing seven-year notes. It did not deliberately redeem securities to drain reserves during the year, because reserve forecasts never called for an extended period of absorption

The Desk also arranged transactions with foreign accounts when orders were compatible with estimated reserve needs With fewer purchases and no sales in 1993, the volume of these transactions was down $2 3 billion from 1992 More than three-quarters of the transactions with foreign accounts in 1993 (about $9 billion) were bill purchases, although the Desk also purchased $2 4 billion of coupon securities from this source

The Desk managed its holdings of federally sponsored agency securities by rolling over maturing issues into replacements or by redeeming securities when suitable replacements were not offered for maturing issues or when issues were called In particular, during 1993, the Desk redeemed almost all of its maturing Federal Home Loan Bank issues § In all, about $0 9 billion of the $2.1 billion of maturing agency issues were redeemed, and the amount of these securities in the System portfolio declined for the thirteenth year in a row

‡ The Desk bought, in par values, $3 1 billion of Treasury coupon securities on March 16, $5 0 billion of coupons on April 14, $5 1 billion of Treasury bills on June 2, $4 0 billion of coupons on August 31, $3 5 billion of bills on November 3, and $4 6 billion of coupons on November 30

§ The Desk can roll over a maturing security into a new agency issue if the new issue satisfies criteria relating to both size and security-type and has an issue date matching the maturity date of the old security In 1993, most new Federal Home Loan Bank debt had issue dates that did not match the maturity dates of the old securities

Temporary transactions

The Desk arranged self-reversing transactions in the market during the year to meet temporary reserve needs Although

Table A2

Weighted Average Maturity of Marketable Treasury Debt

Months

End of	Federal Reserve Holdings†	Total Outstanding
1960	19 3	55
1965	16 1	60
1970	23 9	40
1975	31 2	33
1980	53 7	48
1985	47 3	59
1986	43 7	62
1987	42 6	66
1988	40 5	67
1989	41 2	69
1990	38 7	68
1991	35 3	68
1992	36 2	67
1993	38 0	65

† The effects of all outstanding temporary transactions—including repurchase agreements and matched sale-purchase transactions with foreign accounts—are excluded from the calculation of the average maturity of the portfolio

Table A3

Reserve Measures and Factors Affecting Reserves

Bank Reserves

Millions of Dollars, Not Seasonally Adjusted

	Maintenance Period Ended January 5, 1994	Change during 1993†	Change during 1992‡
Nonborrowed reserves			
Excluding extended credit	63505	6100	768
Including extended credit	63505	6100	767
Extended credit borrowing	0	0	-1
Borrowed reserves			
Including extended credit	142	-127	-253
Adjustment plus seasonal	142	-127	-252
Adjustment	126	-131	-242
Seasonal	16	4	-10
Required reserves§	62405	6116	269
Excess reserves	1241	-144	247

System Portfolio and Operating Factors¶

Billions of Dollars

System portfolio	353 8	36 2	29 9
Operating factors			
Foreign currency††	19 5	0 7	-3 2
U S currency	365 8	-31 5	-27 1
Treasury balance	8 5	-1 1	2 2
Float	1 3	-1 2	1 7
Special drawing rights	8 0	0 0	-2 0
Gold deposits	11 1	0 0	0 0
Foreign deposits	0 3	0 1	-0 3
Applied vault cash	33 3	0 0	0 0
Other items	18 7	1 3	-1 4
Foreign repurchase agreement pool‡‡	7 7	-0 2	-0 6

Note Figures may not add to totals because of rounding

† Change from maintenance period ended January 6, 1993, to that ended January 5, 1994

‡ Change from maintenance period ended January 8, 1992, to that ended January 6, 1993

§ Not adjusted for changes in required reserve ratios

¶ Sign indicates impact of changes in operating factors on bank reserves All items are biweekly averages

†† Acquisition value plus interest earnings Revaluation of foreign currency holdings are included in "other items "

‡‡ Includes customer-related repurchase agreements

the total number of temporary transactions was almost unchanged from a year earlier, the Desk continued its recent trend toward increased use of multiday System RPs during 1993, arranging considerably more of these transactions than it had in 1992 (Table A5).¶ It also arranged about the same number of overnight System RPs as in 1992 and continued to reduce its use of customer-related RPs

The number and dollar volume of matched sale-purchase transactions arranged in the market in 1993 fell sharply from earlier years. The Desk arranged only five rounds of reserve-draining operations during the year, two of them for maturities exceeding one business day In contrast, the Desk arranged a total of twenty such draining operations in 1992 Reserve drains early in 1993 were much smaller than in 1992 because of stronger currency growth and a smaller seasonal decline in required reserves

The Desk typically announced any intention to add or drain reserves with a temporary operation at about 11 30 a m. However, on several occasions during the year, the Desk announced its intended reserve operation earlier than usual to encourage adequate propositions ††

¶ The number of multiday System RPs arranged in 1992 had also represented a large increase from the total arranged in 1991 Although the number of multiday RPs grew considerably in 1993, the average transaction size fell somewhat during the year

Table A4

System Outright Operations by Type of Transaction and by Counterparty

Billions of Dollars

	1993	1992
Total outright	38 6	37 9
By type of transaction		
Purchases	36 9	34 1
Bills	17 7	14 7
Coupons	19 2	19 4
Sales	0 0	1 6
Bills	0 0	1 6
Coupons	0 0	0 0
Redemptions	1 7	2 2
Bills	0 0	1 6
Coupons	0 8	0 0
Agency issues	0 9	0 6
By counterparty		
Total outright in market	25 4	21 9
Purchases	25 4	21 9
Bills	8 6	9 7
Coupons	16 8	12 3
Sales	0 0	0 0
Bills	0 0	0 0
Coupons	0 0	0 0
Agency issues	0 0	0 0
Total outright with foreign accounts	11 5	13 8
Purchases	11 5	12 2
Bills	9 1	5 1
Coupons	2 4	7 1
Sales	0 0	1 6
Bills	0 0	1 6
Coupons	0 0	0 0

Note Values are on a commitment basis

Forecasting reserves and operating factors

In meeting reserve needs during the year, the Desk took into account potential revisions to the demand for and supply of reserves Large revisions to projections can complicate reserve management, especially late in a maintenance period During 1993, the accuracy of staff forecasts of required reserves and excess reserves improved modestly relative to 1992 and revisions to beginning-of-period net operating factor estimates declined substantially Forecasts of some individual operating factors deteriorated, however (Table A6).

On the demand side, the forecast errors for required reserves were smaller at each stage of the maintenance period in 1993 than they had been in 1992, an improvement that stemmed in part from unchanged reserve requirement ratios during the year. The model-based projections for excess reserves also improved somewhat, and actual excess reserves were less volatile than the year before ‡‡ The formal allowance remained at $1 billion for each maintenance period during the year, although the Desk often made informal allowances that either exceeded or fell short of this amount.§§

On balance, the beginning-of-period forecasts for net operating factors were better than in 1992, but the forecast accuracy fell off somewhat from the previous year in the middle of maintenance periods. The accuracy of forecasts on the final day was about unchanged from the previous year

As in past years, the forecasts of the Treasury's Fed balance showed the largest errors, especially following major

†† Twice during the year, on June 24 and on December 23, it arranged RPs that had been announced the afternoon before In both cases, reserve needs for the maintenance period were particularly large On two other occasions, September 30 and December 31, the Desk announced RP operations earlier in the day than usual

‡‡ While one would have expected the increase in the average absolute level of carry-ins at large banks from $107 million in 1992 to $158 million in 1993 to contribute to greater excess reserve volatility, the average absolute period-to-period change in excess reserves actually fell from $366 million in 1992 to $300 million in 1993 The discrepancy may in part reflect the greater frequency with which large money center banks wasted positive carry-ins in 1993

§§ Forecast errors for excess reserves are calculated using model projections of the demand for excess reserves from the New York and Board staffs The measurement of the forecast errors is imprecise because the projections are compared with actual holdings of excess reserves, which can be affected by last-day changes in reserve supplies or by the Desk's decision to over- or underprovide reserves in response to other considerations Finally, the forecast error calculation does not take into account informal adjustments to the model forecasts that the Desk often makes on the basis of the observed pattern or distribution of excess reserve holdings during any given period

Appendix: Desk Activity for the System Open Market Account *(Continued)*

individual and corporate tax dates The Treasury's total cash holdings during these periods often exceeded the capacities of banks' Treasury tax and loan accounts In these circumstances, revenues or expenditures that were higher or lower than expected were fully passed through to the Treasury's balance at the Federal Reserve, sometimes resulting in large daily and period-average forecast misses. As in 1992, the largest first-day miss was in September, when higher than expected tax receipts led to a period-average error of just over $3 billion To guard against an inadvertent overdraft, the Desk and the Treasury continued the practice, begun in 1992, of raising the "targeted" level of the Treasury balance to $7 billion for about two weeks after major tax dates while continuing to target a $5 billion balance at other times.

Forecasts of float, particularly at the outset of maintenance periods, deteriorated somewhat during 1993 relative to the previous year An especially large weather-related float revision occurred in the first maintenance period ending in 1993, and inclement weather also made the task of forecasting float unusually difficult at other times

Another factor affecting forecast errors in 1993 was the continued hefty premiums associated with RP transactions arranged by the Desk The formal measure of the reserve impact of any open market operation is based on the par value of the securities involved The difference between the par value and the cash amount is treated as a forecast miss in the "other items" component of nonborrowed reserves In the case of RPs, the dealers, rather than the Fed, choose the collateral Depending on their choices, which are not known to the Desk until after the operation is completed, the premium can vary considerably In 1993 the Desk made informal allowances for the expected amount of the premia in choosing the size of its operations, and thus some portion of these premia was anticipated. During the year, the continued decline in interest rates lifted the prices of many issues further above par and consequently increased the average premia on reserve operations Net premia on securities held under RP averaged about 8 percent of the par value of the operations for the year, compared with about 5 percent the year before, and ranged from a high of 32 percent to a low of 0 01 percent

Table A5

System Temporary Transactions

Billions of Dollars

	1993		1992	
	Number†	Volume	Number†	Volume
Repurchase agreements				
System	109	510 5	80	392 9
Maturing next business day	29	149 5	27	117 1
Term	80	361 0	53‡	275 9
Fixed term	31	127 2	9	40 8
Withdrawable	49	233 8	45	235 0
Customer-related	54	117 1	64	140 4
Matched sale-purchase agreements				
In market	5	10 9	20	28 6
Maturing next business day	3	7 2	17	23 0
Term	2	3 8	3	5 7
With foreign accounts§	252	1464 1	253	1453 8
Total temporary transactions	420	2102 7	417	2015 8
In market	168	638 6	164	562 0

Note Figures may not add to totals because of rounding

† Number of rounds If the Desk arranged repurchase agreements with two different maturities on the same day, the agreements are treated as one round The Desk arranged such multiple agreements on two days in 1993 and on one day in 1992

‡ Two term repurchase agreements arranged on September 24, 1992, are counted separately as one withdrawable and one fixed term

§ Volumes exclude amounts arranged as customer-related repurchase agreements

Table A6

Approximate Mean Absolute Forecast Errors for Various Forecasts of Reserves and Operating Factors

Millions of Dollars

	1993			1992		
	First Day	Midperiod	Final Day	First Day	Midperiod	Final Day
Reserves						
Required	290–335	160–180	55–65	350–365	245–270	80
Excess†	170–220	160–175	—	220–245	210	—
Factors	785–885	420–470	55–70	1005–1095	385–465	60–85
Treasury	725–760	365–485	40–45	700–830	240–330	45–50
Currency	330–400	160–210	10–20	355–430	140–215	20–40
Float	240–245	150–180	35–65	180–190	135	35–45
Pool	270	111	15	245	140	10

Note A range indicates varying degrees of accuracy by the New York Reserve Bank and Board of Governors staffs

† The reported forecast errors overstate the degree of uncertainty about excess reserves The Desk supplements beginning-of-period and midperiod model forecasts with informal adjustments that are based on the observed pattern and distribution of estimated excess reserve holdings as each maintenance period unfolds