Monetary Policy and Open Market Operations during 1991

Overview

During 1991, monetary policy was directed toward achieving the resumption of a sustainable economic expansion while making further progress toward price stability. The Federal Reserve implemented a series of easing steps early in the year against a backdrop of declining economic activity. Policy was unchanged from midspring through midsummer amid signs that activity was picking up. When the recovery faltered during the final months of the year, the Federal Reserve took more aggressive easing steps. At that time, credit demands and the broader monetary aggregates were weak, consumer confidence was dropping, and earlier efforts to reduce inflation were beginning to pay off.

The substantial degree of monetary accommodation brought about a considerable reduction in market interest rates. The Federal Reserve's easing steps lowered both the discount rate and the federal funds rate by 3 percentage points over the year. Yields on shorter term fixed-income securities fell by about as much, but those on longer term issues declined by much less. Longer term yields were propped up for much of the year by concerns over heavy supplies of debt and by fears that progress against inflation would be stymied as the economy revived.

Lower short-term market rates reduced the opportunity cost of holding liquid types of money and stimulated rapid growth in total reserves and M1, but growth in the broader monetary aggregates nevertheless was quite weak. The less liquid components of these aggregates, particularly time deposits, suffered in competition with a variety of alternative market instruments. Depository institutions did not bid aggressively for these deposits because of weak asset growth and continued industry consolidation. The combination of rapid growth in transactions deposits and declines in time deposits and other managed liabilities meant that M2 and M3 grew only modestly and ended the year near the bottom of their annual growth ranges.

The large interest rate declines helped reduce the heavy debt service burdens that many households and businesses had accumulated during the 1980s. Low rates and the mild improvement in the economy encouraged many investors to hold lesser rated fixed-income securities as well as equities. In this environment, many firms refinanced costlier outstanding debt. Some of the funds used to retire such debt came from stepped up equity issuance. On balance, the private component of nonfinancial debt grew exceptionally slowly during the year.

Implementation of the Federal Reserve's more accommodative policy stance took place against the background of the cut in reserve requirement ratios that took full effect in January 1991. The steep decline in required reserves brought balances held at the Federal Reserve below the levels many institutions needed to

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support comfortably their payments and clearing operations. The difficulties experienced by banks working with low reserve balances were especially acute early in the year when seasonal movements in required reserves and applied vault cash brought reserve balances at the Fed to their annual trough. In structuring its reserve operations around this time, the Federal Reserve's Trading Desk sought to ensure that reserves would be adequate for banks' clearing needs. Still, depositories' cautious management of reserves early in the day, intended to guard against running overnight overdrafts, sometimes generated temporary intraday pressure in the money market and helped make the federal funds rate unusually volatile.

These pressures abated after seasonal movements enlarged reserve balances at the Fed. In addition, with the expansion of M1, required reserves grew rapidly, and banks opened or enlarged required clearing balances, which earn credits that can be applied to payment for Fed services. Both developments helped maintain total reserves held at the Fed at more comfortable levels over the remainder of the year.

Borrowing from the discount window in 1991 continued to be heavily constrained by banks' concern that an institution identified as having tapped this facility would be perceived as being in financial difficulty. Many banks avoided the window for fear of the public scrutiny that could follow. Consequently, adjustment borrowing in 1991 usually hovered around exceptionally low levels, even allowing for the generally narrow spreads between the federal funds and discount rates. The reluctance to borrow diminished the value of the discount window as a safety valve for alleviating temporary reserve pressures. Moreover, the Desk, which bases its formal objectives for reserves on the presumption of a predictable relationship between the level of borrowing and the spread between the funds and discount rates, had to treat the borrowing assumption incorporated in its reserve objective very flexibly in formulating its operations.

Pressures in the reserve market, as measured by deviations in the funds rate from its expected level, were frequently at variance with the Desk's estimates of reserve availability. These differences often resulted from widespread market expectations that monetary policy would be eased. On other occasions, faulty reserve estimates—those available either to the Desk or to depository institutions—were the cause. Faced with these differences, the Desk frequently gave greater weight to trading conditions prevailing in the morning than to its reserve estimates when it structured its open market operations. With market participants closely monitoring the funds rate as a key indicator of policy, this approach to reserve management was intended to minimize the possibility that observers would misconstrue the Fed's current policy stance. By waiting to address reserve situations until conditions in the funds market reflected the estimated need, the Desk sometimes had to arrange very large repurchase agreements (RPs) late in a period. The dilemma between meeting estimated reserve needs and avoiding misleading market signals was more severe when the conflict persisted on settlement days. In some instances, the Desk eschewed meeting its formal objectives. As a result, the funds rate sometimes plummeted. On other occasions, the funds rate surged, forcing heavy borrowing at the discount window.

The Federal Reserve Bank of New York's approach to choosing primary dealers—dealers who act as business counterparties for conducting open market operations—came under scrutiny during the year after Salomon Brothers, a major dealer firm, admitted to bidding irregularities in Treasury auctions. In the wake of these admissions, the Treasury, Securities and Exchange Commission, and Federal Reserve undertook a joint review of various aspects of the U.S. government securities market, including the Treasury's auction process and the Fed's methods for selecting and monitoring primary dealers. As a result, the Treasury made several changes in auction bidding rules, and the Treasury and Federal Reserve developed procedures to verify the authenticity of large customer bids. In addition, in January 1992, the Federal Reserve announced changes in the administration of its relationships with primary dealers. To provide for a more open system of trading relationships, the Fed dropped the requirement that a primary dealer maintain a market share of at least 1 percent of total customer activity reported by all primary dealers. It also discontinued its dealer surveillance activities to help make clear that the Federal Reserve is not the regulator of primary dealer firms. Capital standards were revised to rest essentially on meeting the standards of the dealers' regulators, along with a minimum capital criterion to ensure that counterparties can operate in size terms useful to the Fed. The revised standards still require that the Fed's counterparties make good markets to the Fed, provide it with useful market information, and participate meaningfully in Treasury auctions.

The setting for policy

The economy and prices

The recession, which had started in mid-1990, gave way to a weak recovery in the spring of 1991 (Chart 1). The declines in real gross domestic product (GDP) in the fourth quarter of 1990 and the first quarter of 1991 stemmed primarily from contractions in expenditures for

consumer durable goods and investment, although increases in net exports and government purchases mitigated their severity (Table 1)[1] Consumer expenditures on automobiles were particularly weak over this period. Moreover, the decline in economic activity was exacerbated by a drop in consumption around the time of the Persian Gulf War

Economic activity picked up over the middle of the year, but by historical standards the improvement was anemic for the early stages of a recovery. Consumption and residential construction rose modestly in the second and third quarters, while nonresidential construction continued to shrink The expansion in the third quarter was limited by a contraction in net exports as slowing economies overseas depressed foreign demand for U.S goods, and by a decrease in defense purchases.

The recovery faltered in the fourth quarter in part because of flagging consumption The weakness in consumption likely reflected the dramatic worsening of consumer sentiment As Chart 2 shows, two commonly cited measures of consumer confidence, the University of Michigan and Conference Board surveys, dropped off sharply during the fourth quarter. The plunges in these series may have captured concerns that a spate of announced layoffs—which in some cases would extend over several years—represented permanent job losses that could lead to slow economic growth and reduced living standards in the years ahead. The slowdown in activity may also have stemmed from an increased propensity of businesses and households to pare debt. Although this restructuring of balance sheets was a healthy response to the heavy debt burdens accumulated during the 1980s, it worked against the normal forces of recovery.

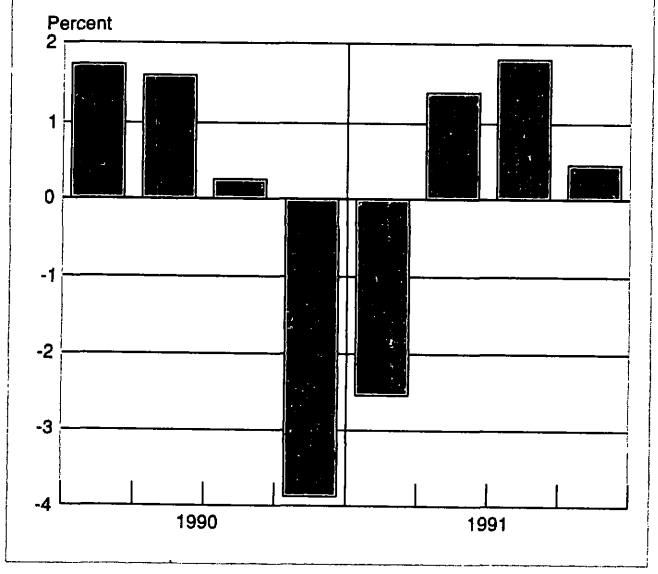
The recession and anemic recovery dampened demand pressures on wages and prices during 1991 In addition, a considerable decline in energy prices helped reduce overall inflation pressures Energy prices had moved sharply higher in 1990 following the Iraqi invasion of Kuwait, but with the resolution of the Persian Gulf conflict, they slumped (Table 2). The implicit GDP deflator and the consumer price index (CPI) registered their smallest advances since 1986. Meanwhile, the producer price index (PPI) edged downward for the first time since 1986. The so-called core components of the CPI and PPI, which exclude food and energy prices, rose at faster rates than the total indexes over 1991, however, these increases were smaller than those of the previous year

[1]GDP replaced GNP (gross national product) as the Bureau of Economic Analysis's standard measure of the nation's output during 1991 Unlike GNP, GDP excludes goods and services produced abroad by U S -owned capital or labor and includes goods and services produced by foreign-owned resources located in the United States

Chart 1

Real Gross Domestic Product

Annualized Rates of Change



Interest rates

Most interest rates fell considerably during the year, reflecting the substantial easing of monetary policy, the weakness in the economy, and some moderation in inflation expectations. The Treasury yield curve steepened markedly over the year as the declines in short-term interest rates exceeded those on long-term rates (Chart 3). Short-term rates fell more or less in step with the moves toward monetary policy accommodation, but decreases in long-term rates were more grudging (Chart 4). The yield on the thirty-year Treasury bond remained in a range between 8 and 8½ percent for much of the year, in part because investors showed little confidence that the reduction in inflation would be sustainable as economic activity recovered. Massive ongoing federal deficits also concerned investors. When the economy showed signs of weakening during the fourth quarter, the long bond yield moved lower, especially in the wake of the December 20 cut in the discount rate by a full percentage point. The long bond yield finished the year about 85 basis points below its year-earlier level (as measured by the constant maturity series).

The monetary aggregates

Lower interest rates stimulated M1 growth, but growth in the broader monetary aggregates remained quite weak Estimates available during the year indicated that the

broader aggregates slipped during the summer to the bottom of their target ranges, where they essentially remained over the rest of the year (Chart 5)[2] From the fourth quarter of 1990 to the fourth quarter of 1991, M1 surged 7.9 percent, M2 advanced 2.7 percent, and M3 grew 1 3 percent[3] The decline in market interest rates over the year reduced the opportunity cost of holding non-interest-bearing currency and demand deposits Moreover, for most of the year, the rates offered on other checkable deposits fell more slowly than other deposit rates in response to the decline in market rates Consequently, M1 deposits became relatively more attractive

The growth of the broader monetary aggregates was restrained by weak asset growth at depository institutions and by shifts of funds out of the aggregates and into higher yielding financial instruments Slow asset growth reflected anemic loan demand in a sluggish economy and the efforts of many banks and thrifts to improve their capital positions in the face of asset quality concerns. With the brisk rise in liquid deposits providing most of the funding for their asset growth, many institutions sought to trim the expansion of their managed liabilities, including the time deposits in M2, by reducing deposit rates, raising fees, or cutting promotional expenditures. Faced with low deposit rates, many depositors shifted funds out of the aggregates and into higher yielding capital market instruments, such as bond or equity mutual funds[4] Moreover, since loan rates were much higher than deposit rates, some

[2]The target ranges were established by the Federal Open Market Committee in February and were reaffirmed in July

[3]Data are as of February 6, 1992 These data do not incorporate the annual benchmark and seasonal factor revisions of February 12, 1992, or subsequent revisions because the earlier data more closely approximate the information that the Committee had available when it was making its decisions As of April 30, 1992, net revisions have lifted both M1 and M2 growth by 0 1 percentage point and have depressed M3 growth by a similar amount Based on the April data, M2 growth was slightly higher over the second half of the year, while M3 growth was a bit weaker Nonetheless, M2 remained in the lowest quarter of its target range

[4]Some depositors decided to hold their balances in the liquid components of M2 rather than shift the funds completely out of the aggregate Such shifts do not affect M2 growth but do affect its composition

Table 1

Real Gross Domestic Product and Its Components

Seasonally Adjusted Annual Growth Rates, in Percent

	1990	1991				1990 Q-IV over Q-IV	1991 Q-IV over Q-IV
	IV	I	II	III	IV		
Real GDP	-3 9	-2 5	1 4	1 8	0 4	-0 1	0 3
Consumption	-3 5	-1 3	1 4	2 3	0 0	0 3	0 6
Durables	-14 0	-11 9	-1 8	9 5	-5 7	-2 7	-2 8
Nondurables	-3 4	-0 3	0 9	0 0	-3 9	-1 0	-0 9
Services	-0 9	0 7	2 5	2 2	3 7	1 9	2 2
Fixed investment	-9 6	-19 3	-1 7	-0 2	0 4	-2 9	-5 6
Producer durables	-1 6	-18 1	0 0	6 7	-1 6	3.1	-3 7
Nonresidential construction	-19.7	-15 7	-10 3	-23 9	-7 8	-4 6	-14 7
Residential construction	-15 0	-24 8	3 1	10 9	12 3	-11 8	-0 9
Change in inventories (billions of dollars)	-31 2	-32 8	-30 4	0 1	7 6	0 8	-55 5
Change in net exports (billions of dollars)	34 5	12 6	6 3	-18 8	9 8	38 8	9 9
Exports	17 7	-7 4	19 4	7 3	9 7	7 6	6 8
Imports	-9 3	-15 4	13 3	22 3	2 1	-0 4	4 6
Government purchases	4 6	2 8	-0 1	-3 4	-5 4	3 2	-1 6
Real GNP	-2 5	-2 8	0 3	2 0	0 4	0 2	0 0
Addenda							
Change in nonfarm payroll employment (in thousands)	-393	-628	-323	128	-31	-551	-855
Civilian unemployment rate	6 0	6 5	6 8	6 8	7 0	0 7†	1 0†

Note Data are as of April 17, 1992

†In percentage points

depositors used their money balances to pay down consumer credit or to finance spending.

The activity of the Resolution Trust Corporation (RTC) also had a damping effect on M2 and M3. When the RTC resolved a troubled thrift, it carried some of the thrift's assets on its own balance sheet until disposition The RTC funded these assets with Treasury securities, whereas the thrift had mostly used M3 deposits. Therefore, RTC-assisted resolutions directly depressed M3. Moreover, depositors at the failed institution may have taken the opportunity to review their banking relationship and to restructure their portfolios, especially if their high-rate certificate of deposit contracts had been abrogated. This activity likely reinforced the tendency of depositors to substitute nonmonetary financial assets for M2 deposits.

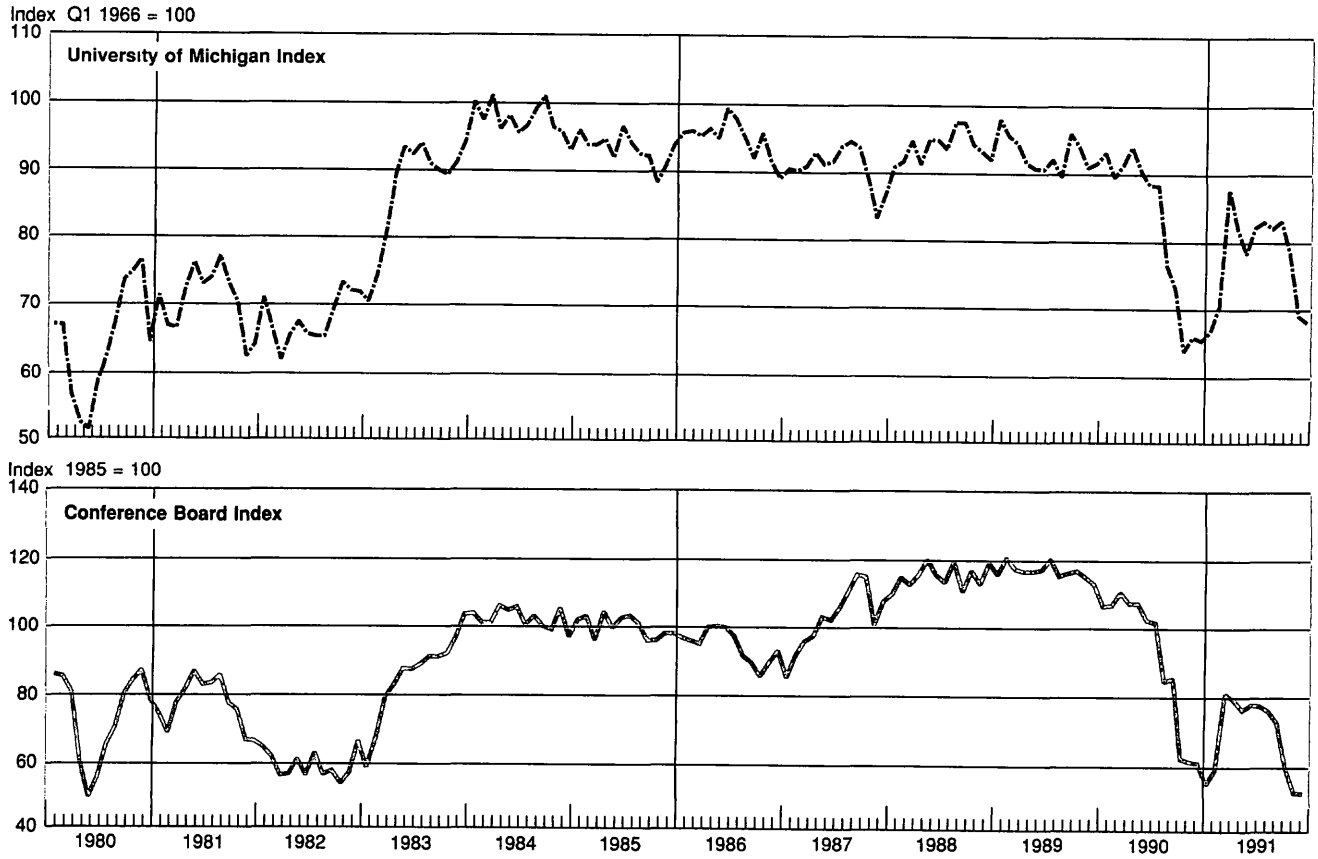
Financial market developments

The financial market strains that had emerged or intensified during 1990 began to recede during 1991. These strains stemmed largely from the heavy debt burdens accumulated during the 1980s. For some households and firms, the overhang of debt proved increasingly difficult, if not impossible, to service when economic activity softened. Consequently, in 1990, "quality spreads," or the differences between yields on lower rated debt and those on higher rated debt of similar maturities, widened considerably, while the ratio of total corporate downgrades to upgrades rose sharply Companies in troubled sectors found their access to the capital markets limited at a time when financial intermediaries, which had financed a large portion of the debt buildup, adopted more restrictive lending practices to help clean up their own troubled balance sheets

The ebbing of financial market strains during 1991 can be attributed in part to the substantial reduction in overall interest rate levels during the year. This reduction directly improved cash flow by cutting the rates paid

Chart 2

Measures of Consumer Confidence



on adjustable rate debt. In addition, it encouraged businesses and consumers to decrease debt servicing costs by refinancing or paying off higher rate debt. Moreover, lower rates and the modest pickup in economic activity boosted equity prices, thus prompting a number of corporations to issue new equity to improve their capital positions. The proceeds of the equity issuance were sometimes used to pay down costly outstanding debt.

Reflecting the propensity of consumers and businesses to pay down debt, total debt of nonfinancial sectors rose only 4.5 percent in 1991 (fourth quarter over fourth quarter) and ended the year at the lower bound of the Federal Open Market Committee's monitoring range (Chart 6).[5] The nonfederal component of debt showed even more modest growth of 2.4 percent, the slowest rate since 1945. Much of the growth in debt can be attributed to the federal government; its debt expanded 11.2 percent.

The restructuring of corporate balance sheets during 1991 and signs of a modest pickup in economic activity soothed concerns about the financial health of many firms. In this environment, some investors were willing to take on additional risk in order to pick up yield. As a result, credit spreads in most sectors narrowed sharply during 1991 (Chart 7). With this narrowing and the improving economic outlook, a number of firms that had experienced curtailed access to the credit markets were able to issue debt once again. Most notably, issuance in the below-investment-grade, or "junk," sector of the corporate bond market rebounded to $8.8 billion, up sharply from only $550 million in 1990. According to Moody's Investor Service, while corporate debt downgrades still outnumbered upgrades during 1991, the ratio of downgrades to upgrades, 2.9 to 1, was appreciably lower than the 4.4 to 1 ratio of 1990, and close to the 2.5 to 1 ratio of 1989.

The financial position of many bank holding companies improved during the year. An indication of this improvement was the decreased pace and volume of loan write-offs and loan-loss provisions during 1991. Yields on most bank holding company debt relative to those on Treasury issues narrowed during the year as market participants perceived that the worst was over. The narrowing of spreads prompted many bank holding companies to sell new debt, while a pickup in their stock prices encouraged some bank holding companies to offer new equity to enhance their capital positions.

Despite the diminished sense of fragility in most sectors, concerns about the financial health of insurance companies rose during 1991. Like banks, many life insurance companies had been hurt by declining real estate values and losses on their holdings of below-investment-grade bonds. These difficulties came under

[5]Data are as of March 12, 1992. Continuing a series of reductions, the Committee lowered the monitoring range for debt growth in 1991. The cut reflected its expectations that private credit demands would be limited by the increased caution of borrowers and lenders and that federal government borrowing would continue to grow rapidly.

Table 2

Price Information

Seasonally Adjusted Annual Growth Rates, in Percent

	1990	1991				1990 Q-IV over Q-IV	1991 Q-IV over Q-IV
	IV	I	II	III	IV		
Consumer price index							
Total	6.9	3.2	2.5	2 7	3.6	6.3	3.0
Excluding food and energy	4.4	6.5	3.8	3.9	3.8	5.3	4 5
Energy	41 4	−21 8	−11.6	−0.1	3.6	18.0	−8.0
Producer price index							
Total	10.0	−1 7	−0.9	0.1	2.1	6.4	−0.1
Excluding food and energy	3.3	5 5	2.6	2 0	2.7	3.5	3 2
Energy	93.3	−28.4	−14.5	−0 3	6.4	34 1	−10.2
Implicit GDP deflator	3.1	4.9	3.2	2.2	1.7	4.2	3.0
Fixed-weight GDP index	3.2	5.4	3.3	2 6	2.1	4.4	3.4
Employment cost index†	2.6	5.7	4.1	4 8	2.5	4.9	4.3

Note: Data are as of April 17, 1992.

†This index is computed for the final month of each quarter. The growth rates therefore represent growth from the final month of the previous quarter; they are not quarterly average rates.

the spotlight during the summer, following the failure of Mutual Benefit Life Insurance Company In 1991, six sizable life insurance companies failed, all but one of which experienced runs by policy holders before their failure Other insurers, meantime, found themselves in weakened capital positions Nevertheless, the difficulties in this sector appeared to be somewhat confined to a small segment of the industry Unlike banks, life insurers had maintained a roughly constant share of real estate holdings since 1975 [6] Moreover, the exposure of life insurance companies to junk bonds was concentrated among a few firms

Course of policy

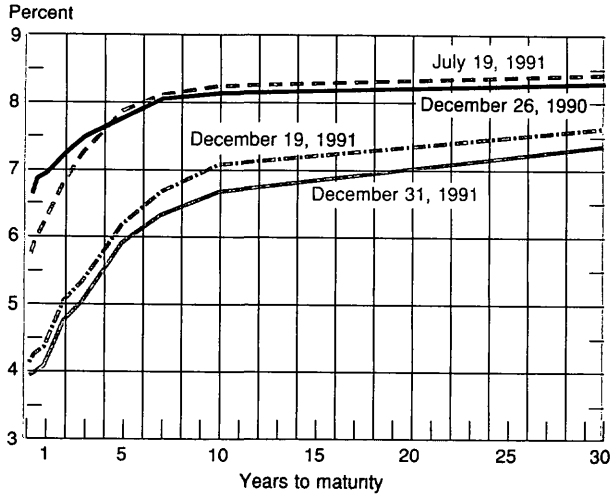
During 1991, the Federal Reserve responded to the weakness in economic activity and the moderation in inflation pressures by continuing the gradual loosening of monetary policy initiated in mid-1989 The ten easing steps by the Federal Open Market Committee (FOMC) brought about a substantial cumulative reduction in reserve pressures in 1991 as the federal funds rate fell 3 percentage points Consistent with the moves on reserves, the Board of Governors approved five cuts in the discount rate, also producing a cumulative decline of 3 percentage points (Table 3) At the end of the year, the discount rate stood at 3½ percent, the lowest level since November 1964.

During the winter and early spring, the FOMC reduced reserve pressures through a series of four easing steps that lowered the federal funds rate by 1¼ percentage points, and the Board approved two half-point reductions in the discount rate Economic activity was observed to be declining over the winter as production and employment shrank The threat of oil-related inflation dissipated in February in the wake of coalition successes in the Persian Gulf War, and broad price measures recorded only modest increases or fell. By late March, however, conditions appeared to be in place for a turnaround in economic activity, in part because of the significant easing of reserve pressures that had

[6] Their share rose from 3 percent in 1970 to a peak of 3 6 percent in 1986 In 1990, it was 3 1 percent These data were taken from Andrew Yuengert, "Empirical Evidence Life Insurance and Annuities," Federal Reserve Bank of New York, Internal Working Paper, 1991

Chart 3

Yield Curves for Selected U.S. Treasury Securities



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

Chart 4

Long-Term and Short-Term Interest Rates

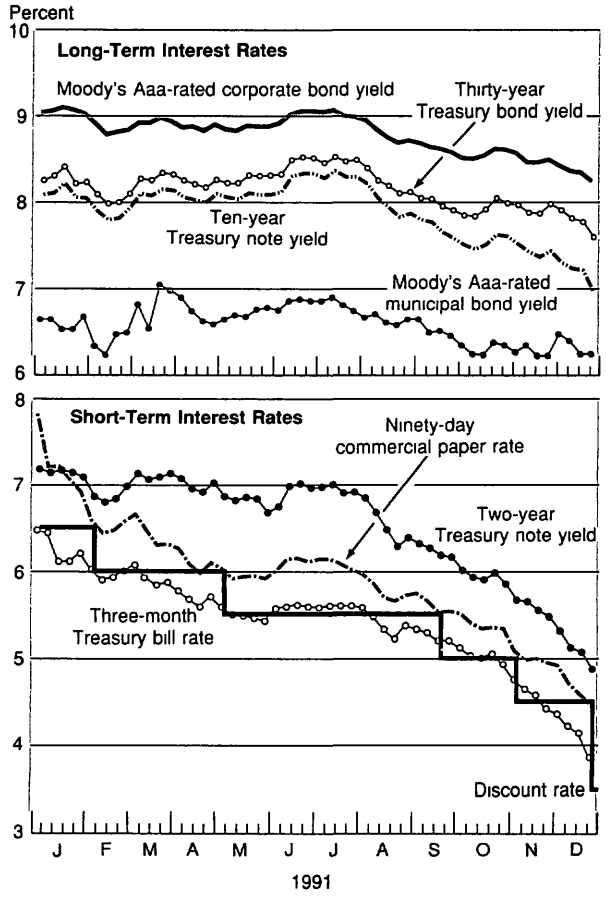


Chart 5A

M2: Levels and Target Ranges

Cones and Tunnels

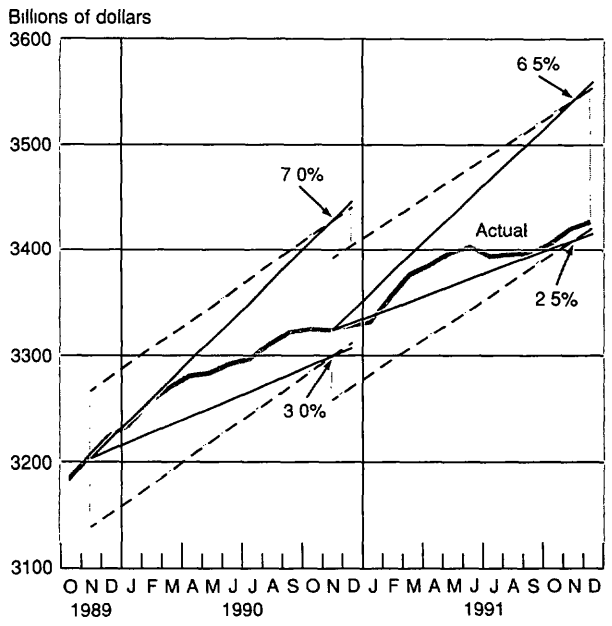


Chart 5B

M3: Levels and Target Ranges

Cones and Tunnels

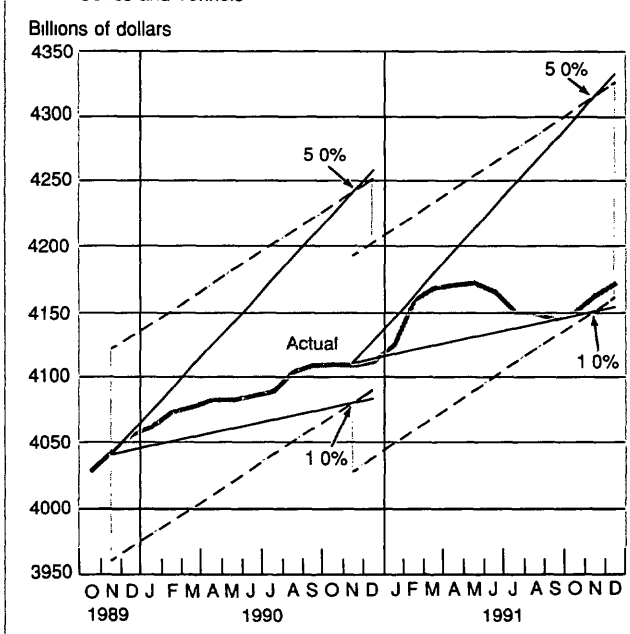


Chart 5C

M1: Levels and Growth Rates

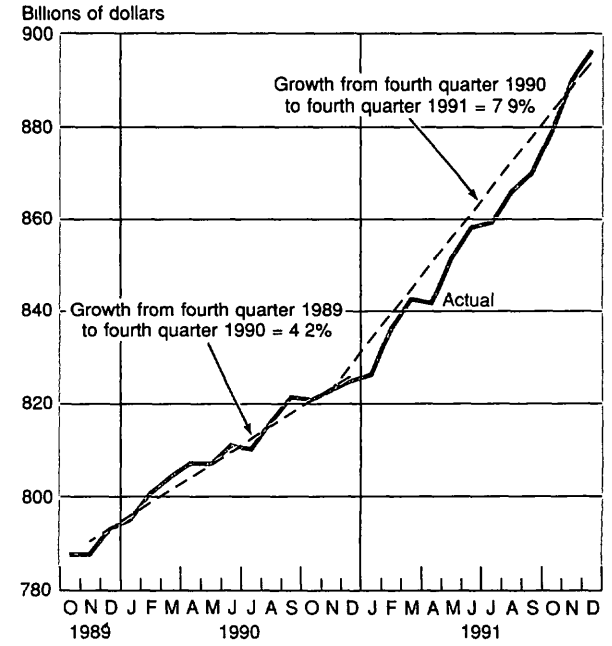
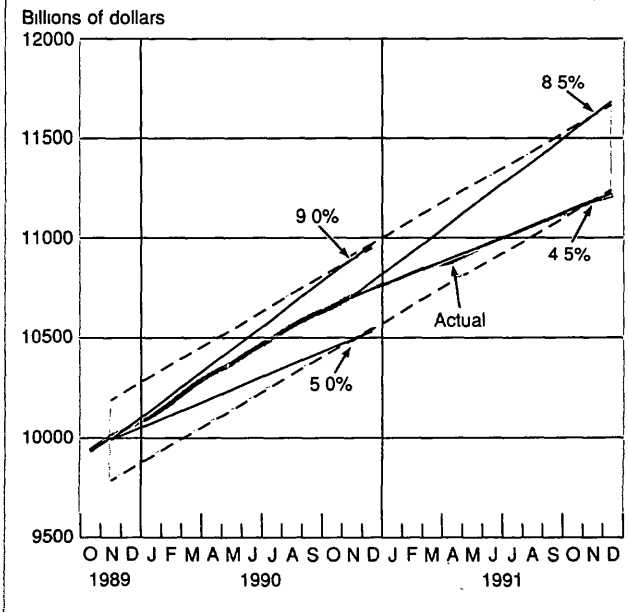


Chart 6

Total Domestic Nonfinancial Debt: Levels and Monitoring Ranges

Cones and Tunnels

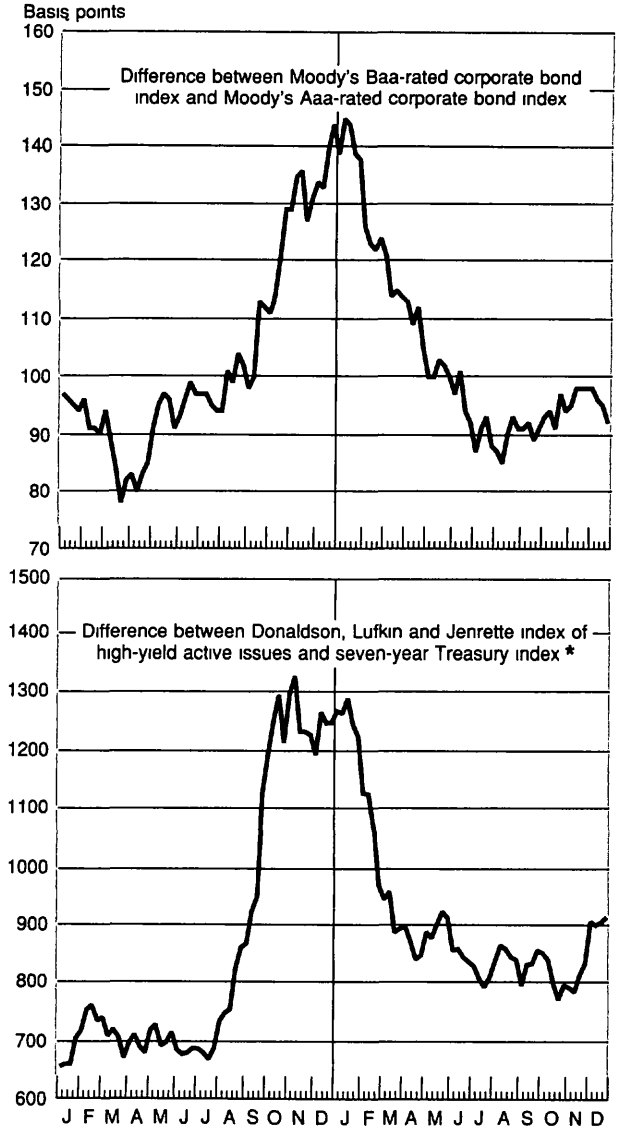


taken place since the latter part of 1990.[7] Nonetheless, the Committee remained alert to the possibility that the recovery might falter Indeed, amid signs of continued weakness, especially in the industrial and capital goods areas, the Board approved a cut in the discount rate on April 30, and the FOMC allowed part of the reduction to show through to the funds market

[7]The federal funds rate had fallen 2 percentage points between mid-October 1990 and late March 1991, with half the decline registered in 1990

Chart 7

Yield Spreads



* Provided by Donaldson, Lufkin and Jenrette

The FOMC adopted a posture of watchful waiting from midspring through midsummer. Economic indicators suggested that a recovery, albeit uneven, was under way, while inflation pressures remained modest In these circumstances, the Committee felt it prudent to guard against the risk of excessive monetary stimulus, which might allow inflationary imbalances to develop. By midsummer, however, some data cast doubt on the strength of the recovery at a time when the broader monetary aggregates were showing persistent weakness. With price pressures abating, the FOMC eased reserve pressures on August 6.

The Federal Reserve stepped up the pace of accommodation over the balance of the year as various data indicated that the upturn in economic activity had faltered During the fall, business and consumer confidence eroded markedly, bank credit was weak, and the broader monetary aggregates were near the lower bounds of their target ranges. Meantime, price measures supported the notion that the rate of inflation was coming down. In this environment, the FOMC reduced reserve pressures every month between September and early December, while the Board approved half-point reductions in the discount rate in September and November. By mid-December, evidence of the downward trend in inflation was even stronger, and economic activity remained sluggish. Consequently, the System took more forceful steps to ease policy. On December 20, the Board of Governors approved the first 1 percentage point cut in the discount rate since 1981, and the Committee effected a 50 basis point decline in the funds rate, the second cut of that size during 1991. The Board and the Committee anticipated that these steps, along with the cumulative effects of earlier actions, would encourage a resumption of sustainable economic expansion

Policy implementation

Adjustment to the cut in reserve requirements

Policy implementation in the early months of 1991 entailed assessing and adapting to the effects of the cut in reserve requirement ratios in December 1990 The reduction in requirements was phased in over two consecutive maintenance periods and took full effect in the period ended January 9, 1991. The reserve requirement cut immediately introduced a huge reserve surplus The Desk absorbed the extra reserves largely through redemptions and outright sales of securities in December 1990.[8] The cut in reserve requirements also had a

[8]The Desk's operations in late 1990 are discussed in some detail in last year's report, "Monetary Policy and Open Market Operations during 1990," Federal Reserve Bank of New York *Quarterly Review*, Spring 1991

Table 3

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

Date of Meeting	Specified Short-Term Growth Rates (Percent) M2	M3	Discount Rate (Percent)	Borrowing Assumption for Deriving NBR Path (Millions of Dollars)	Associated Federal Funds Rate† (Percent)	Effect on Degree of Reserve Pressure	Guidelines for Modifying Reserve Pressure‡
12/18/90	November to March		7	100	7 25	Decrease	A slightly greater degree
	4	1	6 5 on 12/19	125 on 12/19§	7	slightly	*might* be acceptable A
				100 on 1/9‖	6 75		somewhat lesser degree *would*
			6 on 2/1	100††	6 25		be acceptable
2/5 to	December to March		6	100	6 25	Maintain	A slightly greater degree
2/6/91	3½-4	3½-4		75 on 3/8‖	6		*might* be acceptable A
				125 on 3/21‡‡			somewhat lesser degree *would*
							be acceptable
3/26/91	March to June		6	125	6	Maintain	A somewhat greater or
	5½	3½		150 on 4/18‡‡			somewhat lesser degree *might*
			5 5 on 4/30	175 on 4/30§	5 75		be acceptable
				200 on 5/2‡‡			
5/14/91	March to June		5 5	200	5 75	Maintain	A somewhat greater or
	4	2		225 on 5/16‡‡			somewhat lesser degree *might*
				250 on 6/13‡‡			be acceptable
				275 on 6/20‡‡			
				325 on 6/27‡‡			
7/2 to	June to September		5 5	325	5 75	Maintain	A somewhat greater or
7/3/91	5½	3		350 on 7/11‡‡			somewhat lesser degree *might*
				400 on 7/25‡‡			be acceptable
				375 on 8/6‖	5 5		
8/20/91	June to September		5 5	375	5 5	Maintain	A somewhat greater degree
	0	−1		350 on 9/5‡‡			*might* be acceptable A
				300 on 9/12‡‡			somewhat lesser degree *would*
			5 on 9/13	325 on 9/13§	5 25		be acceptable
10/1/91	September to December		5	325	5 25	Maintain	A slightly greater degree
	3	1½		300 on 10/3‡‡			*might* be acceptable A
				275 on 10/10‡‡			slightly lesser degree *would*
				250 on 10/17‡‡			be acceptable
				175 on 10/31§§	5		
11/5/91	September to December		5	175	5	Decrease	A slightly greater degree
	3	1	4 5 on 11/6	175‖‖	4 75	somewhat	*might* be acceptable A
				150 on 11/7‡‡			slightly lesser degree *would*
				125 on 11/14‡‡			be acceptable
				100 on 11/29‡‡			
				75 on 12/6‖	4 5		
12/17/91	November to March		4 5	75	4 5	Maintain	A slightly greater degree
	3	1½	3 5 on 12/20	100 on 12/20§	4		*might* be acceptable A
							somewhat lesser degree *would*
							be acceptable

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

‡ The factors to consider in making a modification did not change materially until the December 1991 meeting Through November they were progress toward price stability, trends in economic activity, behavior of the monetary aggregates, and developments in foreign exchange and domestic financial markets At the December meeting, the Committee specified that, in the context of its long-run objectives for price stability and sustainable economic growth, modifications would be possible after giving careful consideration to economic, financial, and monetary developments

§ This increase was made so that only part of the accommodation from the cut in the discount rate showed through to the market

‖ Change in borrowing assumption reflects adjustment to reserve pressures

†† The assumption was unchanged because the full effect of the discount rate cut was allowed to show through to the market

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

§§ Change in borrowing assumption reflects a change in reserve pressures and a downward technical adjustment

‖‖ The assumption was unchanged because an increase to permit only part of the discount rate cut to show through to the market was offset by a downward technical adjustment

more lasting impact on the Desk's approach to reserve management: it reduced the level of *required reserve balances* to a range that made reserve management difficult at times for many banks and led to strong pressures in the reserves market Required reserve balances consist of all reserves that depository institutions hold at Federal Reserve Banks to meet their reserve requirements.[9] Many depositories maintain reserve balances at the Fed not only to meet their reserve requirements, but also to process transactions and to guard against unexpected late-day deposit withdrawals that could send them into overdraft.[10] The cut in reserve requirement ratios lowered required reserve balances for many institutions below the level needed to support their clearing operations.[11]

The difficulties that the drop in reserve balances presented to depositories in managing their reserve positions were especially pronounced early in 1991 for two reasons. Many of the larger banks had little or no experience working with such low operating balances, and so had trouble initially adapting to the new reserve requirement ratios [12] Furthermore, the cut in reserve requirements took full effect shortly before seasonal movements in the level of required reserves and of applied vault cash caused required reserve balances to drop to their annual low point in late January and early February. Consequently, these seasonal movements pushed the level of required reserve balances to exceptionally low levels (by recent historical standards) early in 1991 [13]

Banks responded to the low levels of required reserve balances by managing their reserve positions more cautiously.[14] To guard against inadvertent overdrafts, depositories often held onto their reserves early in the day, sometimes despite an already large accumulated excess position. This practice gave rise to a tendency towards firmness in the funds rate in the morning In late afternoon trading, as banks became more confident about their reserve positions for the day, they tended to unload their holdings, sometimes driving the funds rate sharply lower. (Chart 8 shows the resulting volatility of the funds rate in early 1991.) Demand for excess reserves typically ran above normal levels as depositories sought to boost their operating balances, and although adjustment borrowing still remained at relatively low levels, depositories turned to the discount window more often than in the recent past.

In conducting open market operations during the early part of the year, the Desk had to adapt to these developments When it set its objectives for reserves, it anticipated that demands for excess reserves would exceed the recent average of around $1 billion. The excess reserve allowance was treated much more flexibly because the size of these elevated demands was

[9]Required reserve balances are defined as required reserves less applied vault cash Required reserve balances together with required clearing balances, which are discussed later in this section, are termed "required operating balances " Total operating balances at the Fed also include excess reserves

[10]Depository institutions are penalized for ending the day overdrawn They are charged the higher of 2 percentage points over the day's effective federal funds rate or 10 percent Moreover, the overdraft amount must be offset by higher reserve balances on other days in the two-week maintenance period to meet the average reserve requirement

[11]The reserve requirement cut lowered required reserve balances by about $11¾ billion The remainder of the $13½ billion in required reserves released by the cut had been met with vault cash

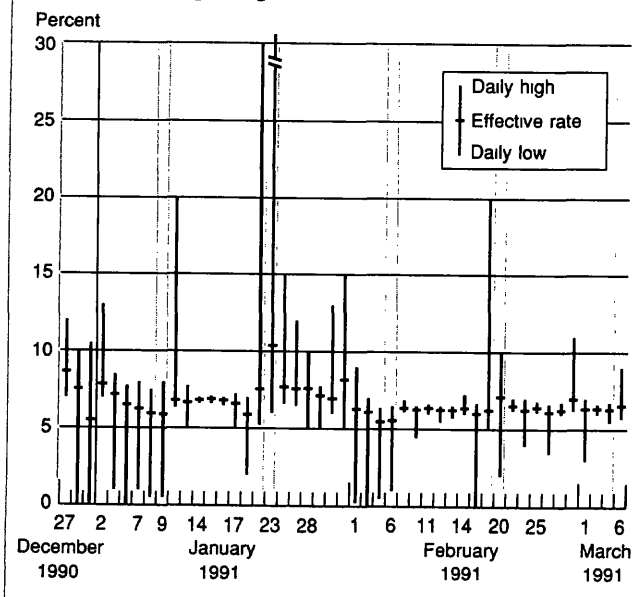
[12]Many small banks and thrifts routinely held more vault cash than they needed to meet their reserve requirements even before the 1990 cut in requirements Consequently, they were unaffected by the cut

[13]Required reserve balances fell from $33 5 billion in the period ended December 12, 1990—just before the cut in reserve requirements—to $16 1 billion in the period ended February 6, 1991

[14]Reserve management practices of depository institutions around this time were also affected by increased worries over the health of many depositories, worries that prompted some institutions to curb their lending limits to other institutions This development was discussed in last year's report

Chart 8

Daily Trading Ranges for Federal Funds



Notes Shaded areas represent settlement days Federal funds rate reached a high of 90 percent on January 23

very uncertain. Temporary reserve operations on some days were aimed at ensuring that reserves were sufficient to support banks' payments operations that day, even when they were not needed to meet reserve requirements for the two-week maintenance period. Because the federal funds rate was volatile, it could no longer serve as a reliable barometer of the availability of reserves for meeting reserve requirements; instead, the Desk sometimes viewed firmness in the funds rate as an indication that the level of operating balances was not adequate for clearing purposes.

During the first two maintenance periods of the year, the Desk took greater account of the expected level of operating balances when formulating its daily operations. In the days immediately following January 1, however, the focus was on allowing banks to work off in an orderly fashion the huge excess reserve positions accumulated just ahead of the year-end.[15] Conditions in the money market in the following maintenance period, the first full period in the new year, settled down somewhat but still remained relatively volatile. Excess reserves in this period were initially expected to be on the high side, but in fact ran on the low side, thanks to large positive carry-ins from the period covering the year-end.

Difficulties associated with low levels of operating balances intensified in the next period, which ended February 6. Required reserves, which typically peak around the year-end holidays and then quickly fall off early in the new year, dropped sharply in this later period. Meanwhile, a large buildup in vault cash around the turn of the year, related to the public's currency demands during the holiday season, became available for meeting reserve requirements in this period and caused applied vault cash to jump.[16] During this period, conditions in the money market were generally tight in the morning, and the funds rate frequently became volatile in later trading. The Desk provided reserves in an aggressive manner during the first week of the period, arranging six consecutive rounds of System RPs. These RPs, which more than met the period's formal need, were partly aimed at providing banks with sufficient reserve balances for clearing.[17] On one day, the Desk preannounced its operation when the level of operating balances was expected to plunge as a result of a spike in the Treasury's Fed balance.[18] As depositories' excess reserve position gradually accumulated, the Desk raised its formal allowance for excess reserves. Later in the period, when reserve pressures relaxed somewhat, the Desk drained reserves, but it only absorbed limited amounts on any one day to avoid bringing operating balances below the level depositories would need to manage their positions.

Pressures remained strong in the period ended February 20 even though applied vault cash fell back from its seasonal high. The Desk continued to respond both to the firmness in the funds rate in the morning and to estimates that showed low levels of operating balances on some days. The Desk added a large volume of reserves on the February 20 settlement day to bring balances to a level believed consistent with clearing needs, although available estimates showed that reserves were more than sufficient for meeting reserve requirements plus expected excess reserve demands for the period.

In subsequent maintenance periods, several developments boosted reserve balances, thus reducing the volatility of the funds rate and other pressures in the reserve market. Seasonal movements in reserve requirements and applied vault cash helped to raise operating balances to more comfortable levels. In addition, depository institutions took measures that increased their reserve balances at the Fed on a permanent basis. A number of banks built up their required reserve balances by economizing on their holdings of vault cash, a strategy that caused vault cash to grow somewhat more slowly in 1991 than in recent years. Many banks also opened or expanded their required clearing balances, lifting the total size of these balances from $1.8 billion in the maintenance period just prior to the cut in reserve requirement ratios to $3.9 billion one year later.[19] Most of this increase occurred

[15]The success that banks had in running down their excess holdings in the second week of the January 9 period proved somewhat surprising. The level of accumulated excess reserves through the first week of this period was about $10 billion, and excess reserves for the period as a whole were about $3½ billion.

[16]Under existing accounting procedures, vault cash holdings could be applied to meeting reserve requirements two maintenance periods later. In February 1992, when the Board announced that a further cut in reserve requirements would take effect in April, it also put out for public comment a proposal to shorten the vault cash lag to one period. Evidence suggests that the shorter lag would lessen the seasonal decline in required reserve balances that occurs in early February.

[17]One of these System RPs was also intended to communicate a policy easing.

[18]Net proceeds from the January auctions of two-year and five-year notes on their settlement date lifted the Treasury's total cash holdings well above its total deposit capacity in the private banking sector.

[19]A depository institution can establish a required clearing balance by specifying an average level of reserves that it will hold at the Federal Reserve for clearing purposes in addition to any balances that it must hold to meet reserve requirements. In exchange, it receives credits on its required clearing balance that it can use to pay for priced services provided by the Fed. Thus, it earns implicit interest on its clearing balance. The Desk knows the size of required clearing balances for a given maintenance period at the beginning of that period but not necessarily the size for future periods.

too late in the year to alleviate reserve pressures in early 1991; by the period ended February 20, required clearing balances had grown to just $2.4 billion.

Despite these developments, required operating balances (required reserve balances plus required clearing balances) in early December 1991 were still about $5 billion below the level prevailing one year earlier, just before the cut in reserve requirements. A tendency for excess reserves to run above recent historical levels and increasing evidence that depositories were wasting their positive reserve carry-ins from previous periods suggested that some banks were still occasionally hampered by low operating balances in managing their reserve positions.

Operating procedures

Borrowed reserves

During 1991, the FOMC continued to frame its operating objectives in terms of the desired degree of reserve pressure, a concept that has been associated with a specified amount of adjustment and seasonal borrowing at the discount window and with a given spread of the federal funds rate over the discount rate. (Anticipated borrowing levels and other reserve measures are presented in Table 4.) The Desk's reserve management procedures are aimed at providing an amount of nonborrowed reserves that together with the intended level of discount window borrowing will just meet the estimated demand for reserves.

In recent years, the relationship between the level of adjustment borrowing and the spread between the federal funds and discount rates has become less reliable, and banks have shown an increased reluctance to borrow from the discount window. As a consequence, wider spreads between the federal funds and discount rates have typically been required to induce banks to turn to

Table 4

1991 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 Borrowed Reserves	Nonborrowed Reserves plus Extended Credit Borrowed Reserves (Current)	Nonborrowed Reserves plus Extended Credit Borrowed Reserves (First Published)	Nonborrowed Reserves Interim Objective	Initial Assumed Excess Reserves	Final Assumed Excess Reserves	Extended Credit Borrowing
1991													
Jan	9	51,480	51,529	3,593	3,472	55,073	274	54,779	54,727	55,997	2,500	4,500	22
	23	48,477	48,535	938	653	49,415	857	48,531	48,332	49,704	1,800	1,300	28
Feb	6	46,438	46,363	2,722	2,798	49,160	161	48,970	49,000	49,703	1,600	3,500†	30
	20	46,935	46,819	1,752	1,929	48,687	153	48,508	48,594	47,882	1,500	1,200	27
Mar	6	46,637	46,615	1,221	1,187	47,858	377	47,432	47,427	47,978	1,500	1,500	50
	20	47,616	47,611	1,007	1,068	48,622	138	48,438	48,541	48,686	1,200	1,200	47
Apr	3	47,563	47,511	1,375	1,417	48,938	151	48,726	48,778	48,587	1,200	1,200	62
	17	50,218	50,216	801	907	51,019	148	50,795	50,977	51,146	1,200	1,000	75
May	1	48,644	48,691	1,199	1,210	49,842	142	49,598	49,760	49,559	1,100	1,000	102
	15	48,469	48,518	970	945	49,438	186	49,124	49,277	49,418	1,100	1,100	128
	29	47,357	47,343	1,121	1,135	48,477	240	48,178	48,238	48,336	1,100	1,100	59
June	12	49,411	49,288	731	815	50,142	275	49,859	49,829	50,163	1,100	1,100	8
	26	49,110	49,099	1,282	1,311	50,392	307	50,078	50,105	49,825	1,000	1,000	7
July	10	50,375	50,462	882	806	51,256	596	50,656	50,673	51,180	1,000	1 000	5
	24	49,492	49,518	941	886	50,433	466	49,964	49,941	50,163	1,000	1,000	4
Aug	7	49,393	49,432	870	830	50,262	704	49,371	49,557	50,027	1,000	1,000	188
	21	49,917	49,892	1,061	1,055	50,977	399	50,298	50,549	50,517	1,000	1,000	281
Sept	4	49,058	49,045	1,273	1,346	50,331	389	49,536	50,003	49,599	1,000	1,000	406
	18	51,447	51,290	732	885	52,179	332	51,351	51,843	51,931	1,000	1,000	496
Oct	2	49,122	49,093	1,044	1,099	50,165	342	49,782	49,850	49,686	1,000	1,000	41
	16	50,908	50,904	1,016	1,163	51,924	284	51,634	51,784	51,686	1,000	1,000	6
	30	50,191	50,188	1,167	1,174	51,357	211	51,133	51,151	50,938	1,000	1,000	13
Nov	13	51,907	51,915	913	917	52,820	112	52,706	52,721	52,515	1,000	1,000	2
	27	52,045	51,915	934	1,039	52,979	101	52,877	52,854	52,791	1,000	1,000	2
Dec	11	53,842	53,883	605	562	54,446	110	54,337	54,337	54,795	1,000	1,000	1
	25	54,483	54,459	1,203	1,233	55,687	115	55,571	55,577	55,292	1,000	1 000	1
1992													
Jan	8	56,020	55,979	1,138	1,206	57,158	521	56,637	56,666	57,098	1,200	1,200	1

†Temporarily raised to 2,500 during the period

the discount window This development has been linked to concerns about the ongoing difficulties of the financial services sector as a whole, and to the increased public scrutiny directed toward those particular institutions rumored to be in financial straits [20] Banks, fearful that the public will perceive their use of the window as a sign of fundamental liquidity constraints, have shied away from using this facility

This avoidance of the discount window was highlighted in the early part of 1991 when many banks were struggling with seasonally low levels of required reserve balances. Somewhat elevated levels of borrowing did occur, but very high federal funds rates were sometimes needed to induce banks to turn to the window. This reluctance to borrow diminished the value of the discount window as a safety valve for alleviating the kinds of temporary reserve pressures facing banks adapting to the lower reserve requirements These developments were noted by Chairman Greenspan in his February 1991 Humphrey-Hawkins testimony before Congress In his remarks, the Chairman encouraged banks to make greater legitimate use of the borrowing facility, and for a time his comments appeared to have had some effect Nonetheless, a strong reluctance to tap the discount window persisted during the year

Low levels of discount window borrowing were also encouraged by a generally narrow spread between the federal funds rate and the discount rate in 1991, which reduced the incentive to turn to the window.[21] A narrow spread between the two rates had emerged in late 1990 and remained throughout the following year. During 1991, the average effective federal funds rate exceeded the discount rate by 24 basis points, although in one maintenance period the average effective funds rate fell below the discount rate by about 20 basis points. In 1990, the spread had averaged 112 basis points, and it had been 228 basis points in the preceding year.

Reflecting these developments, adjustment credit averaged just $140 million in 1991, compared with levels of $233 million and $243 million in 1990 and 1989, respectively. The level of adjustment borrowing reached particularly low levels in the autumn; in the period ended November 13, it averaged only $14 million, its lowest maintenance period average since July 1980 (Chart 9).[22] As in other recent years, adjustment credit often remained very low until the final day of the period, when it rose as a result of settlement day pressures. "Special situation" adjustment borrowing, which is treated as akin to extended credit by the Desk in formulating its reserve objectives, was lower in 1991 than in the previous year. Absent this borrowing, adjustment credit was $123 million in 1991 and $164 million in 1990.[23]

Seasonal borrowing in 1991 followed its usual pattern it rose slowly at first, more quickly in the early summer, and then fell off rapidly during the autumn. To keep pace with movements in seasonal borrowing, nine upward technical adjustments were made to the borrowing allowance between March and late July, and afterwards eleven seasonally related reductions were made to the allowance. Seasonal borrowing peaked at $351 million in the period ended August 7; its lowest average level was $28 million in the period ended January 23.[24] In part reflecting the narrow spread between the federal funds rate and the discount rate, the level of seasonal borrowing in every maintenance period of 1991 was below that in the corresponding period of the preceding year For the year as a whole, seasonal borrowing averaged $155 million, compared with $223 million in 1990 and $275 million in 1989

Conflicts between the federal funds rate and reserve estimates

The Desk's open market operations are designed to fill the gap between the objective for nonborrowed reserves and available estimates of nonborrowed reserve supplies [25] Ideally, an estimated reserve need

[20]Last year's report includes a discussion of this change in discount window borrowing behavior

[21]During most of the year, the federal funds rate and the discount rate declined more or less in step The funds rate generally was slightly above the discount rate, although occasionally the rates were about the same Under borrowed reserve targeting, introduced in the early 1980s, the relationship between the amount of borrowing and the funds rate is not stable when the funds rate is below the discount rate This relationship, however, has not been very dependable in recent years even when the funds rate exceeded the discount rate, and the Federal Reserve has relied less on it The experience gained in the last few years suggests that the Federal Reserve could probably operate with reasonable success even if the funds rate were persistently below the discount rate

[22]The effective federal funds rate exceeded the discount rate by just 18 basis points in the November 13 period, it was below the discount rate in the week-long maintenance period that ended July 9, 1980

[23]Special situation borrowing in the first half of 1990 was elevated by the demands of Bank of New England This bank borrowed much smaller amounts of adjustment credit for a brief period in January 1991, after it had been seized by the Federal Deposit Insurance Corporation and had been converted into a bridge bank In April 1991, Bank of New England was sold to Fleet/Norstar Financial Group Inc

[24]Seasonal borrowing was $22 million in the period ended January 8, 1992 This period was the last in which the rate charged on seasonal borrowing was equal to the discount rate Since that date, the seasonal borrowing rate has been determined by market-related rates the average of the effective federal funds rate and the ninety-day composite rate on certificates of deposit from the preceding period

[25]The objective or "path" for nonborrowed reserves is derived by

will be associated with tightness in the funds rate relative to expectations, an estimated reserve surfeit will be accompanied by a soft federal funds rate, and reserve levels that are on target will be accompanied by funds trading at the expected rate. In fact, however, the reserve estimates and the funds rate often give inconsistent signals. Conflicts between trading conditions in the reserves market and reserve estimates arose with unusual frequency in 1991. Sometimes the strong reluctance to borrow contributed to the disparities. Heightened market expectations of an impending easing in monetary policy sometimes encouraged depositories to defer meeting part of their reserve needs until late in a maintenance period. At other times, banks misjudged their reserve positions, they may have had a smaller tolerance for error because of lower reserve balances.

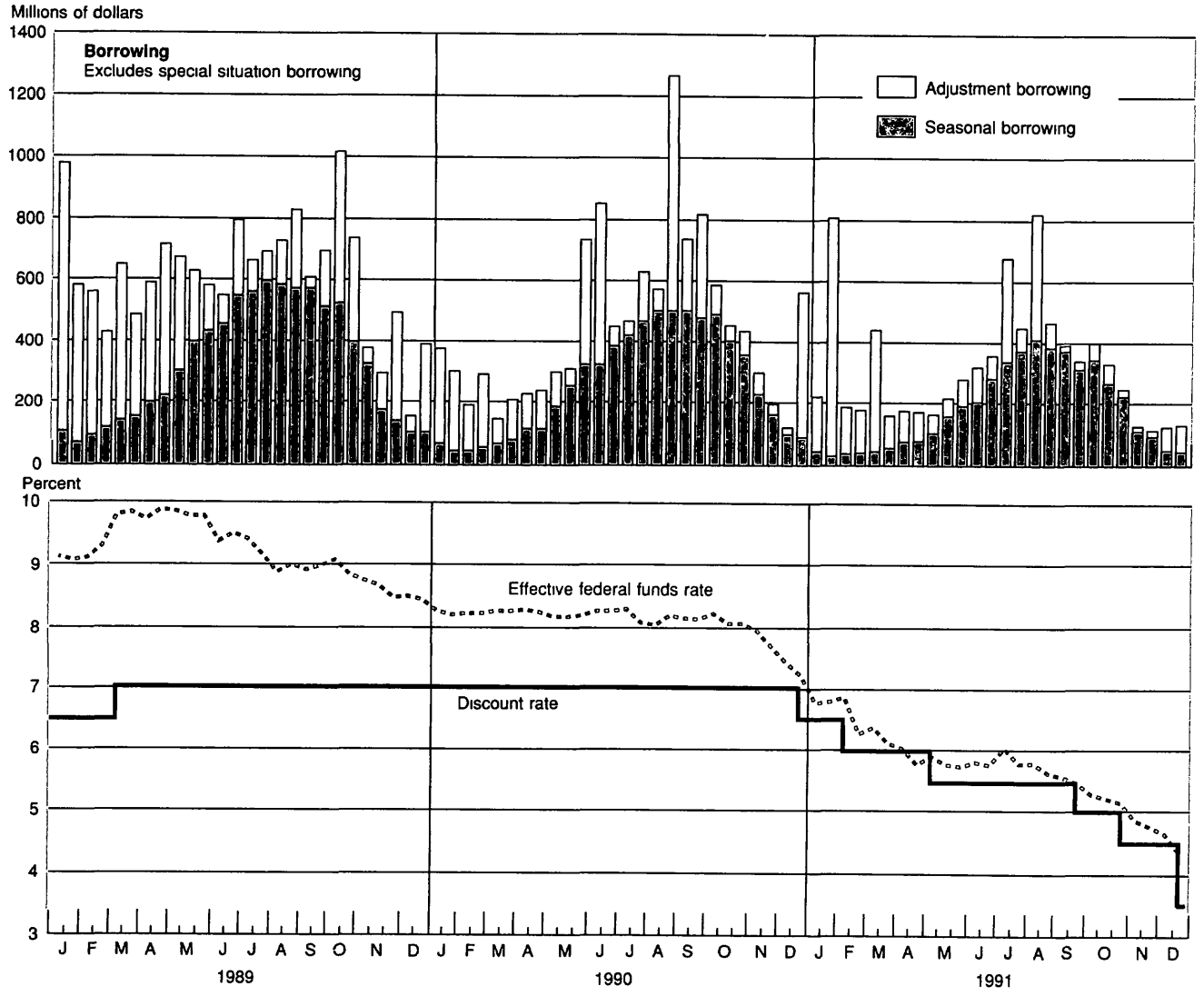
In structuring its temporary operations, the Desk pre-

Footnote 25 continued
subtracting the borrowing allowance from estimates of the total demand for reserves (required plus excess reserves)

Chart 9

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

Maintenance Period Averages



fers to make needed reserve injections or absorptions gradually, allowing for the possibility of changes to the reserve outlook; it does not want to leave the bulk of the needed reserve adjustment to the end of the period because a very large one-day open market operation may be difficult or impossible to arrange. In 1991, inconsistencies between the reserve forecasts and the funds rate often interfered with this approach. When confronted with a conflict, the Desk frequently attached greater importance to the rate at which federal funds were trading in the morning than to its reserve projections. With market participants focusing closely on the funds rate as a key indicator of the Federal Reserve's policy stance, the Desk preferred to keep that rate close to its expected trading level so as not to send misleading signals to the market. Also, discrepancies between trading conditions in the funds market and reserve projections were sometimes taken as evidence that the available reserve estimates might be faulty. This approach to formulating open market operations occasionally led the Desk to postpone meeting its estimated reserve objectives until late in the period, aware that it might then have to arrange very large reserve operations or perhaps even fail to meet reserve objectives.

When the Desk did want to communicate a policy shift, it chose a technique after considering current conditions, including the level of the funds rate relative to its old and new expected trading levels, the extent to which market participants anticipated a move, and the overall reserve picture. For example, if the Desk intended a modest easing of reserve pressures when funds were still at their old level, it would probably arrange an overnight System RP—a step that would tend to be viewed as registering dissatisfaction with the prevailing funds rate. If the funds rate were already at its new level because an easing move was widely expected, the Desk might signal a modest ease by arranging a customer-related RP—an "unaggressive" action generally regarded as indicating acceptance of the prevailing funds rate. Finally, in a period marked by reserve surpluses of which market participants were generally aware, the Desk could provide what might be considered an inconclusive easing signal by refraining from any market operation rather than arranging a round of reserve-absorbing matched sale-purchase agreements (MSPs).[26]

In 1991, federal funds frequently traded at rates below the Committee's expected trading range when market participants saw the possibility of a move to a more accommodative policy. Such episodes often followed the release of key data showing unexpected economic slack or modest inflationary pressures. The Desk typically responded to these situations by structuring its actions to avoid misleading market participants about the Fed's current policy stance. When the policy stance had not changed, the Desk sometimes substituted a customer-related RP for a larger System RP that would have been more consistent with the estimated reserve need. In some instances, it postponed addressing an estimated reserve need until late in a period. On several occasions when funds were trading below the expected level, the Desk sought to make a clear policy statement by draining reserves with MSPs even though a reserve shortage was estimated at the time.[27] On April 15, the Desk responded to market perceptions that an easing was imminent or might have already occurred by entering the market to drain reserves about one hour ahead of its usual intervention time, thereby emphasizing that no easing in policy had taken place.[28]

Conflicts between the reserve picture and the funds rate occasionally emerged even when market participants were not anticipating an imminent policy change. Sometimes depositories allowed deficiencies to develop to ensure against cumulating excess reserve positions that could not be worked off without incurring overdrafts. The Desk at times postponed addressing sizable reserve shortages until very late in a maintenance period because the funds rate was below the expected level. When firm conditions finally emerged, large RP operations were arranged.

Incongruities between the reserve estimates and the morning funds rate remained or emerged on the settlement day on several occasions. Discrepancies at this late stage usually suggested that either the Desk or the banks did not have an accurate picture of the reserve situation. The Desk's responses in these cases varied. Knowing that it could not defer meeting reserve objectives, the Desk gave careful consideration to the various factors underlying its reserve projections. It recognized

[26]On the October 30 settlement day, the Desk faced a moderate drain need, and just before the usual market entry time, funds were being exchanged at a rate below the expected rate At the time, the Committee was in the process of discussing a possible easing The Desk, in consultation with the Chairman, refrained from draining reserves even though no definite policy decision had been made, recognizing that this lack of action might well be interpreted as signaling a move towards easing An easing step was formally adopted the following day

[27]These incidents occurred during the maintenance periods ended April 17, May 29, and October 16

[28]In the week preceding this operation, conditions in the funds market had been soft because a weak payroll employment report and favorable inflation data had encouraged expectations of an imminent policy easing During this week, the Desk arranged four rounds of MSPs, in part to communicate that policy remained unchanged, but at the time estimated reserves were close to path or showed only a modest reserve surplus These draining operations helped give rise to the estimated reserve shortage on April 15

that trading conditions in the funds market could be indicating that the reserve estimates were inaccurate, and, as always, the Desk was mindful that its actions could encourage speculation about the stance of policy. At times, reserve operations were formulated with the expectation that in later trading the funds rate could sink and excess reserves exceed desired levels, or that the rate could spike higher and borrowing run heavy

On the August 7 settlement date, the Desk was guided by staff projections pointing to a very large reserve shortage even though the funds rate was only slightly above the level consistent with the FOMC's policy stance The Desk attempted to meet the estimated reserve need by arranging a round of overnight System RPs; however, it was hampered by an unexpectedly small volume of propositions. Later in the afternoon, the funds rate touched a high of 30 percent, and borrowing climbed to nearly $5 billion. On the September 4 settlement date, the Desk responded primarily to very firm trading conditions in the funds market rather than to estimates that placed reserves above path. The firmness in the funds rate suggested the possibility of either a maldistribution of reserves or a projection error, and the Desk arranged a large volume of System RPs. Later that day, the federal funds rate plummeted, closing at ⅛ percent as the Desk's original reserve estimates proved correct

Open market operations and reserve management

Changes in the System portfolio

In 1991, the System's portfolio of U S. government securities expanded by a record $31 billion, a rate of growth more than double that of the preceding year and the average annual increase between 1981 and 1988.[29] (The portfolio fell in 1989) Close to two-thirds of the increase was in Treasury bills, but the Desk also purchased a substantial amount of Treasury coupon issues. The Desk acquired from official foreign accounts a large volume of coupon securities, mostly of relatively short maturity, because several accounts were making large sales at times when the Desk wished to add reserves [30] Some of the foreign account sales raised dollars to pay obligations stemming from Desert Shield and Desert Storm, while others were part of portfolio restructuring efforts by these accounts. Sales and redemptions of Treasury securities by the Desk in 1991 were negligible, and as in the preceding year the Desk undertook no outright sales of Treasury debt in the market.

The rapid growth in the System's portfolio supported strong overall demand for reserves as M1 grew rapidly and banks established required clearing balances. It also offset changes in operating factors that significantly reduced reserve supplies. In addition to offsetting the typical reserve drain from domestic currency, the Federal Reserve continued to reduce its holdings of foreign currencies, working down the unprecedented buildup of 1989.

Forecasting reserves and operating factors

In formulating its reserve strategy, the Desk makes use of estimates of the demand for and supply of reserves Forecasts of the demand for reserves are based on estimates of required reserves and expectations for excess reserve demands. Projections of the available supply of reserves are derived from forecasts of various operating factors. In 1991, the accuracy of forecasts for most factors affecting reserve needs in a maintenance period usually improved as each period progressed, reflecting the availability of additional information Still, large revisions coming late in the period did sometimes complicate the Desk's reserve management efforts (Details of the staffs' forecasting accuracy are presented in the appendix)

The accuracy of staff forecasts of required reserves available at the start of a period or at midperiod was about the same in 1991 as in the previous year. Excess reserves, however, were considerably harder to anticipate during the early months of 1991 Some deterioration in the excess reserve projections reflected the uncertainties about reserve needs when depositories were operating with sharply reduced required reserve balances As banks opened required clearing balances and required reserves increased, excess reserves became less volatile and easier to predict

Operating factors affecting the supply of reserves also proved harder to forecast in 1991 than in the preceding year. This difficulty was largely traceable to less accurate projections of the Treasury's Fed balance. Large forecast errors were made around major tax dates, with some tendency to underpredict Treasury revenues for the year as a whole The timing of receipts into the Treasury's Defense Cooperation Account for Desert Shield and Desert Storm contributions was also difficult to anticipate. By contrast, projections of currency in circulation improved considerably in 1991 The improvement came about as the large shipments of currency overseas that had marked 1990 abated

Primary dealers

In August 1991, Salomon Brothers Inc. announced that an internal investigation had uncovered misconduct in

[29]The appendix presents details of the 1991 portfolio changes and their causes, along with an overview of the Desk's transactions

[30]The Desk only conducts outright transactions with foreign accounts when the orders are consistent with reserve needs

connection with certain Treasury auctions. In the wake of these admissions, the Treasury, the Securities and Exchange Commission, and the Federal Reserve undertook a thorough review of the U.S. government securities market that included a reexamination of the primary dealer system. This review, which culminated in the publication of the *Joint Report on the Government Securities Market* in January 1992, prompted several changes in the primary dealer system that are now being implemented.[31]

The primary dealer system

Primary dealers are the Federal Reserve's private sector business counterparties. The Federal Reserve needs such counterparties because it implements monetary policy through the purchase and sale of U.S. government securities in the secondary market. These counterparties must be able to handle large orders efficiently and safely. The Federal Reserve, like any responsible market participant, wants to minimize the credit, delivery, and settlement risk associated with its transactions; therefore, it has developed criteria that its counterparties must meet to do business with it. In 1991, as in earlier years, these criteria required primary dealers to make markets across the entire maturity spectrum of Treasury issues, to maintain at least a 1 percent share of the aggregate customer volume of primary dealers, to maintain satisfactory capital, to be an active and competitive participant in Federal Reserve open market operations, and to bid meaningfully in all Treasury auctions. Seeking assurance that its standards were being met, the Federal Reserve also required that primary dealers submit reports and permit its staff to inspect dealer operations and books.

Many firms sought to achieve and maintain primary dealer status because they felt that it carried some advantages. Primary dealer designation was regarded as a source of prestige and a selling point in attracting customers. Several interdealer government securities brokers allowed essentially only the primary dealers to trade through their facilities or to obtain information about bids and offers from their video monitors. Nevertheless, another major broker has long offered access to its bid and offer information to anyone purchasing the service, and that broker has also permitted firms that were not designated as primary dealers to trade through it as long as they met the broker's own credit standards. In addition, in mid-1991, five interdealer brokers began providing price and trading volume data through a private joint venture called GOVPX.

Primary dealers also had some advantages in bidding at Treasury auctions until October 1991. They were among the group of market participants that were permitted to bid on behalf of customers and to bid without guarantee or deposit in note and bond auctions.

Changes affecting the primary dealer system

The joint agency review found that while the primary dealer system had worked well for a number of years, the system also had some drawbacks. Most notably, a public misimpression had developed that the Federal Reserve was the regulator of primary dealer firms. Moreover, the primary dealer designation had been viewed as conferring on firms a special status that carried an element of "franchise value" for their dealer operations and elevated the firms' standing in the marketplace.

To address these drawbacks and to provide for a more open system of trading relationships, the Federal Reserve Bank of New York amended its dealer selection criteria in conjunction with the joint agency review. It eliminated the requirement that primary dealers maintain a market share of at least 1 percent of total customer activity reported by all primary dealers. It also revised the capital requirements for primary dealers by specifying that primary dealers meet the capital standards of their regulators—in most cases the Securities and Exchange Commission. While the revised standards define a potential universe of counterparties that could number in the hundreds, it is not certain how many firms will be interested in becoming primary dealers. Initially, the number of primary dealers is expected to be limited because of resource constraints on Desk operations. But this group could expand further after an automated system for Desk operations is in place.

Many of the new criteria are similar to the previous guidelines. They stipulate that primary dealers make reasonably good markets to the Trading Desk, provide the Desk with useful market information and analysis, and participate meaningfully in Treasury auctions.[32] In addition, primary dealers must be either commercial banking organizations subject to official supervision by U.S. federal bank supervisors or broker/dealers registered with the Securities and Exchange Commission. Primary dealers must meet the minimum standards of

[31]This section draws heavily from the *Joint Report on the Government Securities Market* (Washington, D.C.: GPO, January 1992) and the statement by Peter D. Sternlight before the Subcommittee on Oversight of the House Committee on Ways and Means, September 26, 1991. The *Joint Report* contained a detailed description of the market for U.S. government securities and cited features that could be improved. It suggested several measures for broadening participation in Treasury auctions, strengthening enforcement of Treasury auction rules, and detecting and combating short squeezes. It also included proposed changes in Treasury auction procedures and recommendations for legislation. Our focus is on issues relating to primary dealers. Readers interested in a more in-depth discussion of the other issues should refer to the *Joint Report*.

[32]See Appendix E of the *Joint Report*.

their primary regulator and have at least $100 million of tier I capital (for commercial banking institutions) or $50 million of regulatory capital (for registered broker/dealers).

The Federal Reserve Bank of New York also indicated that it was discontinuing its dealer surveillance activities, consistent with its lack of formal regulatory authority over the firms designated as primary dealers and consistent as well with the Fed's desire to avoid fostering the public misconception that the designation represents an official "approval." The Federal Reserve will continue to evaluate each dealer's performance relative to the specified criteria on an ongoing basis, with a formal review once a year to decide whether a business relationship remains appropriate In the event that a dealer's primary capital slips below standard, the Bank may suspend its trading relationship with the dealer until the capital position is restored In making its determination, the Bank will consult with the dealer's primary regulator to assess whether the firm has an acceptable program to restore its capital position.

While discontinuing *dealer* surveillance, the Federal Reserve Bank of New York is undertaking an enhanced program of *market* surveillance to help evaluate anomalous market conditions that might call for reopening Treasury issues or for official inquiries into possible wrongdoing. The reporting program for primary dealers is expected to undergo some revision in conjunction with the Bank's enhanced market surveillance activities.

Broadening participation in Treasury auctions

The joint review also prompted the Treasury to consider the treatment given primary dealers bidding at its auctions. During the review, it became clear that there was a perception that primary dealers had an unwarranted advantage over other market participants in bidding at Treasury auctions. To address this perception, the Treasury took steps in October 1991 to broaden potential participation in its auctions. These steps included permitting all broker/dealers in U S government securities registered with the Securities and Exchange Commission to submit bids on behalf of customers at auctions, permitting any bidder to bid without deposit provided the bidder has a so-called autocharge agreement with a depository institution to provide payment for securities purchased, and raising the maximum noncompetitive award in note and bond auctions from $1 million to $5 million

The joint agency review also examined whether a change in the Treasury's auction technique could further broaden auction participation. The report proposed an open-bid, iterative, single-price auction method in place of the current sealed-bid, multiple-price method [33] Under the proposed approach, bidders should stand less risk of overpaying for an issue, a change that may encourage nondealer customers to bid on their own rather than through a primary dealer In addition, successful collusive bidding is expected to be more difficult. The proposed technique, however, is feasible only with auction automation. The Treasury is currently soliciting comments on the technique

[33]See *Joint Report*, pp 14-16

Appendix: Desk Activity for the System Open Market Account

This appendix summarizes the Trading Desk's outright and temporary transactions in 1991 and the factors that prompted them It also assesses how accurately the staff was able to predict the supply of and demand for reserves during the year

Outright changes in the System portfolio

Total System holdings of U S government securities grew by a record $31 billion in 1991, ending the year at $279 billion (Table A1) The rise far exceeded growth in 1990 and the average annual increase of about $14 billion from 1981 through 1988 (The portfolio fell in 1989) Even so, the rise in the portfolio just kept pace with the rapid expansion of total marketable Treasury debt outstanding, and the System's share of that debt remained unchanged

Composition of the System portfolio

About two-thirds of the total increase in the System portfolio was in Treasury bills. The $20 billion rise in bill holdings was a record, although it was not far above the previous record set in 1986 The growth in total Treasury coupon holdings was also large, about $11 billion, but it was exceeded by the $17 billion record increase in 1987 Almost all of the growth in coupons was in issues maturing within five years Holdings of five- to ten-year coupons increased modestly, while the System's portfolio of long-term coupon issues edged slightly lower Holdings of federal agency issues declined for the tenth consecutive year With the expansion of the System's port-

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

folio concentrated in bills and short-term coupons and rollovers in quarterly financings remaining tilted toward the shorter options, the weighted average maturity of the portfolio fell by 2 6 months, to 37 9 months.

Bank reserve behavior

The record expansion of the System's portfolio offset large declines in reserve supplies that arose from movements in operating factors and supported substantial increases in the overall demand for reserves Operating factors drained over $31 billion of reserves between the maintenance periods ended January 9, 1991, and January 8, 1992 (Table A2) Rising currency in circulation accounted for about two-thirds of the drain from factors The rate of increase in currency was in line with growth during much of the past decade, with the exception of the record $27 billion increase in currency during 1990 Currency growth in 1990 had been raised by heavy shipments overseas following the Iraqi invasion of Kuwait Shipments abroad remained very strong in the early months of 1991, at the height of the Persian Gulf crisis. They abated thereafter, and some of this currency eventually found its way back to the United States and out of circulation.

The other principal factor affecting reserves was the change in System holdings of foreign currency The net decline in the System's holdings drained roughly $5 billion of reserves The decline in these holdings resulted from a series of off-market transactions conducted directly between U.S and foreign monetary authorities, and from a "dewarehousing" of some of the Treasury's foreign currency holdings at the Fed † Net intervention in support of the dollar further reduced the Fed's foreign currency portfolio by about $400 million Together, these transactions lowered the Federal Reserve's foreign currency holdings by about $8 billion equivalent Two developments partly offset the impact of these operations the Federal Reserve earned $2½ billion equivalent of interest on its foreign currency assets, and the market value of its foreign currency holdings rose a net $350 million in dollar terms

Depository institutions expanded their holdings of required clearing balances during the year by $2 billion in order to raise their reserve balances at the Fed. For convenience, the Desk treats these balances as an operating factor, included in the "other items" category in Table A2. A rise in required clearing balances represents a decline in reserve supplies in this accounting framework Strictly speaking, however, these balances are a source of demand for reserves

As for other sources of reserve demand, strong growth of deposits in M1 throughout 1991 boosted required reserves Meantime, excess reserves returned to more normal levels after having risen to exceptionally high levels around the end of 1990 because of strong year-end funding pressures and the reserve needs of depository institutions adjusting to the cut in reserve requirements.

Borrowed reserves were generally low during 1991 and played a small role in satisfying reserve demands. Nonetheless, settlement day pressures helped elevate adjustment borrowing in the period covering year-end 1991 to a level above that posted in the comparable period one year earlier. Over 1991, extended credit borrowing dropped from a low level to virtually zero.‡

Outright transactions

The Desk conducted outright operations when reserve projections suggested a large sustained need to add or drain reserves. The overall volume of outright transactions in 1991 was $31 8 billion, below the amounts in the previous two years, but the amount of outright purchases reached a record high of $31.4 billion. The almost complete absence of actions to reduce the portfolio in 1991 reflected in part the need for substantial portfolio growth In addition, a large share of the seasonal reserve abundance that typically arises early each year had been addressed in December 1990 when the Desk drained large amounts of reserves at the time of the cut in reserve requirements. The size of the overage was also reduced somewhat by high Treasury balances through February

Table A1

System Portfolio: Summary of Holdings

In Billions of Dollars

	Year-End 1991	Change during 1991	Change during 1990
Total holdings	278 6	+31 0	+12 0
Bills	138 7	+20 0	+11 8
Coupons	133 8	+11 3	+0 4
Agency issues	6 0	−0 3	−0 2

Notes Values are on a commitment basis Changes are from year-end to year-end Figures may not add due to rounding

†These transactions affected the holdings of the Treasury's Exchange Stabilization Fund as well Details are provided in "Treasury and Federal Reserve Foreign Exchange Operations, May-July 1991," Federal Reserve Bank of New York *Quarterly Review*, Autumn 1991

‡Extended credit borrowing was briefly elevated in the spring and again in the summer

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

The distribution of outright transactions by counterparty and by type of security was unusual in 1991. Purchases from official foreign accounts totaled $21.2 billion, a level exceeding that of past years, because several foreign accounts were heavy sellers at times when the Desk wished to add reserves. Foreign institutions sold $9 billion of Treasury notes to the Desk, far above the amount sold in previous years.[§] Most of these purchases were of relatively short maturity issues. Heavy purchases were made from foreign accounts in February and March, thus reducing the need for outright Desk purchases in the market that often occurs in April. During the year, the Desk conducted three outright purchases of bills and one purchase of coupons, the first such market purchase since April 1989.[‖]

[§] In the previous ten years, total coupon purchases from foreign accounts exceeded $1 billion only once—$1½ billion in 1985.

[‖] The Desk bought $2½ billion of bills on May 29, $3½ billion on August 28, and $2 billion on October 30. It bought $2¼ billion of Treasury coupon securities on November 26. For operational convenience, offers in this operation were only considered for coupon securities maturing in July 1992 or later.

Table A2

Reserve Measures and Factors Affecting Reserves

Bank Reserves
(In Millions of Dollars)

	Maintenance Period Ended January 8, 1992	Change during 1991†	Change during 1990‡
Nonborrowed reserves			
Excluding extended credit	56,637	1,858	−9,843
Including extended credit	56,638	1,838	−9,841
Extended credit borrowing	1	−21	3
Borrowed reserves			
Including extended credit	522	226	−44
Adjustment plus seasonal credit	521	247	−46
Adjustment	499	266	−29
Seasonal	22	−19	−17
Required reserves§	56,020	4,540	−12,363
Excess reserves	1,138	−2,455	2,475

System Portfolio and Operating Factors‖
(In Billions of Dollars)

System portfolio	278 6	31 0	12 0
Operating factors			
Foreign currency††	22 6	−4 9	1 7
U S currency	307 2	−20 7	−26 7
Treasury balance	9 6	−2 1	−1 6
Float	0 9	−2 1	1 5
Special drawing rights	10 0	—	1 5
Gold deposits	11 1	—	—
Foreign deposits	0 5	0 2	0 1
Applied vault cash	29 6	0 7	0 6
Other items	18 8	−2 3	0 3
Foreign RP pool‡‡	6 7	—	−1 2

Note: Figures may not add because of rounding.

† Change from maintenance period ended January 9, 1991, to that ended January 8, 1992
‡ Change from maintenance period ended January 10, 1990, to that ended January 9, 1991
§ Not adjusted for changes in required reserve ratios
‖ Sign indicates impact on bank reserves
†† Acquisition value plus interest earnings. Revaluations of foreign currency holdings are included in "other items."
‡‡ Includes customer-related RPs

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

The Desk largely restricted its activities in agency securities to rolling over maturing issues when a suitable replacement issue was available. It redeemed modest amounts of securities when new offerings were smaller in size than the maturing issue.

Temporary transactions

The Desk also met reserve needs through self-reversing transactions that helped smooth the uneven pattern of reserve availability arising from daily movements in operating factors. Repurchase agreements (RPs) were used to provide extra reserves on a temporary basis, while matched sale-purchase transactions (MSPs) drained reserves for short periods. MSPs were also arranged each day with foreign official accounts to meet their demand for an overnight investment facility. The Desk sometimes chose to arrange a portion of these MSPs in the market, as customer-related RPs, when it wanted to make a temporary reserve injection.

During 1991, there were 142 temporary transactions, up from 128 in the previous year. The aggregate value of these transactions was $509 billion in 1991, compared with $390 billion in 1990. System RPs accounted for 63 of the total number of temporary reserve injections in 1991, and for $333 billion of their total value. In 1990, the Desk arranged 61 System RPs totaling $262 billion. About half of the System RPs arranged in 1991 carried maturities of more than one business day, roughly the same percentage as in 1990. Customer-related RPs were arranged with somewhat greater frequency in 1991 than in the preceding year.

In 1991 the Desk arranged 33 MSPs in the market totaling $75 billion in value, down from 21 MSPs worth $48 billion in the preceding year. MSPs were arranged in the market with some frequency during the first few maintenance periods of 1991, when required reserves and currency fell and applied vault cash rose seasonally. A large number of MSPs were also arranged in April and May after lower than expected Treasury balances introduced reserve overages. Only 4 of the MSP transactions conducted in the market in 1991 had maturities exceeding one business day, compared with 11 the year before.

The Desk announced routine RP operations outside of the normal 11:30 a.m. intervention time on several occasions during the year. To ensure adequate propositions, it preannounced on three occasions large overnight System RPs on afternoons before days when a spike in the Treasury's Fed balance was expected to lead to an exceptionally large daily reserve deficiency.[††] The Desk also entered the market ahead of its usual intervention time seven times in 1991. Typically, it did so to ensure adequate propositions on days when the funds rate was firm and a large add need was seen. It also entered the market early on one occasion to drain reserves, dispelling a widespread misperception that a policy easing was underway.

Accuracy of staff forecasts

In planning reserve operations, the Desk takes into account estimates of the reserve need for a maintenance period. These estimates are based on staff projections of the demand for and supply of reserves. During 1991, the estimates of reserve demands and of operating factors available to the Desk were, on balance, somewhat less accurate than in the previous year (Table A3).[‡‡]

On the demand side, the accuracy of initial and mid-period forecasts for required reserves improved marginally in 1991. Forecasts of required reserves typically improved as each maintenance period unfolded and more data on actual bank deposits became available; projection misses were sharply reduced by the end of the period. A string of sizable initial projection errors (in both directions) occurred in the maintenance periods surrounding the important April tax deadline, a time when reservable deposit flows are often highly uncertain.

Excess reserves were particularly hard to estimate in the early months of 1991, when banks were struggling to learn how to manage reserves in an environment of low reserve balances.[§§] Once balances rose somewhat,

Footnote †† continued
the Treasury's regular auction cycle. The quarterly four-year note was dropped and replaced with a monthly five-year issue. The new notes, like the ones they replaced, settle at the end of each month on the same day as the Treasury's two-year notes. Hence, at the end of two of every three months each quarter, auction proceeds from newly issued five-year notes are not offset by payments on a maturing four-year note. On these occasions, the Treasury's total cash holdings rise sharply. These holdings can spill over into the Treasury's Fed balance, draining reserves, on days when the Treasury's holdings in its accounts at commercial banks are close to capacity. Large outpayments for Social Security or various government retirement plans usually bring Treasury balances down again early in the next month.

††The potential for large one-day spikes in the Treasury balance increased in 1991 as a result of changes made in

‡‡The Trading Desk uses forecasts of required reserves, excess reserves, and operating factors made by staffs at the Federal Reserve Bank of New York and the Board of Governors. The Desk also takes into account a forecast of the Treasury's Federal Reserve balance made by the Treasury staff.

§§Measurement of forecast errors of the demand for excess reserves is imprecise. As each maintenance period unfolds, the Desk supplements its forecasts of excess reserves with informal adjustments based on the observed pattern of estimated excess reserve holdings to date. Forecast misses of reserve supplies occurring on the last day of a period cannot be addressed in the Desk's operations and may be reflected in holdings of excess reserves that are higher or

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

the behavior of excess reserves returned to a pattern closer to that observed in earlier years.[‖‖] After the first couple months of 1991, errors in forecasting excess reserves at the start of a period were typically much smaller. Forecasts tended to improve at midperiod when information on excesses or deficits carried into the period was first folded into the forecasts. Higher and more variable excess reserves increased both the average level and variability of reserve carry-ins.[†††]

Forecasts of operating factors were less accurate at the beginning and in the middle of maintenance periods in 1991 than in the previous year. By the final day of a period, the size of these projection misses usually had narrowed considerably and, on average, was even somewhat smaller than in recent years. There was a tendency to overstate the available supply of reserves early in maintenance periods in 1991.

Most of the decline in forecast accuracy for total market factors in 1991 reflected a deterioration in projections of the Treasury's Fed balance available at the start and in the middle of a maintenance period. A rise in period-to-period volatility in the Treasury balance most likely contributed to this loss in forecast accuracy. The mean absolute period-to-period change of this factor was $1.8 billion in 1991 and $0.8 billion in 1990; however, volatility in 1991 was not much higher than, and in some cases was well below, variability in other recent years.

As usual, some of the biggest projection misses occurred around dates requiring major payments of individual nonwithheld and corporate taxes. At these times, the size of the Treasury's revenue flows was often very uncertain, and the Treasury's total cash holdings frequently exceeded the available capacity of its accounts in the private banking system, causing large spillovers into its Fed balance.[‡‡‡] A large forecast error for the Treasury's Fed balance in the January 9 period was caused in part by an unexpected decline in the total capacity of the Treasury's accounts in the private banking system.

Estimation of the Treasury balance was at times complicated by foreign official payments into the Treasury's Defense Cooperation Account for Desert Shield and Desert Storm expenses. The Desk was usually notified at

Footnote [§§] continued
lower than predicted. Moreover, as noted in the text, in 1991 the Desk sometimes responded to pressures in the funds market on settlement day mornings by deliberately over- or under-providing reserves relative to estimated demands. Any resulting reserve surplus would be directly reflected in higher ex post holdings of excess reserves, a shortfall would be reflected in some combination of lower excess reserves and higher borrowing.

[‖‖] The variability of excess reserves also fell substantially after the first couple months of the year. The average period-to-period change in excess reserves was $525 million for all of last year, but if the first few periods are excluded, this figure drops to about $280 million, close to the 1990 level.

[†††] The average carry-in at large banks was $72 million in 1991, compared with $29 million in 1990.

[‡‡‡] Large forecast errors of the Treasury balance at the Fed occurred during the periods ended February 6, June 26, July 10, September 18, and December 25, periods that included or began soon after an important tax date. In 1991, unlike earlier years, forecast errors for periods following the April 15 tax date were not particularly large.

Table A3

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

In Millions of Dollars

	1991			1990		
	First Day	Midperiod	Final Day	First Day	Midperiod	Final Day
Reserves						
Required	290-320	170-200	70-80	300-320	195	70
Excess	300-340	220-250	—	125-150	115-135	—
Factors	1,200-1,280	600-820	50-60	1,010-1,030	530-570	70-95
Treasury	865-890	480-660	40-45	630-670	380-430	45
Currency	330-410	170	15-20	500	210-280	30
Float	230-280	140-150	40-50	190-225	140-170	35-40
Pool	330	115	10	260	120	10

Note: Ranges indicate varying degrees of accuracy by the New York Reserve Bank and Board of Governors staffs.

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

least a day in advance of such payments, but on occasion there was little or no advance notice These payments were especially heavy during March and led to a large underestimate of the Treasury's Fed balance for the period ended April 3. (The Treasury tax and loan accounts at commercial banks were at or near capacity at this time, forcing the flows into the Treasury's Fed account) Moreover, as in 1990, unexpected delays in deposit insurance spending tied to the resolution of failed financial institutions tended to increase forecast errors.

These factors contributed to a tendency to underestimate the size of the Treasury's Fed balance. On average, the balance was about $500 million higher than expected at the start of each maintenance period, in 1990, the balance exceeded expectations at the beginning of each period by about $100 million Capacity limitations caused the Treasury's Fed balance to rise above its $5 billion "target" level on about fifty business days in 1991—a much greater frequency than in 1990, when the Treasury balance exceeded this level on about fifteen days

Initial errors in forecasting the size of the pool of temporary foreign investments increased modestly in 1991, with the size of the pool typically exceeding expectations. Some large projection misses occurred when foreign official institutions temporarily invested in this facility funds they were assembling for the Treasury's Defense Cooperation Account or for the purchase of home currency from the Federal Reserve or the Treasury. By the day the pool increased, the Fed had generally been informed

Currency projections were more accurate in 1991 than in 1990, although forecast errors were about in line with those in earlier years The improvement from 1990 reflected currency's return to more normal patterns of behavior as the large unexpected shipments abroad that characterized 1990 subsided after the first quarter. Projection misses remained relatively large early in the year, when these overseas shipments were still quite strong Currency estimates were also improved by better information on shipments During 1991, staff members charged with projecting reserves began to receive information about several major banks' net overseas currency shipments, as well as more timely data on currency shipments to and from Federal Reserve Banks