

# The Implementation of Monetary Policy

**T**he Federal Reserve uses the tools of monetary policy—open market operations, the discount window, and reserve requirements—to adjust the supply of reserves in relation to the demand for reserves. In so doing, it can influence the amount of pressure on bank reserve positions and, hence, the federal funds rate.

IN GENERAL, THE FEDERAL RESERVE can take one of two basic approaches to affect reserves:

- It can target a certain *quantity* of reserves, allowing changes in the demand for reserves to influence the federal funds rate.
- It can target the *price* of reserves (the federal funds rate) by adjusting the supply of reserves to meet any change in the demand for reserves.

The Federal Reserve has used variations of these basic approaches over the years.

## OPERATIONAL APPROACHES

Before October 1979, the Federal Reserve's approach to affecting reserves was designed to produce a targeted degree of ease or tightness in reserve market conditions (that is, to achieve a desired cost or availability of reserves). These conditions were gauged by the way the federal funds rate behaved as well as by the extent to which reserves in the depository system fell short of satisfying required reserves and institutions had to borrow from the discount window or run down their excess reserves. Although the target for reserve market conditions was set so as to be consistent with the objectives specified for money and credit, the Federal Reserve initially accommodated any expansion of money by providing whatever nonborrowed reserves were needed to support that expansion. If money and credit persistently behaved differently from the policy objectives, the Federal Reserve would change the pressure on reserve market conditions

by varying the extent to which it accommodated the demand for reserves. If, for example, the growth of money and credit was weaker than desired and additional ease was needed, the Federal Reserve would increase nonborrowed reserves by buying securities in the open market. This increase in nonborrowed reserves lowered the amount of reserves that banks needed to borrow at the discount window and decreased the pressure on them to borrow in the federal funds market. As a result, interest rates in the federal funds market, and in short-term markets generally, tended to fall. When additional tightness was needed, the Federal Reserve would reduce nonborrowed reserves by selling securities in the open market or would increase reserves less rapidly than it otherwise would have done. These actions would boost the need to borrow at the discount window, increase demand in the federal funds market, and raise short-term rates.

Control of money and credit under this procedure rested on the ability to estimate the relation between the money market conditions that guided the provision of nonborrowed reserves and the amount of money the public would hold at the associated levels of interest rates. Control also depended on the Federal Reserve's willingness to alter the relative availability of reserves, and hence short-term interest rates, when money growth deviated from its desired path. As inflation intensified in the late 1970s, the Federal Open Market Committee (FOMC) changed its approach to implementing open market operations. In October 1979, it began targeting the quantity of reserves—specifically, nonborrowed reserves. A predetermined target path for nonborrowed reserves was based on the FOMC's objectives for the M1 money stock. If M1 grew faster than the FOMC prescribed, actual required reserves would grow faster than nonborrowed reserves; the faster growth of required reserves, in turn, would produce upward pressure on the federal funds rate and other short-term interest rates. The rise in interest rates would then reduce the amount of M1 deposits demanded by the public, and M1 would be brought back toward its targeted path.

Later, however, the combination of interest rate deregulation and financial innovation disrupted the historical relationships between M1 and the objectives of monetary policy. In response, the Federal Reserve in late 1982 shifted from controlling M1 through a reserves-oriented approach and returned to accommodating short-run fluctuations in reserves demand and preventing these

fluctuations from affecting the federal funds rate. At the same time, Federal Reserve policy decisions became conditioned on a much wider range of economic and financial variables, including M2 and other broad monetary and credit aggregates, that seemed more closely linked than M1 to the long-term goals of monetary policy. Since 1982, daily open market operations have been keyed once again to achieving a particular degree of tightness or ease in reserve market conditions rather than to the quantity of reserves outstanding.

In general, no one approach to implementing monetary policy is likely to be satisfactory under all economic and financial circumstances. The actual approach has been adapted at various times in light of different considerations, such as the need to combat inflation, the desire to encourage sustainable economic growth, uncertainties related to institutional change, and evident shifts in the public's attitudes toward the use of money. When economic and financial conditions warrant close control of a monetary aggregate, more emphasis may be placed on guiding open market operations by a fairly strict targeting of reserves. In other circumstances, a more flexible approach to managing reserves may be required.

## OPEN MARKET OPERATIONS

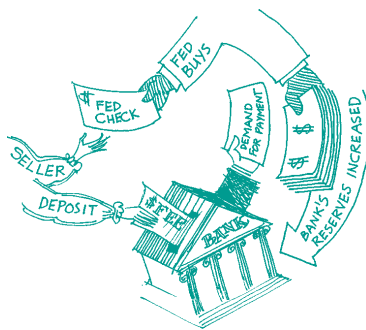
Open market operations involve the buying and selling of securities by the Federal Reserve. A Federal Reserve securities transaction changes the volume of reserves in the depository system: A purchase adds to nonborrowed reserves, and a sale reduces them. In contrast, the same transaction between financial institutions, business firms, or individuals simply redistributes reserves within the depository system without changing the aggregate level of reserves.

When the Federal Reserve buys securities from any seller, it pays, in effect, by issuing a check on itself. When the seller deposits the check in its bank account, the bank presents the check to the Federal Reserve for payment. The Federal Reserve, in turn, honors the check by increasing the reserve account of the seller's bank at the Federal Reserve Bank. The reserves of the seller's bank rise with no offsetting decline in reserves elsewhere; consequently, the total volume of reserves increases. Just the opposite occurs when

the Federal Reserve sells securities: The payment reduces the reserve account of the buyer's bank at the Federal Reserve Bank with no offsetting increase in the reserve account of any other bank, and the total reserves of the banking system decline. This characteristic—the dollar-for-dollar change in the reserves of the depository system with a purchase or sale of securities by the Federal Reserve—makes open market operations the most powerful, flexible, and precise tool of monetary policy.

In theory, the Federal Reserve could provide or absorb bank reserves through market transactions in any type of asset. In practice, however, most types of assets cannot be traded readily enough to accommodate open market operations. For open market operations to work effectively, the Federal Reserve must be able to buy and sell quickly, at its own convenience, in whatever volume may be needed to keep the supply of reserves in line with prevailing policy objectives. These conditions require that the instrument it buys or sells be traded in a broad, highly active market that can accommodate the transactions without distortions or disruptions to the market itself.

The market for U.S. government securities satisfies these conditions, and the Federal Reserve carries out by far the greatest part of its open market operations in that market. The U.S. government securities market, in which overall trading averages more than \$100 billion a day, is the broadest and most active of U.S. financial markets.



Transactions are handled over the counter (that is, not on an organized stock exchange), with the great bulk of orders placed with specialized dealers (both bank and nonbank). Although most dealer firms are in New York City, a network of telephone and wire services links dealers and customers regardless of their location to form a worldwide market.

The Federal Reserve's holdings of government securities are tilted somewhat toward Treasury bills, which have maturities of one year or less (table 3.1). The average maturity of the Federal Reserve's portfolio of Treasury issues is only a little more than 3 years, somewhat below the average maturity of roughly 5½ years for all outstanding marketable Treasury securities. In the 1980s, the average maturity of the Federal Reserve's portfolio

**Table 3.1**  
**Securities held in the Federal Reserve's open market account**  
**as of June 29, 1994**

Billions of dollars

<i>Remaining maturity</i>	<i>U.S. Treasury securities</i>	<i>Federal agency securities</i>	<i>Total</i>
1 year or less	209.5	1.8	211.3
More than 1 year to 5 years	83.7	1.8	85.6
More than 5 years to 10 years	25.3	.6	25.8
More than 10 years	33.1	0	33.1
<b>Total</b>	<b>351.6</b>	<b>4.2</b>	<b>355.8</b>

shortened somewhat, as the Federal Reserve began to emphasize liquidity in managing its portfolio. More recently, the Federal Reserve has slightly lengthened the average maturity of its portfolio.

### Other Factors Influencing Nonborrowed Reserves

Most purchases and sales of securities are not undertaken to adjust conditions in reserves markets as a result of a policy decision. Rather they are made to offset other influences on reserves. Certain factors beyond the immediate control of the Federal Reserve, such as the amount of currency in circulation, the size of Treasury balances at Federal Reserve Banks, and the volume of Federal Reserve float, cause reserves to rise and fall. (These factors are discussed in detail in appendix A.)

The movement of these factors, called technical factors, must be forecast so that the makers of policy can determine what would happen to reserves if the Federal Reserve were to abstain from open market operations. Fluctuations in some technical factors are attributable mainly to pronounced seasonal influences, and thus their effect on nonborrowed reserves is fairly predictable. For example, the amount of currency in circulation rises late in the year because individuals tend to hold more currency during the holiday shopping season. This rise in currency in circulation drains reserves from the depository system because, when a depositor withdraws currency from a bank, the bank turns to the

Federal Reserve to replenish its depleted vault cash and pays for the shipment of currency by drawing down its reserve account. In contrast, a decline in currency in circulation provides reserves.

Movements in the Treasury's balance at the Federal Reserve also follow certain regular, seasonal patterns, which are related to corporate and individual tax dates, social security payments, and the like. When the Treasury, perhaps anticipating a major spending commitment, shifts funds from its collateralized "tax and loan" accounts at commercial banks into its account at the Federal Reserve, reserves are removed from the banking system. In contrast, when the Treasury makes a payment, such as a tax refund, it reduces its balance at the Federal Reserve and injects reserves into the depository system.

Other technical factors are affected more by random occurrences, such as transportation difficulties due to winter storms, and thus are more difficult to predict. One such factor is float, which is the difference between the total value of checks in the process of collection that have been credited to banks' reserve accounts and the value of those collected but not yet credited to banks' reserve accounts. A rise in float increases reserves whereas a decline in float reduces them.

Technical factors can provide or absorb a sizable amount of reserves. If, on balance, they are adding to or drawing down reserves in amounts consistent with the FOMC's objectives as to the supply of reserves, the Federal Reserve will take no action. At other times, the Federal Reserve may undertake open market operations to neutralize technical factors and to obtain desired levels of nonborrowed reserves. Indeed, most of the Federal Reserve's operations are defensive in the sense that they are intended to offset the various market forces that are pushing the level of nonborrowed reserves in a direction at odds with the FOMC's objectives.

### Techniques of Open Market Operations

Depending on the reserve situation, the Federal Reserve approaches open market operations in one of two ways. When forecasts of the factors that influence reserves indicate that the supply of reserves will probably continue to need adjustment, the Fed-

eral Reserve may make outright purchases or sales of securities. If the need is to withdraw reserves, the Federal Reserve may also redeem maturing securities held in its portfolio. (When the Federal Reserve redeems the securities, the Treasury takes funds out of its account to pay the Federal Reserve, leaving fewer reserves in the depository system.) In general, it conducts outright transactions (sales, purchases, and redemptions) only a few times each year, to meet longer-term reserve needs.

When projections indicate only a temporary need to alter reserves, either because the technical factor affecting reserves is expected to be reversed or offset or because the near-term outlook for reserves is uncertain, the Federal Reserve may engage in transactions that only temporarily affect the supply of reserves—repurchase agreements, in the case of temporary additions of reserves, and matched sale–purchase transactions, in the case of temporary drains of reserves. These temporary transactions, which are designed to reduce fluctuations in the overall supply of reserves by offsetting the short-term effects of technical factors, are used much more frequently than are outright transactions. Market participants monitor these operations very closely for signs of any change in the underlying thrust of monetary policy.

**Open market operations can be used to meet a temporary need or to affect the supply of reserves over the longer term.**

### Outright Purchases and Sales

Transactions on an outright basis occur largely through auctions in which dealers are requested to submit bids to buy or offers to sell securities of the type and maturity that the Federal Reserve has elected to sell or to buy. The dealers' bids or offers are arranged according to price, and the Federal Reserve accepts amounts bid or offered in sequence, taking the highest prices bid for its sales and the lowest prices offered for its purchases, until the desired size of the whole transaction is reached. The Federal Reserve also conducts securities transactions with several official agencies, such as foreign central banks. Occasionally the Federal Reserve reduces its holdings of securities by redeeming maturing securities rather than rolling them over at Treasury auctions, as it usually does (table 3.2).

### Repurchase Agreements

When a temporary addition to bank reserves is called for, the Federal Reserve engages in short-term repurchase agreements (RPs)

**Table 3.2**  
**Federal Reserve System outright transactions, 1990–93<sup>1</sup>**  
 Billions of dollars

<i>Transaction</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>
Purchases	25.2	31.4	34.1	36.9
Sales	7.6	.1	1.6	0
Redemptions	5.6	1.3	2.2	1.5
<b>Total</b>	<b>38.4</b>	<b>32.8</b>	<b>37.9</b>	<b>38.5</b>

1. Components may not sum to totals because of rounding.

with dealers; that is, it buys securities from dealers who agree to repurchase them by a specified date at a specified price (table 3.3). Because the added reserves will automatically be extinguished when the RPs mature, this arrangement is a way of temporarily injecting reserves into the depository system.

Repurchase agreements for the Federal Reserve account may be conducted on an overnight basis or on a so-called term basis. Most term RPs mature within seven days, and dealers sometimes have the choice of terminating the transaction before maturity. The absorption of reserves due to premature terminations by dealers may also suit the needs of the Federal Reserve. Such terminations often occur when the availability of reserves to depository institutions is greater than anticipated, which tends to reduce the borrowing costs that dealers face elsewhere.

Whenever the Federal Reserve arranges RPs with dealers, the distribution of the transaction among dealers is determined by auction. Individual dealers may enter several offers at various interest rates. The Federal Reserve arranges all the offers in descending order and then accepts those offers with the highest rates up to the dollar amount needed to meet the reserve objectives.

### **Matched Sale–Purchase Transactions**

When the Federal Reserve needs to absorb reserves temporarily, it employs matched sale–purchase transactions with dealers. These transactions involve a contract for immediate sale of securities to, and a matching contract for subsequent purchase from,



**Table 3.3**  
**Federal Reserve System temporary transactions, 1990–93**  
 Volume in billions of dollars

	<i>1990</i>		<i>1991</i>		<i>1992</i>		<i>1993</i>	
	<i>Num.</i>	<i>Vol.</i>	<i>Num.</i>	<i>Vol.</i>	<i>Num.</i>	<i>Vol.</i>	<i>Num.</i>	<i>Vol.</i>
Repurchase agreements <sup>1</sup>	128	189.9	142	508.7	144	533.3	163	627.6
Matched sale–purchase transactions	21	48.3	33	75.3	20	28.6	5	10.9

1. Includes all types of repurchase agreements.

each participating dealer. The maturities of such arrangements do not usually exceed seven days. The initial sale causes reserves to be drained from the banking system; later, when the Federal Reserve purchase is implemented, the flow of reserves is reversed.

Matched sale–purchase transactions are typically arranged in Treasury bills. The Federal Reserve selects a bill in which it has a substantial holding and invites dealers to state an interest rate at which they are willing to purchase the bills for same-day delivery and to sell them back for delivery on a subsequent day. It then accepts the most advantageous (lowest rate) bids to the point that sufficient reserves are withdrawn.

### A Typical Day in the Conduct of Open Market Operations

Each weekday morning, two groups of Federal Reserve staff members, one at the Federal Reserve Bank of New York and one at the Board of Governors in Washington, prepare independent projections of the technical factors affecting reserve availability for the next few days and for several weeks to come. At 11:15 a.m., the Manager of the System Open Market Account and the group in New York are linked in a telephone conference call with members of the senior staff at the Board of Governors and with a Federal Reserve Bank president who is currently a member of the FOMC. Participants in the call discuss staff forecasts for reserves, recent developments in financial markets, and the latest data on the monetary and credit aggregates. They pay special attention to trading conditions in the reserves market, particularly to the level

of the federal funds rate in relation to the level expected to be consistent with the reserve conditions specified in the policy directive. In light of this information, they determine a program of open



*The Domestic Trading Desk at work.*

market operations. After the call, which usually ends around 11:30 a.m., all FOMC members as well as all nonmember Bank presidents are informed of the actions the Federal Reserve intends to take during the day.

When the Federal Reserve has decided to undertake a particular operation, members of the staff at the Domestic Trading Desk (the Desk)

at the Federal Reserve Bank of New York contact dealers trading in U.S. Treasury and federal agency securities. Approximately three dozen dealers that actively trade in U.S. Treasury and federal agency securities have relationships with the Desk; thus, the Federal Reserve normally encounters no difficulty in promptly completing its large orders. Once the transaction is executed, the reserve account of each dealer's bank is credited or debited accordingly, and the supply of reserves to the banking system changes.

## THE DISCOUNT WINDOW

The Federal Reserve's lending at the discount window serves two key functions:

- It complements open market operations in managing the reserves market day to day and in implementing longer-term monetary policy goals.
- It facilitates the balance sheet adjustments of individual banks that face temporary, unforeseen changes in their asset-liability structure.

The role of the discount window in the conduct of monetary policy has changed substantially since the early years of the Fed-

eral Reserve. In the 1920s, the discount window was the primary conduit for monetary policy and for the provision of reserves to the depository system. As U.S. financial markets developed, however, providing reserves primarily through open market operations became feasible and more efficient. As a result, discount window lending has for many years accounted for a relatively small fraction of total reserves.

Despite the comparatively small volume of borrowed reserves, the discount window remains an important factor in reserves market management and in the broader implementation of monetary policy. It serves as a buffer in the reserves market against unexpected day-to-day fluctuations in reserves demand and supply. When the demand for reserves is unexpectedly high or the supply is unexpectedly low, banks can turn to the window for reserves. Thus, the availability of the window helps to alleviate pressures in the reserves market and to reduce the extent of unexpected movements in the federal funds rate. Moreover, adjustments to the basic discount rate can be important in signaling and implementing shifts in the Federal Reserve's monetary policy stance.



Apart from its role in monetary policy, discount window lending enables individual banks to adjust their balance sheets. Open market operations could not easily duplicate the discount window's role in facilitating certain balance sheet adjustments. Although discount window loans and open market operations have comparable effects on aggregate reserve availability, the loans are uniquely suited to the task of meeting the temporary liquidity needs of individual depositories. Conversely, open market operations are better suited to implementing the short-term adjustments to the availability of aggregate reserves that are necessary in conducting monetary policy.

### Interest Rates

The structure of interest rates charged on discount window credit has changed over the years. However, the rate for adjustment credit, which is the basic discount rate, has always been the most significant for monetary policy. Today, separate, market-related rates generally apply for seasonal credit and extended credit.

The basic discount rate that each Federal Reserve Bank charges on its loans is established by the Bank's board of directors, subject to review and determination by the Board of Governors. Originally each Federal Reserve Bank set its discount rate independently, to reflect the banking and credit conditions in its own District. Over the years, however, the transition from regional credit markets to a national credit market has gradually produced a national discount rate. As a result, the Federal Reserve maintains a uniform structure of discount rates across all Reserve Banks.

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The basic discount rate is adjusted from time to time, in light of changing market conditions, to complement open market operations and to support the general thrust of monetary policy. Changes in the discount rate are made judgmentally rather than automatically and may somewhat lag changes in market rates. The immediate response of market interest rates to a change

in the discount rate—the announcement effect—depends partly on the extent to which the change has been anticipated. If rates have adjusted in anticipation of a change in the discount rate, the actual event may have only moderate effects on market conditions. Generally, the response of market rates to a change in the discount rate will be largest when the market views the adjustment as signaling a basic shift in the stance of monetary policy. Indeed, given the generally small volume of discount window credit, the direct effect of a discount rate change on the funding costs of depository institutions is quite small. Thus, the effect of changes in the discount rate must be interpreted in the context of existing economic and financial conditions and in relation to other policy actions. For example, the response of market rates will also depend on actions taken in open market operations.

The basic discount rate is applied on all adjustment credit. Surcharges above the basic discount rate have at times been applied to larger institutions that relied too frequently on adjustment borrowing as a source of funding. In 1980 and 1981, for example, the Federal Reserve applied a surcharge (varying between 2 and 4 percentage points) to adjustment borrowing by institutions having deposits of \$500 million or more that appeared to be borrowing more frequently than necessary. The surcharges were intended to encourage these institutions to adjust their portfolios more quickly.

Before 1990, the basic discount rate also applied to all loans under the seasonal credit program. In early 1990, after careful review of the program, the Board implemented a market-related rate on seasonal credit. The move was designed to eliminate the implicit subsidy associated with the discount rate, which is a below-market rate, while still providing a reliable source of funds for institutions lacking access to national money markets. The market-related rate applied to seasonal credit is based on an average of recent federal funds rates and ninety-day certificate of deposit (CD) rates, but it is never less than the discount rate applicable to adjustment credit. The market-related rate is reestablished periodically.

At the discretion of each Federal Reserve Bank, the basic discount rate may be applied to extended credit loans for as long as thirty days. A flexible rate somewhat above market rates, and always 50 basis points above the rate charged for seasonal credit, is applied to extended credit loans that are outstanding for more than thirty days. In practice, the flexible rate is often applied to extended credit loans outstanding for less than thirty days.

### **Borrowing Eligibility**

Before the passage of the Monetary Control Act of 1980, only banks that were members of the Federal Reserve System enjoyed regular access to the discount window. The Monetary Control Act extended reserve requirements to nonmember institutions and provided that any institution holding deposits subject to reserve requirements (such as transaction accounts and nonpersonal time deposits) would have the same access to the discount window that member institutions have.

Institutions eligible to borrow at the discount window include domestic commercial banks, U.S. branches and agencies of foreign banks, savings banks, savings and loan associations, and credit unions. Many depository institutions meet the eligibility criteria—about 11,000 banks (including U.S. branches and agencies of foreign banks) and 16,000 thrift institutions (including credit unions) at the end of 1993. Eligibility to borrow is in no way contingent upon or related to the use of Federal Reserve priced services (see chapter 7).

## Borrowing Procedures

Institutions that expect to borrow at the discount window typically execute a set of legal documents with the Federal Reserve that specify the terms and conditions under which discount window credit will be granted and the requirements for collateral pledged to secure such loans.

All discount window credit must be secured to the satisfaction of the Federal Reserve Bank that is providing the credit. Satisfactory collateral generally includes U.S. Treasury and federal agency securities and, if of acceptable quality, mortgage notes covering one- to four-family residences; state and local government securities; and business, consumer, and other customer notes. Although collateral is generally held in safekeeping at the Federal Reserve Banks or by acceptable third-party custodians, borrowers in good financial condition may be permitted to hold their own collateral, appropriately earmarked; lending against borrower-held collateral, however, is usually of only short duration.

Federal Reserve Banks ensure that the value of collateral pledged to secure a discount window loan exceeds the amount of the loan. The extra cushion of collateral helps protect the Reserve Banks against loss in the event that a borrower defaults.

Technically, discount window credit can be extended as a discount of eligible paper (notes, drafts, and bills of exchange) or as an advance secured by collateral. Although these are two distinct forms of credit, both practices are customarily referred to as discounting, and the interest rate charged on such borrowing is called the discount rate. When obtaining credit in the form of a discount, the borrowing depository institution transfers eligible paper carrying its legal endorsement to the Federal Reserve Bank. In return, the borrower is credited in an amount equal to the discounted value of the eligible paper at the current discount rate. When the discounted paper matures, it is returned to the borrower, and the borrower's reserve account is debited by the full amount of the paper. An advance is simply a loan by a Federal Reserve Bank to the borrowing institution on its note secured by adequate collateral. At one time, discounts were the predominant form of discount window credit. From an operational perspective, however, advances are more convenient, and thus for many years all discount window credit has been in the form of advances.

The Federal Reserve most often makes a loan by crediting the reserve account of the borrowing institution. For borrowers that do not maintain accounts with the Federal Reserve, credit is extended by increasing the reserve account of the borrower's correspondent bank (a bank that has agreed to accept the deposits of, and perform services for, another); essentially, the Federal Reserve writes a check on itself, which the borrower then deposits with its correspondent bank. All loans, whether adjustment, seasonal, or extended credit, are technically demand notes and hence have no real maturity. As a matter of convenience, discount officers may arrange to extend credit for a period of time without requiring the borrowing institution to make a formal request to renew the loan each day.

### Types of Credit

The three basic types of discount window credit are adjustment credit, seasonal credit, and extended credit.

- Adjustment credit helps depository institutions meet short-term liquidity needs. For example, an institution experiencing an unexpectedly large withdrawal of deposits may request adjustment credit overnight or for a few days until it finds other sources of funding.
- Seasonal credit assists smaller institutions in managing liquidity needs that arise from regular, seasonal swings in loans and deposits, such as those at agricultural banks associated with the spring planting season.
- Extended credit may be provided to depositories experiencing somewhat longer-term liquidity needs that result from exceptional circumstances.

In addition, the Federal Reserve has the power to extend emergency credit to entities other than banks, although it has not done so since the 1930s.

#### Adjustment Credit

Adjustment credit helps depository institutions meet temporary liquidity needs arising from short-term fluctuations in assets and liabilities. Three basic principles govern the provision of adjustment credit:

- The Federal Reserve Bank provides credit at its own discretion.



- Borrowing must be for an appropriate reason.
- The borrower must seek other reasonably available sources of funds before turning to the discount window.

No fixed rules define an appropriate reason for borrowing. Some common situations that are appropriate for borrowing include meeting liquidity needs arising from an unexpected loss of deposit or nondeposit funding, avoiding unexpected overnight overdrafts in the institution's reserve account, or meeting liquidity needs arising from operational problems beyond the institution's control or from an external event such as a natural disaster.

**The amount of adjustment borrowing has declined over the past decade.**

Discount officers apply judgment also in determining whether an institution has sought all other reasonably available sources of funds before turning to the window. For example, most large institutions are presumed to have greater access to alternative funding sources than small community banks have. Branches and agencies of foreign banks, even if they are not large, are presumed to have access to funding in national markets and

from their foreign parents or affiliates. Depositories that are members of multibank holding companies are expected to seek funding from affiliates before turning to the window. Institutions that have access to a special industry lender, such as the Federal Home Loan Bank System, are expected to use these sources before requesting an advance from the discount window.

When reviewing a borrowing request, discount officers consider other pertinent information at their disposal, such as information from the institution's primary supervisor, balance sheet information, the frequency and amount of past borrowing, and the institution's general management of its reserve account. While borrowing under the adjustment credit program, institutions provide daily balance sheet data to the Federal Reserve for monitoring purposes. Discount officers carefully review these data to ensure that adjustment credit is not being used inappropriately, such as to fund a planned increase in loans, securities, or federal funds sales or a predictable decline in deposit funding or other liabilities.

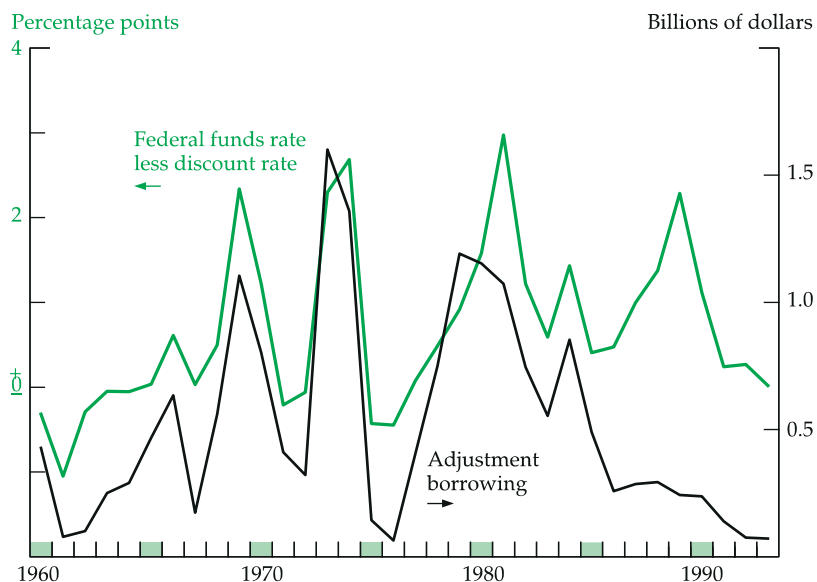
A significant factor that affects the level of adjustment borrowing is the spread between the federal funds rate and the discount rate.



(See chart 3.1 for the average annual volume of adjustment borrowing since 1960.) Partly because discount officers routinely monitor banks to ensure that borrowing requests are for appropriate reasons and partly because the market pays close attention to banks that might be relying on discount window credit, most banks are generally reluctant to borrow at the discount window. A positive spread between the federal funds rate and the discount rate (that is, a federal funds rate higher than the discount rate) provides a pecuniary inducement to borrow. When reserves are in heavy demand or short supply, the spread between the federal funds rate and the discount rate tends to widen, encouraging more institutions to overcome their reluctance to borrow. The resulting injection of borrowed reserves helps to alleviate reserve market pressures and to moderate any unexpected spikes in the federal funds rate. In this way, adjustment borrowing serves as a safety valve that relieves short-term pressures in the reserves market.

The level of adjustment borrowing has declined on balance since 1980. This trend reflects several factors. During a period in which many banks were failing, banks became concerned that the market might detect borrowing at the window and interpret it as a sign of financial weakness. Also, a relatively narrow spread between the federal funds rate and the discount rate reduced the pe-

**Chart 3.1**  
**Adjustment borrowing and the spread of the federal funds rate over the discount rate**



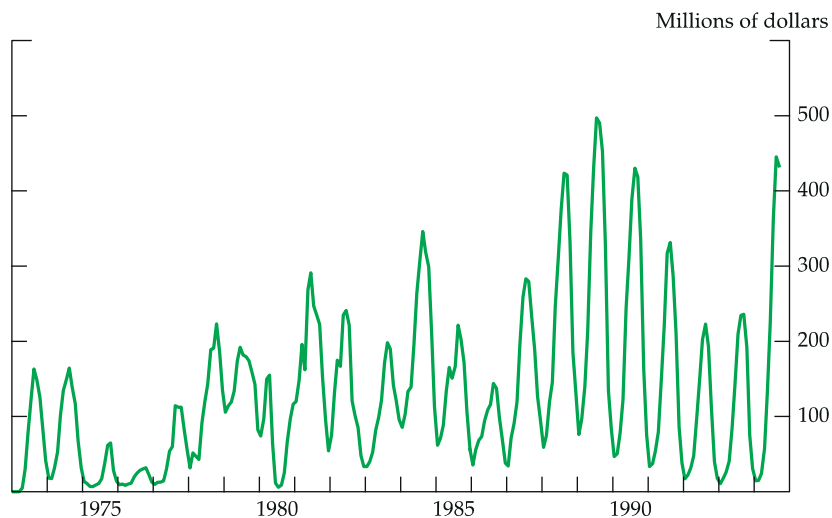
Note. Yearly averages.

cuniary incentive to borrow. Finally, various measures implemented by the Federal Reserve in recent years to reduce risk in the payments system have generally led depositories to monitor their reserve account positions more closely during the day, and consequently they can more promptly respond to unexpected funding losses without relying on discount window credit. The downward trend in adjustment credit notwithstanding, the Federal Reserve encourages banks to turn to the window in appropriate circumstances. Only in this way can the discount window continue to fulfill its role as a safety valve in the reserves market.

### Seasonal Credit

Established in 1973, the seasonal credit program assists small institutions that lack effective access to national money markets. To qualify for the program, an institution must demonstrate a seasonal funding need arising from regular, intra-yearly swings in deposits and loans that persist for at least four weeks. The program is structured so that larger institutions must meet a larger portion of their seasonal need through market funding sources; institutions with more than \$250 million in total deposits generally cannot demonstrate a need under the criteria of the seasonal program. Also, institutions with access to a special industry lender that provides similar assistance are expected to use that source before using the Federal Reserve seasonal credit program. The regular pattern in seasonal borrowing during any given year

**Chart 3.2**  
Seasonal borrowing



Note. Monthly data.

is associated primarily with loan demand in the farm sector (chart 3.2). Most seasonal borrowers are small agricultural banks that face strong loan demand and deposit runoffs during the planting and growing seasons over the spring and summer months. Later in the year, farmers reap their harvest and pay down their bank loans. Simultaneously, banks pay down their seasonal loans from the Federal Reserve.

**M**ost seasonal borrowers are small agricultural banks whose deposits fluctuate with the seasons.

The amount of seasonal borrowing grew rapidly from 1986 through 1989. Most of the growth reflected increasing use of the program by non-member banks that had not been eligible for the program before the Monetary Control Act. In the early 1990s, the peak volume of seasonal borrowing edged down, probably because of somewhat weaker loan demand during a period of sluggish economic growth and the move to a market-related interest rate on seasonal credit.

### Extended Credit

Extended credit may be provided when exceptional circumstances or practices adversely affect an individual institution. To obtain extended credit, a borrower must comply with certain conditions: It must make full use of reasonably available alternative sources of funds and have a plan in place for eliminating its liquidity problems. The institution must report special data on its financial condition, including data on its lending, which may be restricted while it is borrowing from the Federal Reserve. The Federal Reserve extends credit of this type in coordination with the borrower's primary supervisor.

When conditions warrant, extended credit may be granted to institutions experiencing difficulties adjusting to changing conditions in the money market. For example, during the period of high interest rates in the early 1980s, many thrift institutions suffered substantial losses of deposits. In cooperation with the Federal Home Loan Bank System and other supervisors, the Federal Reserve provided temporary assistance to some thrift institutions until they could obtain funding elsewhere or make other adjustments to their balance sheets.

In determining whether to lend under the extended credit program, the Federal Reserve has always reviewed the financial con-

dition of an institution. The Federal Reserve has sometimes provided credit to troubled depositories to facilitate an orderly closure of the institution. In the 1980s, faced with a succession of banking crises and record numbers of bank and thrift institution failures, the Federal Reserve, in cooperation with other regulators, extended a significant volume of credit to troubled institutions until the problem could be resolved in an orderly fashion.

In the early 1990s, Congress began seeking ways to speed the resolution of troubled institutions in an effort to reduce the cost of bank and thrift institution failures. The outcome of this process was the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA). The “prompt corrective action” provisions of FDICIA place increasingly severe restrictions on depositories as their capital positions deteriorate and creates a framework that expedites the resolution of depositories that are close to insolvency.

Among the restrictions imposed by FDICIA on depositories in weak capital condition are limitations on access to the Federal Reserve’s discount window. Since December 1993, FDICIA has limited the availability of Federal Reserve credit for undercapitalized and critically undercapitalized institutions. FDICIA stipulates that the Federal Reserve may not lend to an undercapitalized institution for more than 60 days in any 120-day period without incurring a potential liability to the FDIC; exceptions to this rule arise if the borrower’s primary federal supervisor certifies that the institution is viable or if the Board conducts its own examination of the borrower and certifies that it is viable. A viable institution is one that is not critically undercapitalized, is not expected to become critically undercapitalized, and is not expected to be placed in conservatorship or receivership. FDICIA states that the Federal Reserve may not lend to a critically undercapitalized institution for more than five days beyond the date on which it became critically undercapitalized without incurring a potential liability to the FDIC and must report any liability of this nature to Congress within six months after it is incurred.

### **Emergency Credit**

Section 13 of the Federal Reserve Act empowers the Federal Reserve to lend to individuals, partnerships, and corporations under “unusual and exigent” circumstances. When not secured by U.S. government securities, any loans to nondepositories under this authority must be approved by five members of the Board of

Governors. Lending under these provisions has been extremely rare, and such loans have not been extended since the 1930s.

## RESERVE REQUIREMENTS

Requirements that depository institutions maintain a fraction of their deposits in reserve in specified assets—the third tool of monetary policy—have long been part of our nation’s banking history. The rationale for these requirements has changed over time, however, as the country’s financial system has evolved and as knowledge about how reserve requirements affect the monetary system has grown. At present, reserve requirements aid in the conduct of open market operations by helping to ensure a stable, predictable demand for reserves; they thereby increase the Federal Reserve’s control over short-term interest rates.

Requiring banks to hold a certain fraction of their deposits in reserve, either as cash in their vaults or as non-interest-bearing balances at the Federal Reserve, imposes a cost on the private sector, however. The cost is equal to the amount of forgone interest on these funds—or at least on the portion of these funds that banks hold only because of legal requirements and not to meet the needs of their customers.

### Structure of Reserve Requirements

Before 1980, only banks that were members of the Federal Reserve System were subject to reserve requirements established by the Federal Reserve. By the 1970s, however, it had become apparent that the structure of reserve requirements was becoming outdated. The regulatory structure and competitive pressures during a period of high interest rates were putting an increasingly onerous burden on member banks. The situation fostered the growth of deposits, especially the newly introduced interest-bearing transaction deposits, at institutions other than member banks and led many banks to leave the Federal Reserve System. Given this situation, reserve requirements clearly needed to be applied to a broad group of institutions for more effective monetary control—that is, to make the relation between the amount of reserves supplied by the Federal Reserve and the overall quantity of money in the economy more likely to be close.

The Monetary Control Act of 1980 (MCA) reformed reserve requirements to end the problem of membership attrition and to facilitate monetary control. Under the act, all depository institutions regardless of membership in the Federal Reserve System—commercial banks, savings banks, savings and loans, credit unions, U.S. agencies and branches of foreign banks, and Edge Act and agreement corporations—are subject to reserve requirements set by the Federal Reserve. The Board of Governors may impose reserve requirements on transaction deposits and on nonpersonal time deposits solely for the purpose of implementing monetary policy, and these requirements must be applied uniformly to all similar accounts at all depository institutions. The reserve requirement may range from 8 percent to 14 percent on

***Nonmember  
as well as member  
depository  
institutions are  
subject to reserve  
requirements.***

transaction deposits, which include demand deposits and interest-bearing accounts that offer unlimited checking privileges. Reserve requirements on nonpersonal time deposits, ranging from 0 percent to 9 percent, may be differentiated by maturity. The Board of Governors may also set reserve requirements on the net liabilities of depository institutions in the United States to their foreign affiliates or to other foreign banks.

Reserve requirements are structured to bear relatively less heavily on smaller institutions. At every depository, a reserve requirement of 0 percent is applied to a certain amount of liabilities that are subject to reserve requirements (reservable liabilities), and relatively low requirements are applied to such liabilities up to another level. These levels are adjusted annually to reflect growth in the banking system. In 1994, the first \$4.0 million of reservable liabilities were made exempt from any requirements, and transaction deposits up to \$51.9 million were given a reserve ratio of only 3 percent. Transaction deposits of more than \$51.9 million were subject to a 10 percent reserve requirement.

The MCA also empowers the Board of Governors under extraordinary circumstances to establish a supplemental reserve requirement of up to 4 percentage points on transaction accounts if such an action is deemed essential for the conduct of monetary policy. Unlike reserves required under the regular schedule, these supplemental reserves earn interest. Furthermore, the Federal Reserve Act empowers the Board of Governors, after consultation with Congress, to impose, for periods of up to 180 days, ratios

outside the regular bounds established by the act and to apply requirements to other classes of liabilities.

To provide banks with flexibility in meeting their reserve requirements, the Federal Reserve requires banks to hold an average amount of reserves over a two-week maintenance period rather than a specific amount on each day. The Federal Reserve also offers reserve carry-forward options within certain limits; that is, excess reserves of up to 4 percent of reserve and clearing-balance requirements during the maintenance period may be carried forward and used to help satisfy requirements in the next period. Any deficiency of up to 4 percent of a bank's reserve and clearing-balance requirements during a maintenance period similarly may be carried forward to be made up by the holding of additional reserves in the next period. A penalty equal to the discount rate plus 2 percentage points is levied against reserve deficiencies beyond the carry-forward amount.

### Relation to Open Market Operations

The reserve requirement structure specified in the MCA was designed primarily to tighten the link between reserves and M1. At the time the act was written, the Federal Reserve was focusing on controlling growth in M1 to foster the nation's economic objectives. A tight link between reserves and M1 was considered crucial to the Federal Reserve's efforts to exercise precise, short-run control of M1. By making all M1 deposits at all depositories subject to reserve requirements and by extending requirements to some nontransaction deposits as well, the MCA broadened the reserve base. It increased the number of institutions bound by reserve requirements to hold balances at the Federal Reserve, thereby strengthening the System's ability to influence aggregate levels of deposits by manipulating the quantity of reserves. The MCA also improved the predictability of the link between reserves and M1 by vastly simplifying the existing reserve requirement structure: It made the components of M1 subject to more uniform reserve ratios so that shifts among different types of deposits or among institutions of various sizes or types no longer altered the money-reserves relationship.

In 1982, the Federal Reserve took another step to improve its short-run control of M1 by switching to a contemporaneous re-

serve requirement (CRR) scheme. It made the period in which banks must maintain their reserves against transaction deposits virtually contemporaneous with the period in which deposit levels are computed for determining reserve requirements. This move tightened the real-time link between reserves and M1. In so doing, the Federal Reserve remedied a weakness in the short-run monetary control mechanism of the reserves-based operating procedure employed at the time.

Ironically, by 1984, when the CRR scheme was instituted, the Federal Reserve had shifted its attention away from short-run, reserves-based control of M1 and had begun to focus on M2. The latter aggregate appeared more closely linked to the objectives of policy than did M1, which had begun to behave much differently in relation to the economy, in part because it had become highly sensitive to interest rates after the authorization of nationwide NOW accounts and the general deregulation of interest rates on deposits. Thus, the basic structure of reserve requirements, which had been meticulously designed to facilitate the control of M1 through a reserves-oriented targeting procedure, had come to be seen by some as an anachronism.

**R**eserve requirements provide a stable, predictable demand for aggregate reserves.

Actually, reserve requirements continue to be important in the conduct of monetary policy, partly because they provide a stable, predictable demand for aggregate reserves. Without reserve requirements, banks would still hold some balances at the Federal Reserve to meet their clearing needs. The exact amount of balances that banks wish to hold for clearing purposes may vary considerably from day to day, however, and the Federal Reserve cannot precisely forecast it. By making reserve requirements the binding constraint on banks' demand for reserves—that is, by keeping required balances above the shifting and unpredictable level needed for clearing purposes—the Federal Reserve can more accurately determine the banking system's demand for reserves. Thus, it can more readily achieve a desired degree of pressure on bank reserve positions by manipulating the supply of reserves.

Moreover, the level of required reserves and the averaging method used to meet it afford banks flexibility that helps smooth fluctuations in reserve markets. Banks use this flexibility by sub-



stituting reserves on one day of the period, when reserves are expected to be less costly, for those on another day, when reserves are expected to be more costly. This flexibility would be reduced if most reserve balances were needed for purposes of clearing.

Depositories that have insufficient required reserve balances to meet their clearing needs can, under the provisions of the MCA, open clearing accounts. Banks can contract with the Federal Reserve to hold an average amount of their clearing balances in their reserve accounts over the two-week reserve maintenance period. If they fail to hold the amount required under the contract, they are penalized, much as they would be if they failed to hold sufficient balances to meet their reserve requirements. Unlike required reserve balances, however, which do not earn interest, banks receive earnings credits on clearing balances held under their contractual agreement. They may use these earnings credits to defray the costs of Federal Reserve priced services. Thus, for a bank, opening a clearing balance account is a virtually costless means of boosting the average balance it must hold in its reserve account over the maintenance period, of providing extra insurance against overdrafts, and of adding flexibility to reserve management.

### Changes in Required Reserve Ratios

Changes in reserve requirement ratios—the percentage of deposits of certain types that depositories must hold in reserve—can be a useful supplementary tool of monetary policy. Increasing the ratios reduces the volume of deposits that can be supported by a given level of reserves and, in the absence of other actions, reduces the money stock and raises the cost of credit. Decreasing the ratios leaves depositories initially with excess reserves, which can induce an expansion of bank credit and deposit levels and a decline in interest rates; it also lowers the costs of bank funding by reducing the amount of non-interest-bearing assets that must be held in reserve.

However, because even small changes in reserve ratios can substantially affect required reserves, adjustments to reserve requirements are not well suited to the day-to-day implementation of monetary policy. Indeed, to avoid large, sudden effects on deposits and credit, changes in reserve ratios have, when implemented,

typically been at least partially offset by open market operations. Also, as reserve requirements are an important variable in banks' business calculations, frequent changes in them would unnecessarily complicate financial planning by these institutions. As a result, the Federal Reserve changes reserve requirements only infrequently and usually merely to reinforce or to supplement the effects of open market operations and discount policy on overall monetary and credit conditions. Changes in reserve ratios have also been used at times for their announcement effect—that is, to emphasize a particular direction of policy and to influence the public's perception of the thrust of monetary policy.

**T**he Federal Reserve changes reserve requirements only infrequently.

The use of reserve requirements to supplement monetary policy was somewhat more prevalent in the 1960s and 1970s, when the Federal Reserve sought to influence the expansion of money and credit partly by manipulating bank funding costs. As financial innovation spawned new sources of bank funding, the Federal Reserve adapted reserve requirements to these new financial products. It also often changed requirements on specific bank liabilities that were most frequently used to fund new lending.

As banks relied more heavily on the issuance of large-denomination time deposits, such as certificates of deposit, to fund their acquisitions of assets, the Federal Reserve periodically altered reserve requirements on these instruments and thereby affected the cost of their issuance and, hence, the supply of credit through banks. It sometimes supplemented its actions by placing a marginal reserve requirement on large time deposits—that is, an additional requirement applied only to each new increment of these deposits. Reserve requirements were also imposed on other, newly emerging liabilities that were the functional equivalents of deposits, such as Eurodollar borrowings. The imposition of requirements on these and other managed liabilities was especially useful in the late 1970s as the Federal Reserve sought to curb the expansion of money and credit and thereby reduce inflation.

More recently, the Federal Reserve has taken steps to reduce reserve requirements. In December 1990, the required reserve ratio on nonpersonal time deposits was pared from 3 percent to zero, and in April 1992 the 12 percent requirement on transaction deposits was trimmed to 10 percent. These actions were partly motivated by evidence suggesting that some lenders had adopted a

more cautious approach to extending credit, which was increasing the cost and restricting the availability of credit to some types of borrowers. By reducing funding costs and thus providing depositories with easier access to capital markets, the cuts in reserve requirements put banks in a better position to extend credit. The reduction for nonpersonal time deposits was aimed directly at spurring bank lending because these accounts are often used as a marginal source for funding. ■