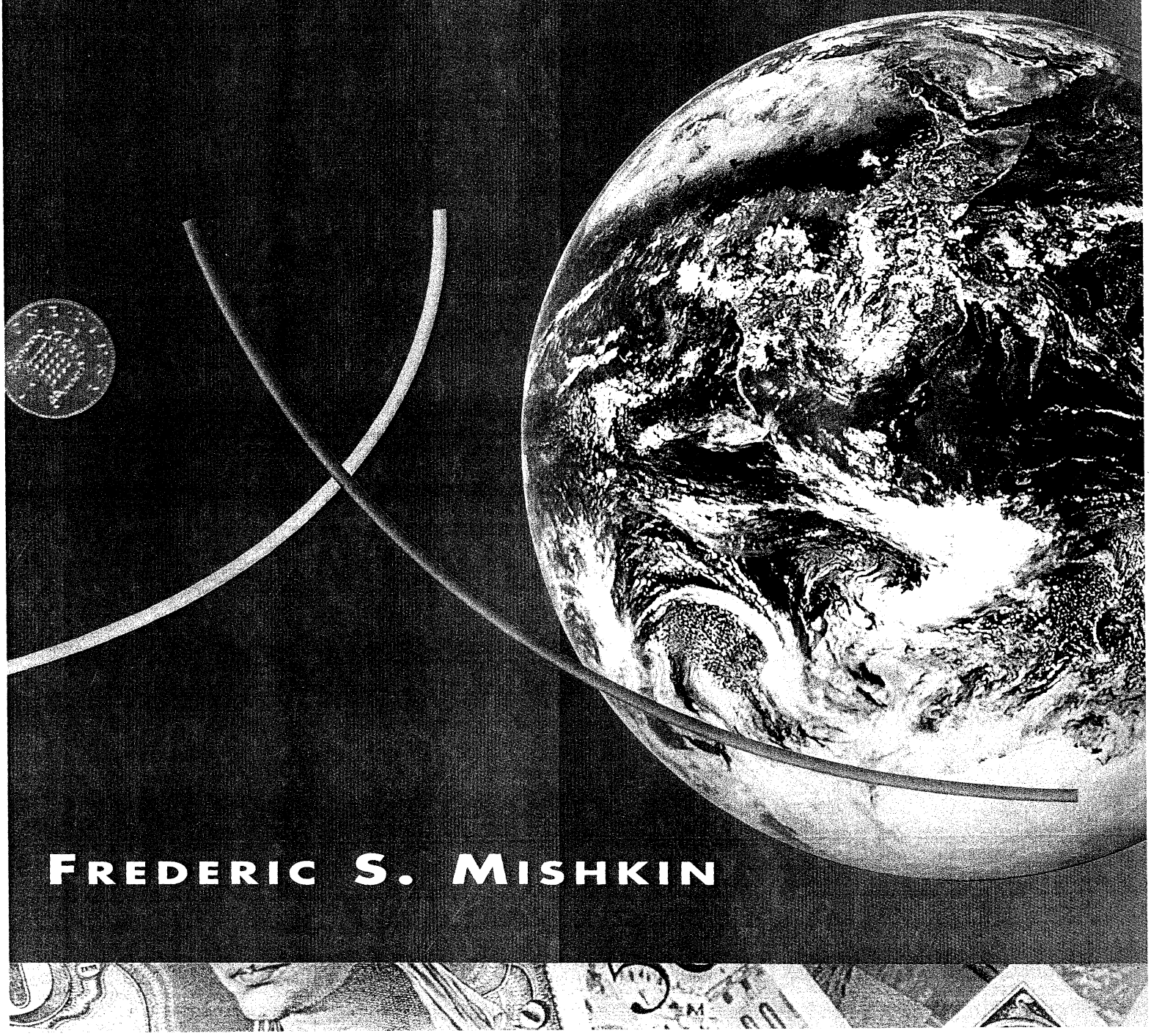
THE ECONOMICS OF MONEY, BANKING, AND FINANCIAL MARKETS

FOURTH EDITION



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Chapter 20

THE TOOLS OF MONETARY POLICY

PREVIEW In the chapters describing the money supply process and the structure of the Federal Reserve System, we mentioned three policy tools that the Fed can use to manipulate the money supply: open market operations, which affect the monetary base; changes in the discount rate, which affect the monetary base by influencing the quantity of discount loans; and changes in reserve requirements, which affect the money multiplier. Because the Fed's use of these policy tools has such impact on economic activity, it is important to understand how the Fed wields them in practice and how relatively useful each tool is. In this chapter we also seek an answer to the following question: How can the use of these policy tools be modified to improve control over the money supply?

OPEN MARKET OPERATIONS

Open market operations are the most important monetary policy tool because they are the primary determinant of changes in the monetary base, the main source of fluctuations in the money supply. Open market purchases expand the monetary base, thereby raising the money supply, and open market sales shrink the monetary base, lowering the money supply. (Details and T-accounts for this mechanism are found in Chapter 16.) Now that we understand the factors that influence the monetary base, we can examine how the Federal Reserve conducts open market operations with the object of controlling the money supply.

There are two types of open market operations: **Dynamic open market operations** are intended to change the level of reserves and the monetary base, and **defensive open market operations** are intended to offset movements in other factors that affect the monetary base, such as changes in Treasury deposits with the Fed or float. The Fed conducts open market operations in U.S. Treasury

and government agency securities, especially U.S. Treasury bills.[1] The Fed conducts most of its open market operations in Treasury securities because the market for these securities is the most liquid and has the largest trading volume. It has the capacity to absorb the Fed's substantial volume of transactions without experiencing excessive price fluctuations that would disrupt the market.

As we saw in Chapter 18, the decision-making authority for open market operations is the Federal Open Market Committee (FOMC). The actual execution of these operations, however, is conducted by the trading desk at the Federal Reserve Bank of New York. The best way to see how these transactions are executed is to look at a typical day at the trading desk, located in a room on the eighth floor of the Federal Reserve Bank of New York.

A Day at the Trading Desk

The manager for domestic operations supervises the traders who execute the purchases and sales of securities. Let's call this manager Jim. He starts his workday by reading a report that estimates the total amount of reserves in the banking system as of the night before. This information on reserves helps him decide how large a change in reserves is needed to obtain a desired level of the money supply. He also examines the current federal funds rate, which provides information about the amount of reserves in the banking system. If the banking system has a large amount of reserves, many banks will have excess reserves to lend to other banks, and the federal funds rate will probably fall. If the level of reserves is low, few banks will have excess reserves to lend, and the federal funds rate will probably rise.

At 9:00 A.M. Jim has discussions with several government securities dealers (who operate out of private firms or commercial banks) to get a feel for what may happen to the prices of these securities in the course of the day. After the meeting with the dealers, at around 10:00 A.M., he receives a report from the research staff with a detailed forecast of what will be happening to some of the short-term factors affecting the monetary base (discussed in Chapter 19). For example, if float is predicted to decrease because good weather throughout the country is speeding up check delivery, Jim knows that he will have to conduct a defensive open market operation (a purchase of securities) to offset the expected decline in the monetary base from the decreased float. However, if Treasury deposits or foreign deposits with the Fed are predicted to fall, a defensive open market sale would be needed to offset the expected increase in the monetary base. The report also predicts the change in the public's holding of cur-

[1]The Fed does not conduct open market operations in privately issued securities in order to avoid conflicts of interest. (For example, think of the conflict of interest if the Federal Reserve purchased bonds issued by a company owned by the chairman's brother-in-law.)

rency. If currency holdings are expected to rise, then, as we have seen in our money supply model of Part IV, an open market purchase is needed to raise the monetary base to prevent the money supply from falling.

At 10:15 A.M. Jim or a member of his staff telephones the U.S. Treasury to compare his staff's forecasts on such items as Treasury deposits with the Treasury's forecasts. Because the Treasury may have additional information on the changes in its own deposits, its forecasts help Jim refine his staff's forecasts. The call to the Treasury is also used to procure other pieces of helpful information—for example, the timing of future Treasury sales of securities—that provide clues as to what will be happening in the bond market.

After collecting all these data, Jim looks at the directive he has received from the FOMC, which indicates the desired growth rate of several monetary aggregates (expressed as a range, say, 4% to 6% at an annual rate) and the range on the federal funds rate (say, 10% to 14%) that the FOMC would like to achieve. He then figures out the dynamic open market operations that are needed to satisfy the FOMC directive. By combining the necessary defensive open market operations with the desired dynamic open market operations, the manager puts together the "game plan" for open market operations that day.

The whole process is completed by 11:15 A.M., at which time Jim makes daily conference calls to several members of the FOMC and outlines his strategy. After the plan is approved, normally a little after 11:30 A.M., he has the traders in the trading room call the primary dealers (private bond dealers numbering around 40) who trade government securities and request selling price quotations (if open market purchases are planned). For instance, if Jim wants to purchase $250 million of Treasury bills in order to increase the monetary base, the traders list on a large board the quantity of bills at the selling prices that dealers are asking, with the offers ranked from the lowest to the highest price. Since the Fed wants to get the best prices possible, it goes down the list and purchases bills until the desired amount of $250 million has been bought.

Collecting quotations and executing trades is completed around 12:15 P.M. The trading room then quiets down, but the traders continue to monitor conditions in the money market and in bank reserves in the rare instance Jim decides that additional trades are necessary.

Sometimes the open market operations are conducted by straightforward purchases or sales of securities. But ordinarily the trading desk engages in two other types of transactions. In a **repurchase agreement** (often called a **repo**), the Fed purchases securities with an agreement that the seller will repurchase them in a short period of time, usually less than a week. A repo is actually a temporary open market purchase and is an especially desirable way of conducting a defensive open market purchase that will be reversed shortly. When the Fed wants to conduct a temporary open market sale, it engages in a **matched sale-purchase transaction** (sometimes called a **reverse repo**) in which the Fed sells securities and the buyer agrees to sell them back to the Fed in the near future.

Advantages of Open Market Operations

Open market operations have several advantages over the other tools of monetary policy.

1. Open market operations occur at the initiative of the Fed, which has complete control over their volume. This control is not found, for example, in discount operations in which the Fed can encourage or discourage banks to take out discount loans by altering the discount rate but cannot directly control the volume of discounting.

2. Open market operations are flexible and precise; they can be used to any extent. No matter how small a change in reserves or the monetary base is desired, open market operations can achieve it with a small purchase or sale of securities. Conversely, if the desired change in reserves or the base is very large, the open market operations tool is strong enough to do the job through a very large purchase or sale of securities.

3. Open market operations are easily reversed. When a mistake is made in conducting an open market operation, the Fed can immediately reverse its use of this tool. If the Fed decides that the money supply is growing too fast because it has made too many open market purchases, it can immediately make a correction by conducting open market sales.

4. Open market operations can be implemented quickly; they involve no administrative delays. When the Fed decides that it wants to change the monetary base or reserves, it just places an order with a securities dealer, and the trade is executed immediately.

DISCOUNT POLICY

Discount policy, which primarily involves changes in the discount rate, affects the money supply by affecting the volume of discount loans and the monetary base. A rise in discount loans adds to the monetary base and expands the money supply; a fall in discount loans reduces the monetary base and shrinks the money supply. The Federal Reserve facility at which discount loans are made to banks is called the **discount window.** It is easiest to understand how the Fed affects the volume of discount loans by looking at how the discount window operates.

Operation of the Discount Window

The Fed can affect the volume of discount loans in two ways: by affecting the *price* of the loans (the discount rate) or by affecting the *quantity* of the loans through its administration of the discount window.[2]

[2]Each Federal Reserve bank administers its own discount window facility. In our discussion here of discount policy, when we discuss the Fed's administration of the discount window, we are actually referring to the district banks' administration of their discount window facilities.

The mechanism through which the Fed's discount rate affects the volume of discount loans is straightforward: A higher discount rate raises the cost of borrowing from the Fed, so banks will take out fewer discount loans; a lower discount rate makes discount loans more attractive to banks, and loan volume will increase.

To examine how the Fed affects the quantity of discount loans through its administration of the discount window, we have to examine more closely how these loans are made.

The Fed's discount loans to the banks are of three types: adjustment credit, seasonal credit, and extended credit. *Adjustment credit loans,* the most common type, are intended to be used by banks to help them with short-term liquidity problems that may result from a temporary deposit outflow. Adjustment credit, which can be obtained with a phone call, is expected to be repaid fairly quickly—by the end of the next business day for the larger banks. *Seasonal credit* is given to meet the seasonal needs of a limited number of banks in vacation and agricultural areas that have a seasonal pattern. *Extended credit,* given to banks that have experienced severe liquidity problems because of deposit outflows, is not expected to be repaid quickly. Banks obtaining this type of credit have to submit a proposal outlining the need for extended credit and a plan for restoring the liquidity of the bank. The most important example of extended credit to a bank was the Fed's loans to Continental Illinois in 1984, which exceeded $5 billion.

The Fed administers the discount window in several ways to prevent its credit funds from being misused and to limit this borrowing. In recent years, as depicted in Figure 1, the discount rate has frequently been below market interest rates, so there is a great incentive for banks to take out low-interest discount loans from the Fed and use the proceeds to make loans or purchase securities with higher interest rates. (Figure 3 in Chapter 17 shows that the volume of discount loans rises abruptly when the discount rate falls below market interest rates.) Banks are not supposed to make a profit from discount loans, and the Fed tries to prevent that by setting rules for individual banks that limit how often they can take out discount loans. If a bank comes to the discount window too frequently, the Fed will deny it loans in the future. Its position is that coming to the discount window is a privilege, not a right.

A bank faces three costs when it borrows from the discount window: the interest cost represented by the discount rate, the cost of complying with Fed investigations of the soundness of the bank when it borrows at the discount window, and the cost of being more likely to be turned down for a discount loan in the future because of too frequent trips to the discount window. The Fed's setting of rules for use of the discount window is frequently referred to as *moral suasion.*

Lender of Last Resort

In addition to its use as a tool to influence the monetary base and the money supply, discounting is important in preventing financial panics. When the Federal Reserve System was created, its most important role was intended to be as

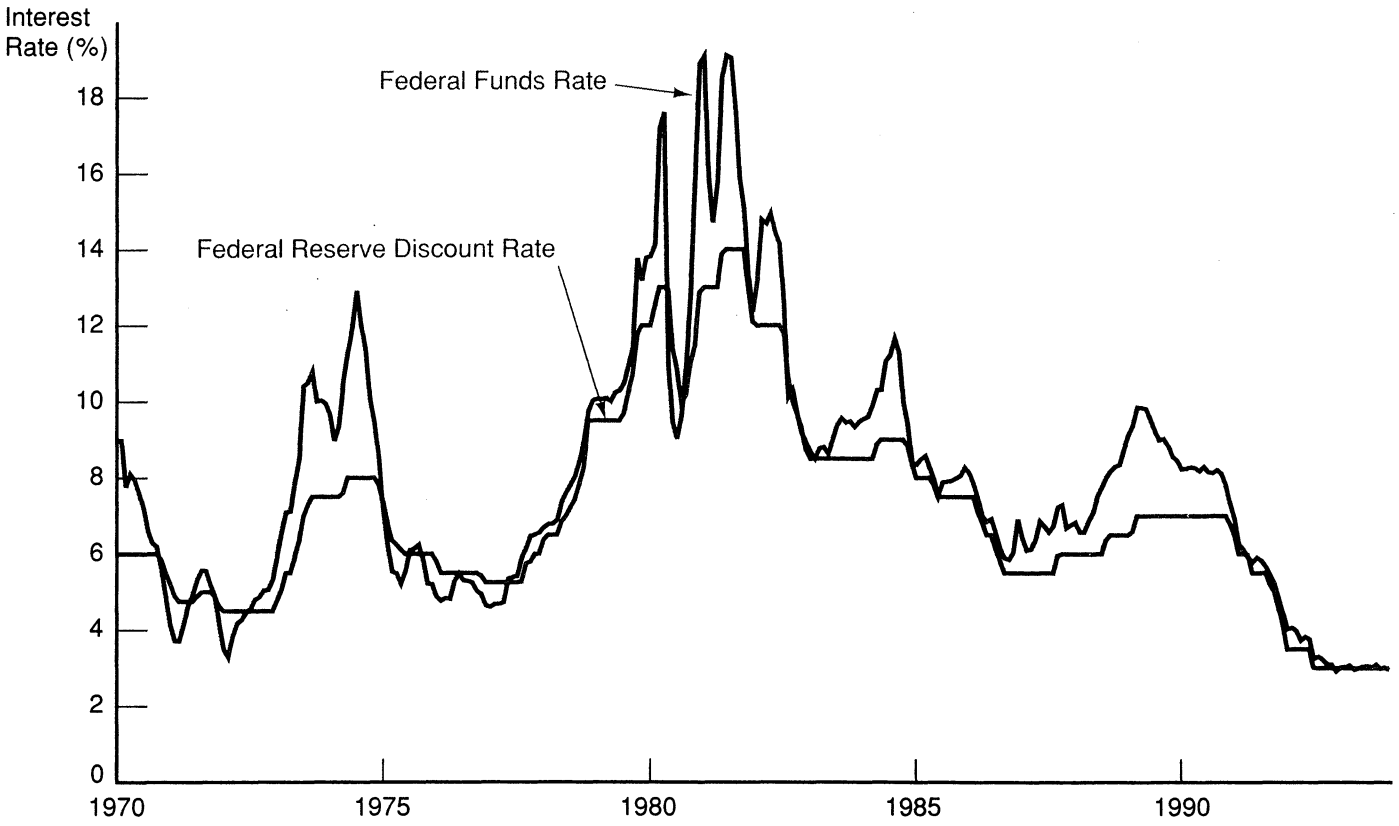

FIGURE 1 Market Interest Rates and the Discount Rate, 1970–1993
Source: Federal Reserve *Bulletin.*

the lender of last resort; it was to provide reserves to the banking system when bank failures threatened to get out of control, thereby preventing bank and financial panics. Discounting is a particularly effective way to provide reserves to the banking system during a banking crisis because reserves are immediately channeled to the banks that need them most.

Using the discount tool to avoid financial panics by performing the role of lender of last resort is an extremely important requirement of successful monetary policymaking. As we demonstrated with our money supply analysis in Chapter 17, the bank panics in the 1930–1933 period were the cause of the sharpest decline in the money supply in U.S. history, which many economists see as the driving force behind the collapse of the economy during the Great Depression. Financial panics can also severely damage the economy because they interfere with the ability of these markets to move funds to people with productive investment opportunities (Chapter 9).

Unfortunately, the discount tool has not always been used by the Fed to prevent financial panics, as our discussion of massive bank failures during the Great Depression in Chapter 17 indicated. The Fed learned from its mistakes of that period and has performed admirably in its role of lender of last resort in the post–World War II period. Two examples of the use of the Fed's discount

Box 1

DISCOUNTING TO TROUBLED BANKS: FRANKLIN NATIONAL BANK AND CONTINENTAL ILLINOIS

In May 1974, the public learned that Franklin National Bank, the twentieth-largest bank in the United States, with deposits close to $3 billion, had suffered large losses in foreign exchange trading and had made many bad loans. Large depositors, whose deposits exceeded the $100,000 limit insured by the FDIC, began to withdraw their deposits, and the failure of the bank was imminent. Because the immediate failure of Franklin National would have had repercussions on other vulnerable banks, possibly leading to more bank failures, the Fed announced that discount loans would be made available to Franklin National so that depositors, including the largest, would not suffer any losses. By the time that Franklin National was merged into the European-American Bank in October 1974, the Fed had lent Franklin National the sum of $1.75 billion, nearly 5% of the total amount of reserves in the banking system. The quick Fed action was completely successful in preventing any other bank failures, and a possible bank panic was avoided.

A 1984 episode involved Continental Illinois National Bank and the Fed in a similar action. Continental Illinois had made many bad loans (primarily to businesses in the energy industry and to foreign countries), and rumors of financial trouble in early May 1984 caused large depositors to withdraw over $10 billion of deposits from the bank. The FDIC arranged a rescue effort in July 1984, which culminated in a $4.5 billion commitment of funds to save the bank; still, the Fed had to lend Continental Illinois over $5 billion—making its $1.75 billion loan to Franklin National look like small potatoes! The Fed's action prevented further bank failures, and again a potential bank panic was averted.

weapon to avoid bank panics are the provisions of huge loans to Franklin National Bank in 1974 and to Continental Illinois ten years later (see Box 1).

At first glance it might appear as though the presence of the FDIC, which insures depositors from losses due to a bank's failure up to a limit of $100,000 per depositor, would make the lender-of-last-resort function of the Fed superfluous. (The FDIC is described in detail in Chapter 13.) There are two reasons why this is not the case. First, it is important to recognize that the FDIC's insurance fund (which guarantees deposits under $100,000) amounts to less than 1% of the amount of these deposits outstanding. If a large number of bank failures occurred, the FDIC would not be able to cover all the depositors' losses. Indeed, the large number of bank failures in recent years, described in Chapter 13, has

led to large losses and a shrinkage in the FDIC's insurance fund, which has reduced the FDIC's ability to cover depositors' losses. This fact has not weakened the confidence of small depositors in the banking system because the Fed has been ready to stand behind the FDIC and to provide whatever reserves the banking system needs to prevent bank panics. Second, more than $300 billion of large-denomination deposits in the banking system are not guaranteed by the FDIC because they exceed the $100,000 limit. A loss of confidence in the banking system could still lead to runs on banks from the large-denomination depositors, and bank panics could still occur despite the existence of the FDIC. The importance of the Federal Reserve's role as lender of last resort is, if anything, more important today because of the growing number of bank failures experienced in the 1980s and 1990s.

Not only can the Fed be a lender of last resort to banks, but it can also play the same role for the financial system as a whole. The Fed's discount policy can be used to prevent financial panics that are not triggered by bank failures. The Black Monday stock market crash of 1987 provides a clear-cut example of how the Fed can prevent a financial panic by using the discount window to keep markets operating (see Box 2).

Although the Fed's role as the lender of last resort has the benefit of preventing bank and financial panics, it does have a cost. If a bank expects that the Fed will provide it with discount loans when it gets into trouble, as occurred with Continental Illinois, it will be willing to take on more risk knowing that the Fed will come to the rescue. The Fed's lender-of-last-resort role has thus created a moral hazard problem similar to the one created by deposit insurance (discussed in Chapter 13): Banks take on more risk, thus exposing the deposit insurance agency, and hence taxpayers, to greater losses. The moral hazard problem is most severe for large banks, which may believe that the Fed and the FDIC view them as "too big to fail"; that is, they will always receive Fed loans when they are in trouble because their failure would be likely to precipitate a bank panic.

Similarly, Federal Reserve actions to prevent financial panic, as occurred after the October 1987 stock market crash, may encourage financial institutions other than banks to take on greater risk. They, too, expect the Fed to ensure that they could get loans if a financial panic seemed imminent. When the Fed considers using the discount weapon to prevent panics, it therefore needs to consider the trade-off between the moral hazard cost of its role as lender of last resort and the benefit of preventing financial panics. This trade-off explains why the Fed must be careful not to perform its role as lender of last resort too frequently.

Announcement Effect

Discount policy serves another function for the Federal Reserve: It can be used to signal the Fed's intentions about future monetary policy. Hence if the Fed decides to slow down expansion in the economy by letting interest rates rise, it can

Box 2

DISCOUNTING TO PREVENT A FINANCIAL PANIC: THE BLACK MONDAY STOCK MARKET CRASH OF 1987

Although October 19, 1987, dubbed "Black Monday," will go down in the history books as the largest one-day decline in stock prices to date, it was on Tuesday, October 20, 1987, that financial markets almost stopped functioning. Felix Rohatyn, one of the most prominent men on Wall Street, stated flatly: "Tuesday was the most dangerous day we had in 50 years."* Much of the credit for prevention of a market meltdown after Black Monday must be given to the Federal Reserve System and the chairman of the Board of Governors, Alan Greenspan.

The stress of keeping markets functioning during the sharp decline in stock prices on Monday, October 19, meant that many brokerage houses and specialists (dealer-brokers who maintain orderly trading on the stock exchanges) were severely in need of additional funds to finance their activities. However, understandably enough, New York banks, as well as foreign and regional U.S. banks, growing very nervous about the financial health of securities firms, began to cut back credit to the securities industry at a time when it was most needed. Panic was in the air. One chairman of a large specialist firm commented that on Monday, "from 2 P.M. on, there was total despair. The entire investment community fled the market. We were left alone on the field." It was time for the Fed, like the cavalry, to come to the rescue.

Upon learning of the plight of the securities industry, Greenspan and E. Gerald Corrigan, president of the Federal Reserve Bank of New York and the Fed official most closely in touch with Wall Street, became fearful of a spreading collapse of securities firms. To prevent this from occurring, Greenspan announced before the market opened on Tuesday, October 20, the Federal Reserve System's "readiness to serve as a source of liquidity to support the economic and financial system." In addition to this extraordinary announcement, the Fed made it clear that it would provide discount loans to any bank that would make loans to the securities industry. As one New York banker said, the Fed's message was, "We're here. Whatever you need, we'll give you."

The outcome of the Fed's timely action was that a financial panic was averted. The markets kept functioning on Tuesday and a market rally ensued that day with the Dow Jones Industrial Average climbing over 100 points.

*"Terrible Tuesday: How the Stock Market Almost Disintegrated a Day After the Crash," *Wall Street Journal,* Friday, November 20, 1987, p. 1. This article provides a fascinating and more detailed view of the events described here and is the source of all the quotations cited.

signal its intent to do so by raising the discount rate. This signal may help slow the economic expansion because the public will expect monetary policy to be less expansionary in the future.

The problem with the announcement effect is that it is subject to misinterpretation. In Chapter 17 we saw that if market interest rates are rising relative to the discount rate, the volume of discount loans will rise. In such a situation, the Fed may have no intention of changing its policy to be less expansionary, but to keep the amount of discounting from becoming excessive, it may raise the discount rate to keep it more in line with market interest rates. When the discount rate rises, the market may interpret this as a signal that the Fed is moving to a contractionary policy when that is not the case. The announcement effect may be a hindrance rather than a help. A more sensible approach is probably for the Fed to communicate directly with the public by announcing its intentions outright and then carrying them out. Fed announcements would be believed, and the market would respond accordingly.

Advantages and Disadvantages of Discount Policy

The most important advantage of discount policy is that the Fed can use it to perform its role of lender of last resort. Experiences with Continental Illinois, Franklin National Bank, and the Black Monday crash indicate that this role has become more important in the past couple of decades. Yet two significant disadvantages of discount policy cause many economists to suggest that it should not be used as a tool of monetary control. First is the confusion about the Federal Reserve's intentions that may be created by the announcement of discount rate changes. Second, when the Fed sets the discount rate at a particular level, large fluctuations will occur in the spread between market interest rates and the discount rate $(i - i_d)$ as market interest rates change. As we have seen in Chapter 17 (see Figure 3), these fluctuations lead to large unintended fluctuations in the volume of discount loans and hence in the money supply. Discount policy can make it harder to control the money supply.

The use of discount policy to control the money supply seems to have little to recommend it. Not only does it suffer from the two disadvantages described, but it is also less effective than open market operations in controlling the money supply for two additional reasons. Open market operations are completely at the discretion of the Fed, whereas the volume of discount loans is not—the Fed can change the discount rate, but it can't make banks borrow. In addition, open market operations are more easily reversed than changes in discount policy. The disadvantages of discount policy as a tool of monetary control have prompted economists to suggest several proposed reforms of discount policy.

Proposed Reforms of Discount Policy

Should Discounting Be Abolished? Milton Friedman and other economists have proposed that the Fed should terminate its discount facilities in order to establish better monetary control.[3] Friedman has contended that the presence of the FDIC eliminates the possibility of bank panics; therefore, the use of discounting is no longer as necessary. Abolishing discounting would eliminate fluctuations in the monetary base due to changes in the volume of discount loans and so would reduce unintended fluctuations in the money supply.

Critics of Friedman's proposal emphasize that the FDIC is effective at preventing bank panics only because the Fed stands behind it and plays the role of lender of last resort. Furthermore, as we have seen in the case of the Black Monday crash, the Federal Reserve's discount facilities can be used to avert a financial panic unrelated to bank failures. Because of the increased number of bank failures in recent years, the need for the Fed's use of the discount facility to preserve the health of the financial system has become more apparent. Hence most economists do not support Friedman's proposal.

Should the Discount Rate Be Tied to a Market Rate of Interest? An alternative proposal, much less radical than abolishing discounting, is that the discount rate be tied to a market rate of interest, such as the three-month U.S. Treasury bill rate or the federal funds rate. One version of this proposal, called the *penalty discount rate concept,* involves setting the discount rate at a fixed amount above the market interest rate—say, at 3 percentage points above the three-month bill rate—and allowing banks to borrow all the funds they want at that rate.

The advantages of tying the discount rate to a market rate of interest are many. First, the Fed could continue to use discounting to perform its role of lender of last resort. Second, most fluctuations in the spread between market interest rates and the discount rate $(i - i_d)$ would be eliminated, removing a major source of fluctuations in the volume of discount loans. Third, if the penalty discount rate concept were used, the administration of the discount window would be greatly simplified because banks would no longer be borrowing from the discount window to make a profit. Fourth, because discount rate changes would be automatic, there would be no false signals about the Federal Reserve's intentions, and the announcement effect would disappear.

Tying the discount rate to a market rate of interest is supported by many professional economists. However, the Federal Reserve has opposed this proposed reform, and a possible reason is provided by the theory of bureaucratic behavior discussed in Chapter 18. By tying the discount rate to a market interest

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[3]Milton Friedman, *A Program for Monetary Stability* (New York: Fordham University Press, 1960); Marvin Goodfriend and Robert G. King, "Financial Deregulation, Monetary Policy, and Central Banking," *Federal Reserve Bank of Richmond Review* 74 (1988): 3–22.

rate, the Fed would be giving up one of its policy tools, and this it may be reluctant to do because it implies giving up some of its power. Another reason why the Fed might want to keep the discount rate fixed when market interest rates change is that it thinks that this would reduce fluctuations in market interest rates. Such a policy would cause discount loans and hence reserves to rise when market interest rates rise, possibly countering some of the rise in market interest rates.

Despite the Federal Reserve's objections to tying the discount rate to a market rate of interest, we can see in Figure 1 that the Fed already pursues a discount policy that is not too far removed from this proposal. It does not let the discount rate move too far away from market rates of interest because it does not want to let the volume of discount loans get out of hand.

RESERVE REQUIREMENTS

As we saw in Chapter 16, changes in reserve requirements affect the money supply by causing the money supply multiplier to change. A rise in reserve requirements reduces the amount of deposits that can be supported by a given level of the monetary base and will lead to a contraction of the money supply. Conversely, a decline in reserve requirements leads to an expansion of the money supply because more multiple deposit creation can take place. The Fed has had the authority to vary reserve requirements since the 1930s, and this is a powerful way of affecting the money supply. Indeed, changes in reserve requirements have such large effects on the money supply that the Fed rarely resorts to using this tool to control it.

The Depository Institutions Deregulation and Monetary Control Act of 1980 provided a simpler scheme for setting reserve requirements. All depository institutions, including commercial banks, savings and loan associations, mutual savings banks, and credit unions, are now subject to the same reserve requirements, as follows: Required reserves on all checkable deposits—including non-interest-bearing checking accounts, NOW accounts, super-NOW accounts, and ATS (automatic transfer savings) accounts—are equal to 3% of the bank's first $51.9 million of checkable deposits[4] and 10% of the checkable deposits over $51.9 million, and the percentage set initially at 10% can be varied between 8% and 14% at the Fed's discretion. In extraordinary circumstances, the percentage can be raised as high as 18%.

[4]The $51.9 million figure is as of the end of 1993. Each year, the figure is adjusted upward by 80% of the percentage increase in checkable deposits in the United States.

Advantages and Disadvantages of Reserve Requirement Changes

The main advantage of using reserve requirements to control the money supply is that they affect all banks equally and have a powerful effect on the money supply. The fact that changing reserve requirements is a powerful tool, however, is probably more of a curse than a blessing because small changes in the money supply are hard to engineer by varying reserve requirements. With checkable deposits currently hovering near the $800 billion level, a ½ percentage-point increase in the reserve requirement on these deposits would reduce excess reserves by $4 billion. Because this decline in excess reserves would result in multiple deposit contraction, the decline in the money supply would be even greater. It is true that small changes in the money supply could be obtained by extremely small changes in reserve requirements (say, by 0.001 percentage point), but because it is so expensive to administer changes in reserve requirements, such a strategy is not practical. Using reserve requirements to fine-tune the money supply is like trying to use a jackhammer to cut a diamond.

Another disadvantage of using reserve requirements to control the money supply is that raising the requirements can cause immediate liquidity problems for banks with low excess reserves. When the Fed has raised these requirements in the past, it has usually softened the blow by conducting open market purchases or by making the discount window more available, thus providing reserves to banks that needed them. Continually fluctuating reserve requirements would also create more uncertainty for banks and make their liquidity management more difficult.

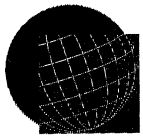
The policy tool of changing reserve requirements does not have much to recommend it, and it is rarely used.

Proposed Reforms of Reserve Requirements

Two extreme proposals have been suggested to reform reserve requirements. One is to abolish reserve requirements entirely, and the other is to set required reserves at 100% of deposits.

Should Reserve Requirements Be Abolished? As we see in Box 3, central banks in many countries have been reducing reserve requirements, and some have eliminated them entirely. If you had studied only the simple deposit multiplier (Chapter 15), you might think that abolishing reserve requirements would result in an infinite money supply. However, as our more sophisticated money supply model (Chapters 16 and 17) indicates, this reasoning would be incorrect. Banks would still want to hold reserves to protect themselves against deposit outflows, and there

Box 3 A Global Perspective



WHY HAS THERE BEEN A WORLDWIDE DECLINE IN RESERVE REQUIREMENTS?

In recent years, central banks in many countries in the world have been reducing or eliminating their reserve requirements. In the United States, the Federal Reserve eliminated reserve requirements on time deposits in December 1990 and lowered reserve requirements on checkable deposits from 12% to 10% in April 1992. Canada has gone a step further: Financial market legislation taking effect in June 1992 eliminated all reserve requirements over a two-year period. The central banks of Switzerland, New Zealand, and Australia have also eliminated reserve requirements entirely. What explains the downward trend for reserve requirements in most countries?

You may recall from Chapter 10 that reserve requirements act as a tax on banks. Because central banks typically do not pay interest on reserves, the bank earns nothing on them and loses the interest that could have been earned if the bank held loans instead. The cost imposed on banks from reserve requirements means that banks, in effect, have a higher cost of funds than intermediaries not subject to reserve requirements, making them less competitive. We have already seen in Chapter 12 that additional market forces have been making banks less competitive, weakening the health of banking systems throughout the world. Central banks have thus been reducing reserve requirements to make banks more competitive and stronger.* The Federal Reserve was explicit about this rationale for its April 1992 reduction when it announced it on February 18, 1992, stating in its press release that "the reduction . . . will reduce funding costs for depositories and strengthen their balance sheets. Over time, it is expected that most of these cost savings will be passed on to depositors and borrowers."

*Many economists believe that the Fed should pay market interest rates on reserves, another suggestion for dealing with this problem.

would still be a demand for currency. Both these factors would limit the size of the money supply.

The case for keeping reserve requirements must rest on the proposition that having reserve requirements results in a more stable money multiplier and hence a more controllable money supply. Since the evidence for or against this view is limited, the desirability of this proposed reform remains an open question.

Should Reserve Requirements Be Raised to 100%? At the same time that Milton Friedman suggested abolishing discounting, he also suggested that required

reserves be set equal to 100% of deposits.[5] With 100% reserve requirements, the money supply could be strictly controlled by the Fed because it would be equal to the monetary base. The advantage of this proposal is clear, but several major disadvantages surface. Banks would no longer be able to make loans because with a 100% reserve requirement, no excess reserves would be available. Loans would have to be made by other financial intermediaries. Not only would this restructuring of the banking system be extremely costly, but the financial intermediaries not subject to reserve requirements might develop ways of making their liabilities function more like checkable deposits in order to attract funds.[6] The outcome might be that the Fed would enjoy complete control of the *official* money supply, but the *economically relevant* money supply might be even less under the Fed's control because it is affected by the activities of the nonbank financial intermediaries. In addition, the Fed's control over the financial system could be weakened further because all the loan activity would be in the hands of financial institutions not subject to the Fed's reserve requirements.

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[5]Friedman, *Program for Monetary Stability*. This proposal was outlined earlier by Henry Simons in *Economic Policy for a Free Society* (Chicago: University of Chicago Press, 1948).

[6]We would expect this to happen because it would trigger the process of financial innovation discussed in Chapter 10.

SUMMARY

1. The number of open market operations conducted in any given day by the trading desk of the Federal Reserve Bank of New York is determined by the number of dynamic open market operations intended to change the monetary base and by the number of defensive open market operations used to offset other factors that affect the monetary base. Open market operations are the primary tool used by the Fed to control the money supply because they occur at the initiative of the Fed, are flexible, are easily reversed, and can be implemented quickly.
2. The volume of discount loans is determined by the discount rate and the discouragement of borrowing by moral suasion. Besides its effect on the monetary base and the money supply, discounting allows the Fed to perform its role as the lender of last resort. However, discount policy does make control of the money supply more difficult because it results in unintended fluctuations in the volume of discount loans and hence in the money supply. Many economists support tying the discount rate to a market interest rate to reduce these unintended fluctuations in the volume of discount loans.
3. Changing reserve requirements is too blunt a tool to use for controlling the money supply, and hence it is rarely used.

KEY TERMS

dynamic open market operations

defensive open market operations

repurchase agreement (repo)

matched sale-purchase transaction (reverse repo)

discount window

QUESTIONS AND PROBLEMS

*1. If the manager of domestic operations hears that a snowstorm is about to strike New York City, making it difficult to present checks for payment there, what defensive open market operations will the manager undertake?
2. During Christmastime, when the public's holdings of currency increase, what defensive open market operations typically occur? Why?
*3. If the Treasury has just paid for a supercomputer and as a result its deposits with the Fed fall, what defensive open market operations will the manager of domestic operations undertake?
4. If float decreases below its normal level, why might the manager of domestic operations consider it more desirable to use repurchase agreements to affect the monetary base rather than an outright purchase of bonds?
*5. Most open market operations are currently repurchase agreements. What does this tell us about the likely volume of defensive open market operations relative to dynamic open market operations?
6. "The only way that the Fed can affect the level of discount loans is by adjusting the discount rate." Is this statement true, false, or uncertain? Explain.
*7. If the Fed did not administer the discount window to limit borrowing, what do you predict would happen to the money supply if the discount rate were several percentage points below the interest rate on loans?
8. "If the discount rate were always kept above the interest rate on loans, the Fed would rarely have to administer the discount window to limit borrowing." Is this statement true, false, or uncertain? Explain.
*9. "Discounting is no longer needed because the presence of the FDIC eliminates the possibility of bank panics." Discuss.
10. The benefits of using Fed discount operations to prevent bank panics are straightforward. What are the costs?
*11. You often read in the newspaper that the Fed has just lowered the discount rate. Does this signal that the Fed is moving to a more expansionary monetary policy? Why or why not?
*12. How can the procyclical movement of interest rates (rising during business cycle expansions and falling during business cycle contractions) lead to a procyclical movement in the money supply as a result of Fed discounting? Why might this movement of the money supply be undesirable?
*13. Which proposal would lead to tighter control of the money supply: abolishing discounting or tying the discount rate to a market rate of interest? Which of the two proposals would you prefer and why?
14 "Considering that raising reserve requirements to 100% makes complete control of the money supply possible, Congress should authorize the Fed to raise reserve requirements to this level." Discuss.
*15. Compare the use of open market operations, discounting, and changes in reserve requirements to control the money supply on the following criteria: flexibility, reversibility, effectiveness, and speed of implementation.