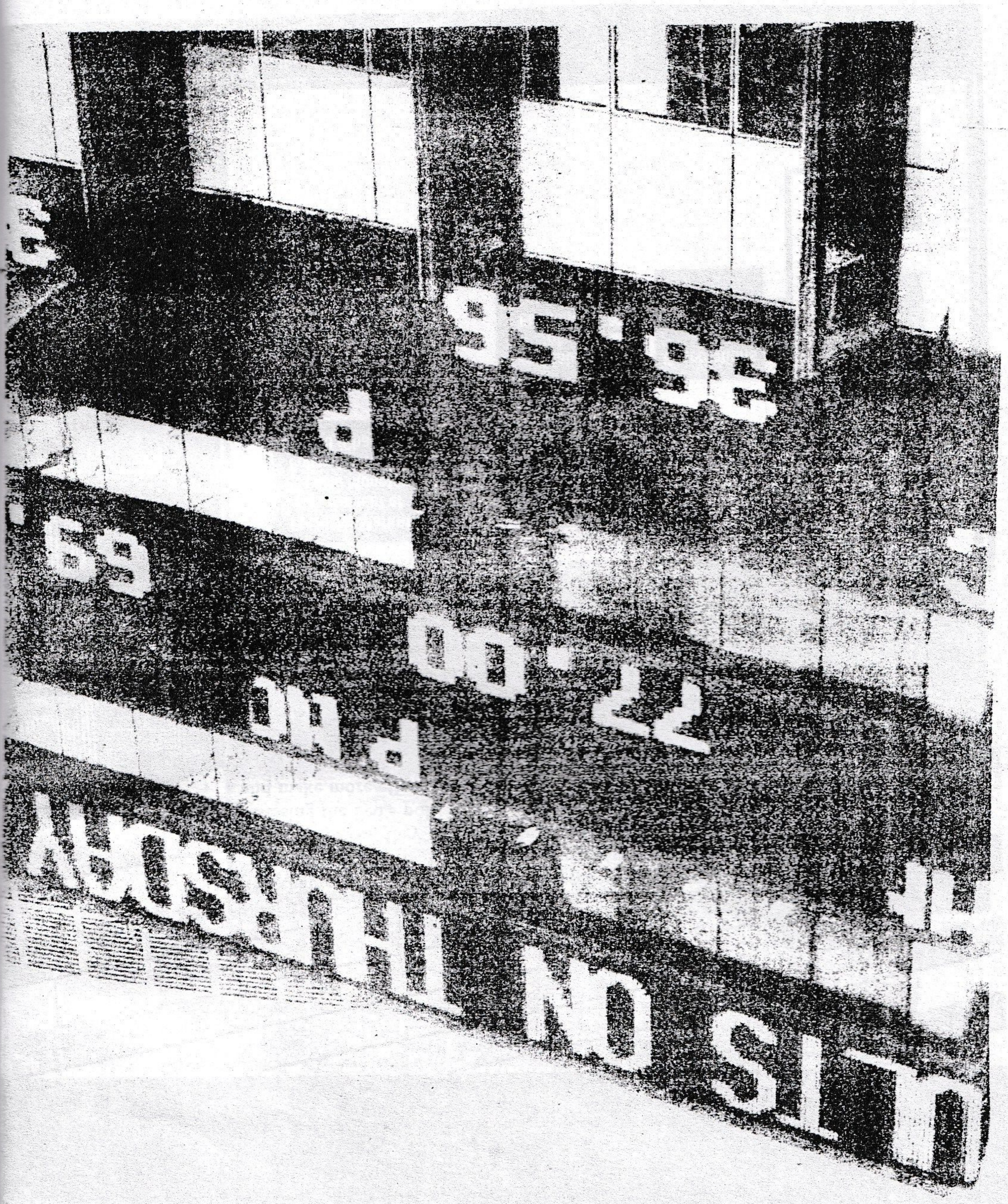
PART 2
The Fed and Monetary Policy

The chapters in Part 2 explain how the Federal Reserve System (the Fed) affects economic conditions. Because the policies implemented by the Fed can influence securities prices, they are closely monitored by financial market participants. By assessing the Fed's policies, market participants can more accurately value securities and make more effective investment and financing decisions.


BUILDING

4
Functions of the Fed

CHAPTER OBJECTIVES

The specific objectives of this chapter are to:

- describe the organizational structure of the Fed,
- describe how the Fed influences monetary policy,
- explain how the Fed revised its lending role in response to the credit crisis, and
- explain how monetary policy is used in other countries.

WEB

www.clevelandfed.org
- Features economic and banking topics.

The **Federal Reserve System** (the Fed) is involved (along with other agencies) in regulating commercial banks. It is responsible for conducting periodic evaluations of state-chartered banks and savings institutions with more than $50 billion in assets. Its role as regulator is discussed in Chapter 18.

4-1 Overview

As the central bank of the United States, the Fed has the responsibility for conducting national monetary policy in an attempt to achieve full employment and price stability (low or zero inflation) in the United States. With its monetary policy, the Fed can influence the state of the U.S. economy in the following ways. First, since the Fed's monetary policy affects interest rates, it has a strong influence on the cost of borrowing by households and thus affects the amount of monthly payments on mortgages, car loans, and other loans. In this way, monetary policy determines what households can afford and therefore how much consumers spend.

Second, monetary policy also affects the cost of borrowing by businesses and thereby influences how much money businesses are willing to borrow to support or expand their operations. By its effect on the amount of spending by households and businesses, monetary policy influences the aggregate demand for products and services in the United States and therefore influences the national income level and employment level. Since the aggregate demand can affect the price level of products and services, the Fed indirectly influences the price level and hence the rate of inflation in the United States.

Because the Fed's monetary policy affects interest rates, it has a direct effect on the prices of debt securities. It can also indirectly affect the prices of equity securities by affecting economic conditions, which influence the future cash flows generated by publicly traded businesses. Overall, the Fed's monetary policy can have a major impact on households, businesses, and investors. A more detailed explanation of how the Fed's monetary policy affects interest rates is provided in Chapter 5.

4-2 Organizational Structure of the Fed

During the late 1800s and early 1900s, the United States experienced several banking panics that culminated in a major crisis in 1907. This motivated Congress to establish a central bank. In 1913, the Federal Reserve Act was implemented, which established reserve requirements for the commercial banks that chose to become members. It also specified 12 districts across the United States as well as a city in each district where a

Federal Reserve district bank was to be established. Initially, each district bank had the ability to affect the money supply (as will be explained later in this chapter). Each district bank focused on its particular district without much concern for other districts. Over time, the system became more centralized, and money supply decisions were assigned to a particular group of individuals rather than across 12 district banks.

The Fed earns most of its income from the interest on its holdings of U.S. government securities (to be discussed shortly). It also earns some income from providing services to financial institutions. Most of its income is transferred to the Treasury.

The Fed as it exists today has five major components:

- Federal Reserve district banks
- Member banks
- Board of Governors
- Federal Open Market Committee (FOMC)
- Advisory committees

4-2a Federal Reserve District Banks

The 12 Federal Reserve districts are identified in Exhibit 4.1, along with the city where each district bank is located. The New York district bank is considered the most important because many large banks are located in this district. Commercial banks that become members of the Fed are required to purchase stock in their **Federal Reserve district bank**. This stock, which is not traded in a secondary market, pays a maximum dividend of 6 percent annually.

Each Fed district bank has nine directors. There are three Class A directors, who are employees or officers of a bank in that district and are elected by member banks to represent member banks. There are three Class B directors, who are not affiliated with any bank and are elected by member banks to represent the public. There are also three Class C directors, who are not affiliated with any bank and are appointed by the Board of Governors (to be discussed shortly). The president of each Fed district bank is appointed by the three Class B and three Class C directors representing that district.

Fed district banks facilitate operations within the banking system by clearing checks, replacing old currency, and providing loans (through the so-called discount window) to depository institutions in need of funds. They also collect economic data and conduct research projects on commercial banking and economic trends.

4-2b Member Banks

Commercial banks can elect to become member banks if they meet specific requirements of the Board of Governors. All national banks (chartered by the Comptroller of the Currency) are required to be members of the Fed, but other banks (chartered by their respective states) are not. Currently, about 35 percent of all banks are members; these banks account for about 70 percent of all bank deposits.

WEB

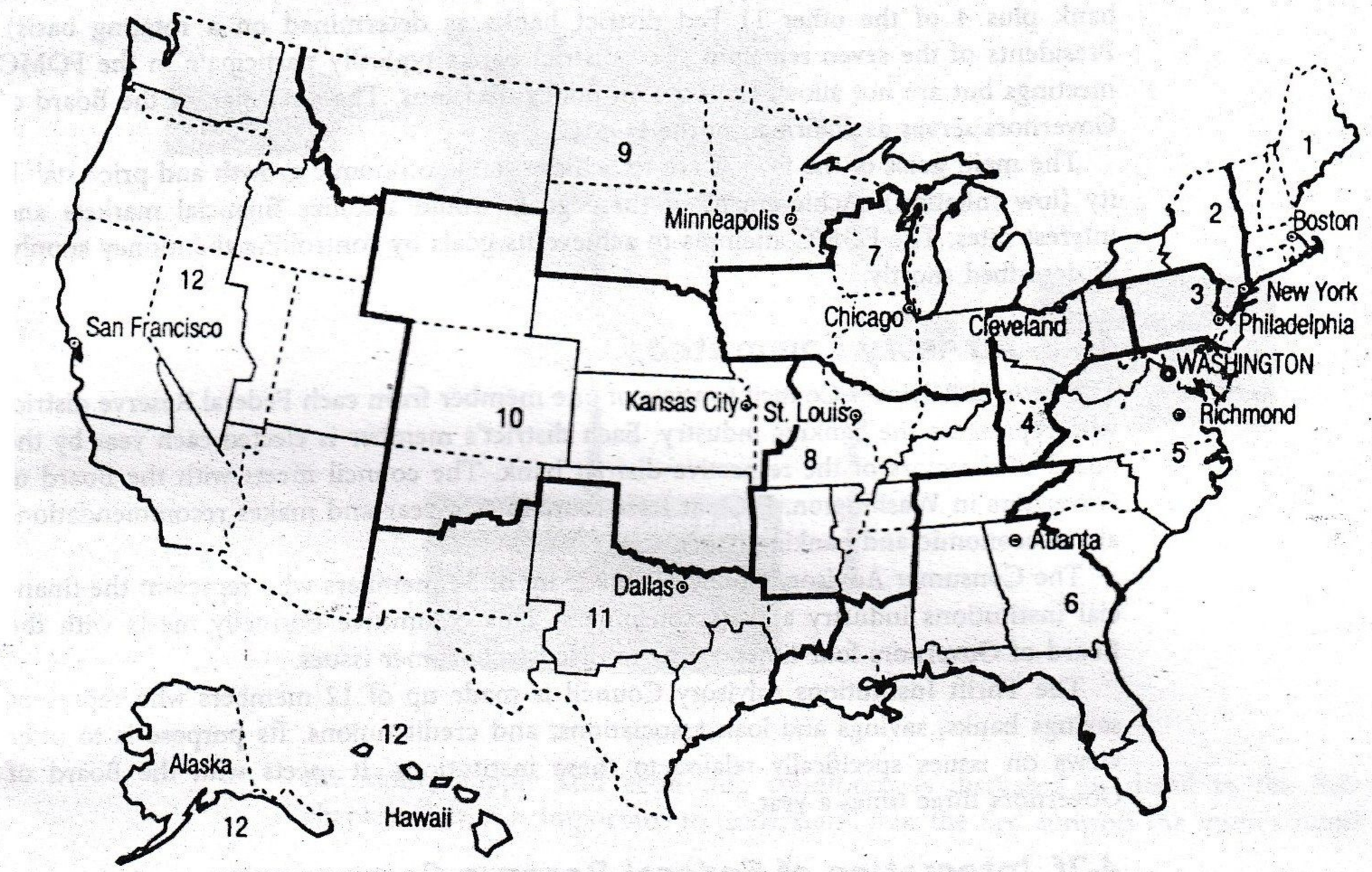
www.federalreserve.gov
Background on the Board of Governors, board meetings, board members, and the structure of the Fed.

4-2c Board of Governors

The **Board of Governors** (sometimes called the Federal Reserve Board) is made up of seven individual members with offices in Washington, D.C. Each member is appointed by the President of the United States and serves a nonrenewable 14-year term. This long term is thought to reduce political pressure on the governors and thus encourage the development of policies that will benefit the U.S. economy over the long run. The terms are staggered so that one term expires in every even-numbered year.

B.F.M.I-11th-8

Exhibit 4.1 Locations of Federal Reserve District Banks



Source: *Federal Reserve Bulletin.*

One of the seven board members is selected by the president to be the Federal Reserve chairman for a four-year term, which may be renewed. The chairman has no more voting power than any other member but may have more influence. Paul Volcker (chairman from 1979 to 1987), Alan Greenspan (chairman from 1987 to 2006), and Ben Bernanke (whose term began in 2006) were regarded as being highly persuasive.

As a result of the Financial Reform Act of 2010, one of the seven board members is designated by the president to be the Vice Chairman for Supervision; this member is responsible for developing policy recommendations that concern regulating the Board of Governors. The Vice Chairman reports to Congress semiannually. The board participates in setting credit controls, such as margin requirements (percentage of a purchase of securities that must be paid with no borrowed funds). With regard to monetary policy, the board has the power to revise reserve requirements imposed on depository institutions. The board can also control the money supply by participating in the decisions of the Federal Open Market Committee, discussed next.

WEB

www.federalreserve.gov/monetarypolicy/fomc.htm
Find information about the Federal Open Market Committee (FOMC).

4-2d Federal Open Market Committee

The **Federal Open Market Committee** (FOMC) is made up of the seven members of the Board of Governors plus the presidents of five Fed district banks (the New York district bank plus 4 of the other 11 Fed district banks as determined on a rotating basis). Presidents of the seven remaining Fed district banks typically participate in the FOMC meetings but are not allowed to vote on policy decisions. The chairman of the Board of Governors serves as chairman of the FOMC.

The main goals of the FOMC are to achieve stable economic growth and price stability (low inflation). Achievement of these goals would stabilize financial markets and interest rates. The FOMC attempts to achieve its goals by controlling the money supply, as described shortly.

4-2e Advisory Committees

The Federal Advisory Council consists of one member from each Federal Reserve district who represents the banking industry. Each district's member is elected each year by the board of directors of the respective district bank. The council meets with the Board of Governors in Washington, D.C., at least four times a year and makes recommendations about economic and banking issues.

The Consumer Advisory Council is made up of 30 members who represent the financial institutions industry and its consumers. This committee normally meets with the Board of Governors four times a year to discuss consumer issues.

The Thrift Institutions Advisory Council is made up of 12 members who represent savings banks, savings and loan associations, and credit unions. Its purpose is to offer views on issues specifically related to these institutions. It meets with the Board of Governors three times a year.

4-2f Integration of Federal Reserve Components

Exhibit 4.2 shows the relationships among the various components of the Federal Reserve System. The advisory committees advise the board, while the board oversees operations of the district banks. The board and representatives of the district banks make up the FOMC.

4-2g Consumer Financial Protection Bureau

As a result of the Financial Reform Act of 2010, the Consumer Financial Protection Bureau was established. It is housed within the Federal Reserve but is independent of the other Fed committees. The bureau's director is appointed by the president with consent of the Senate. The bureau is responsible for regulating financial products and services, including online banking, certificates of deposit, and mortgages. In theory, the bureau can act quickly to protect consumers from deceptive practices rather than waiting for Congress to pass new laws. Financial services administered by auto dealers are exempt from the bureau's oversight. An Office of Financial Literacy will also be created to educate individuals about financial products and services.

FINANCIAL REFORM

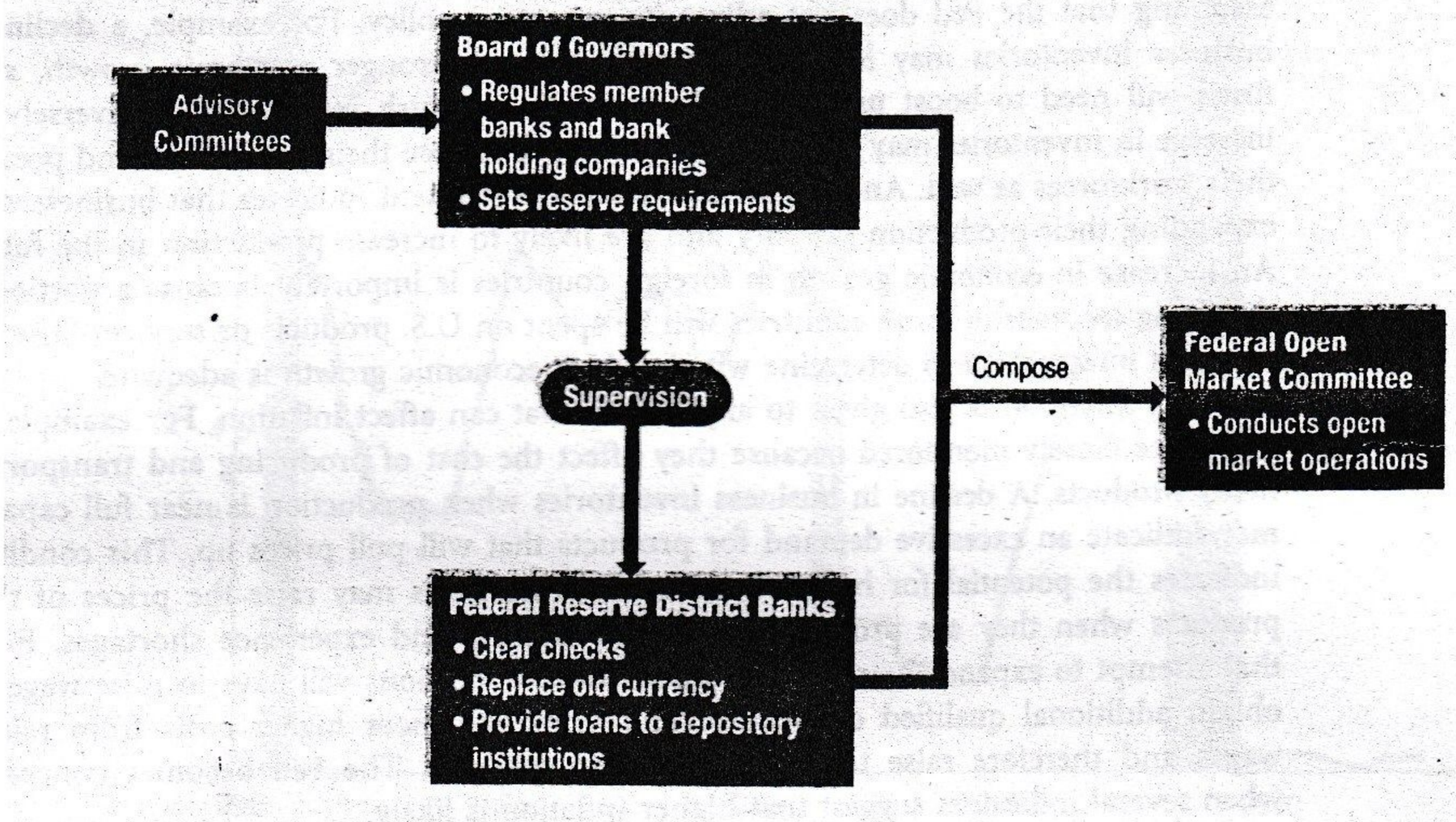
WEB

www.federalreserve.gov/monetarypolicy/fomccalendars.htm
Provides minutes of FOMC meetings. Notice from the minutes how much attention is given to any economic indicators that can be used to anticipate future economic growth or inflation.

4-3 How the Fed Controls Money Supply

The Fed controls the money supply in order to affect interest rates and thereby affect economic conditions. Financial market participants closely monitor the Fed's actions so that they can anticipate how the money supply will be affected. They then use this information to forecast economic conditions and securities prices. The relationship between

Exhibit 4.2 Integration of Federal Reserve Components



the money supply and economic conditions is discussed in detail in the following chapter. First, it is important to understand *how* the Fed controls the money supply.

4-3a Open Market Operations

The FOMC meets eight times a year. At each meeting, targets for the money supply growth level and the interest rate level are determined, and actions are taken to implement the monetary policy dictated by the FOMC. If the Fed wants to consider changing its targets for money growth or interest rates before its next scheduled meeting it may hold a conference call meeting.

Pre-Meeting Economic Reports About two weeks before the FOMC meeting, FOMC members are sent the **Beige Book**, which is a consolidated report of regional economic conditions in each of the 12 districts. Each Federal Reserve district bank is responsible for reporting its regional conditions, and all of these reports are consolidated to compose the Beige Book.

About one week before the FOMC meeting, participants receive analyses of the economy and economic forecasts. Thus there is much information for participants to study before the meeting.

Economic Presentations The FOMC meeting is conducted in the boardroom of the Federal Reserve Building in Washington, D.C. The seven members of the Board of Governors, the 12 presidents of the Fed district banks, and staff members (typically economists) of the Board of Governors are in attendance. The meeting begins with presentations by the staff members about current economic conditions and recent economic trends. Presentations include data and trends for wages, consumer prices, unemployment, gross domestic product, business inventories, foreign exchange rates, interest rates, and financial market conditions.

The staff members also assess production levels, business investment, residential construction, international trade, and international economic growth. This assessment is conducted in order to predict economic growth and inflation in the United States, assuming that the Fed does not adjust its monetary policy. For example, a decline in business inventories may lead to an expectation of stronger economic growth, since firms will need to boost production in order to replenish inventories. Conversely, an increase in inventories may indicate that firms will reduce their production and possibly their workforces as well. An increase in business investment indicates that businesses are expanding their production capacity and are likely to increase production in the future. An increase in economic growth in foreign countries is important because a portion of the rising incomes in those countries will be spent on U.S. products or services. The Fed uses this information to determine whether U.S. economic growth is adequate.

Much attention is also given to any factors that can affect inflation. For example, oil prices are closely monitored because they affect the cost of producing and transporting many products. A decline in business inventories when production is near full capacity may indicate an excessive demand for products that will pull prices up. This condition indicates the potential for higher inflation because firms may raise the prices of their products when they are producing near full capacity and experience shortages. Firms that attempt to expand their capacity under these conditions will have to raise wages to obtain additional qualified employees. The firms will incur higher costs from raising wages and therefore raise the prices of their products. The Fed becomes concerned when several indicators suggest that higher inflation is likely.

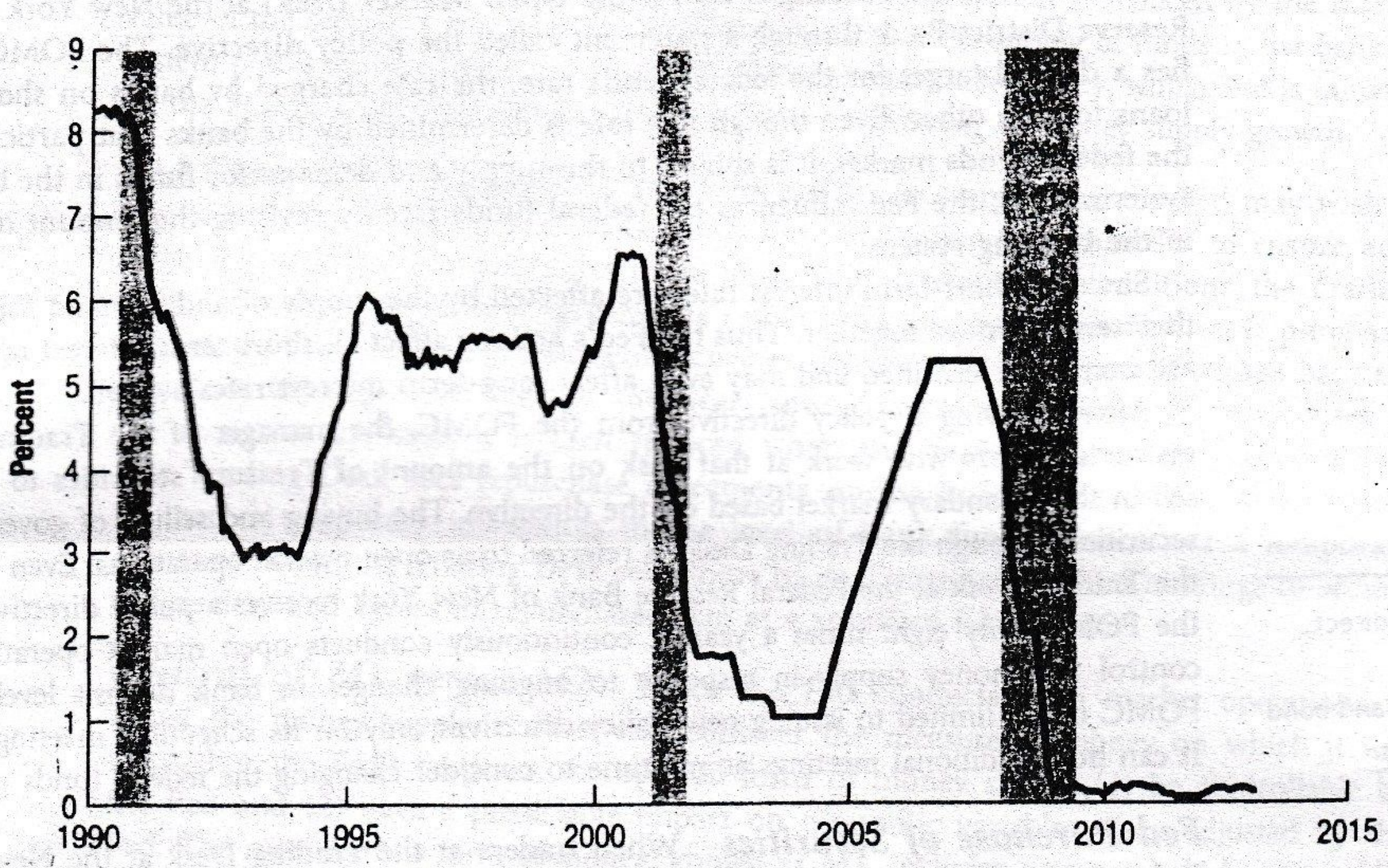
The staff members typically base their forecasts for economic conditions on the assumption that the prevailing monetary growth level will continue in the future. When it is highly likely that the monetary growth level will be changed, they provide forecasts for economic conditions under different monetary growth scenarios. Their goal is to provide facts and economic forecasts, not to make judgments about the appropriate monetary policy. The members normally receive some economic information a few days before the meeting so that they are prepared when the staff members make their presentations.

FOMC Decisions Once the presentations are completed, each FOMC member has a chance to offer recommendations as to whether the federal funds rate target should be changed. The target may be specified as a specific point estimate, such as 2.5 percent, or as a range, such as from 2.5 to 2.75 percent.

In general, evidence that the economy is weakening may result in recommendations that the Fed implement a monetary policy to reduce the federal funds rate and stimulate the economy. For example, Exhibit 4.3 shows how the federal funds rate was reduced near the end of 2007 and in 2008 as the economy weakened. In December 2008, the Fed set the targeted federal funds rate in the form of a range between 0 and 0.25 percent. The goal was to stimulate the economy by reducing interest rates in order to encourage more borrowing and spending by households and businesses. The Fed maintained the federal funds rate within this range over the 2009–2013 period.

When there is evidence of a very strong economy and high inflation, the Fed tends to implement a monetary policy that will increase the federal funds rate and reduce economic growth. This policy would be intended to reduce any inflationary pressure that is attributed to excess demand for products and services. The participants are commonly given three options for monetary policy, which are intended to cover a range of the most reasonable policies and should include at least one policy that is satisfactory to each member.

Exhibit 4.3 Federal Funds Rate over Time



Source: *Board of Governors, Federal Reserve.*

The FOMC meeting allows for participation by voting and nonvoting members. The chairman of the Fed may also offer a recommendation and usually has some influence over the other members. After all members have provided their recommendations, the voting members of the FOMC vote on whether the interest rate target levels should be revised. Most FOMC decisions on monetary policy are unanimous, although it is not unusual for some decisions to have one or two dissenting votes.

FOMC Statement Following the FOMC meeting, the committee provides a statement that summarizes its conclusion. The FOMC has in recent years begun to recognize the importance of this statement, which is used (along with other information) by many participants in the financial markets to generate forecasts of the economy. Since 2007, voting members vote not only on the proper policy but also on the corresponding communication (statement) of that policy to the public. The statement is clearly written with meaningful details. This is an improvement over previous years, when the statement contained vague phrases that made it difficult for the public to understand the FOMC's plans. The statement provided by the committee following each meeting is widely publicized in the news media and also can be accessed on Federal Reserve websites.

Minutes of FOMC Meeting Within three weeks of a FOMC meeting, the minutes for that meeting are provided to the public and are also accessible on Federal Reserve websites. The minutes commonly illustrate the different points of view held by various participants at the FOMC meeting.

4-3b Role of the Fed's Trading Desk

If the FOMC determines that a change in its monetary policy is appropriate, its decision is forwarded to the **Trading Desk** (or the **Open Market Desk**) at the New York Federal Reserve District Bank through a statement called the **policy directive**. The FOMC specifies a desired target for the federal funds rate, the rate charged by banks on short-term loans to each other. Even though this rate is determined by the banks that participate in the federal funds market, it is subject to the supply and demand for funds in the banking system. Thus, the Fed influences the federal funds rate by revising the amount of funds in the banking system.

Since all short-term interest rates are affected by the supply of and demand for funds, they tend to move together. Thus the Fed's actions affect all short-term interest rates that are market determined and may even affect long-term interest rates as well.

After receiving a policy directive from the FOMC, the manager of the Trading Desk instructs traders who work at that desk on the amount of Treasury securities to buy or sell in the secondary market based on the directive. The buying and selling of government securities (through the Trading Desk) is referred to as open market operations. Even though the Trading Desk at the Federal Reserve Bank of New York receives a policy directive from the FOMC only eight times a year, it continuously conducts open market operations to control the money supply in response to ongoing changes in bank deposit levels. The FOMC is not limited to issuing new policy directives only on its scheduled meeting dates. It can hold additional meetings at any time to consider changing the federal funds rate.

WEB

www.treasurydirect.gov
Treasury note and bond auction results.

Fed Purchase of Securities When traders at the Trading Desk at the New York Fed are instructed to *lower* the federal funds rate, they purchase Treasury securities in the secondary market. First, they call government securities dealers to obtain their list of securities for sale, including the denomination and maturity of each security, and the dealer's ask quote (the price at which the dealer is willing to sell the security). From this list, the traders attempt to purchase those Treasury securities that are most attractive (lowest prices for whatever maturities are desired) until they have purchased the amount requested by the manager of the Trading Desk. The accounting department of the New York Fed then notifies the government bond department to receive and pay for those securities.

When the Fed purchases securities through government securities dealers, the bank account balances of the dealers increase and so the total deposits in the banking system increase. This increase in the supply of funds places downward pressure on the federal funds rate. The Fed increases the total amount of funds at the dealers' banks until the federal funds rate declines to the new targeted level. Such activity, which is initiated by the FOMC's policy directive, represents a *loosening* of money supply growth.

The Fed's purchase of government securities has a different impact than a purchase by another investor would have because the Fed's purchase results in additional bank funds and increases the ability of banks to make loans and create new deposits. An increase in funds can allow for a net increase in deposit balances and therefore an increase in the money supply. Conversely, the purchase of government securities by someone other than the Fed (such as an investor) results in offsetting account balance positions at commercial banks. For example, as investors purchase Treasury securities in the secondary market, their bank balances decline while the bank balances of the sellers of the Treasury securities increase.

Fed Sale of Securities If the Trading Desk at the New York Fed is instructed to *increase* the federal funds rate, its traders sell government securities (obtained from previous purchases) to government securities dealers. The securities are sold to the dealers that

submit the highest bids. As the dealers pay for the securities, their bank account balances are reduced. Thus the total amount of funds in the banking system is reduced by the market value of the securities sold by the Fed. This reduction in the supply of funds in the banking system places upward pressure on the federal funds rate. Such activity, which also is initiated by the FOMC's policy directive, is referred to as a *tightening* of money supply growth.

Fed Trading of Repurchase Agreements In some cases, the Fed may wish to increase the aggregate level of bank funds for only a few days in order to ensure adequate liquidity in the banking system on those days. Under these conditions, the Trading Desk may trade **repurchase agreements** rather than government securities. It purchases Treasury securities from government securities dealers with an agreement to sell back the securities at a specified date in the near future. Initially, the level of funds rises as the securities are sold; it is then reduced when the dealers repurchase the securities. The Trading Desk uses repurchase agreements during holidays and other such periods to correct temporary imbalances in the level of bank funds. To correct a temporary excess of funds, the Trading Desk sells some of its Treasury securities holdings to securities dealers and agrees to repurchase them at a specified future date.

Control of M1 versus M2 When the Fed conducts open market operations to adjust the money supply, it must also consider the measure of money on which it will focus. For the Fed's purposes, the optimal form of money should (1) be controllable by the Fed and (2) have a predictable impact on economic variables when adjusted by the Fed. The most narrow form of money, known as **M1**, includes currency held by the public and checking deposits (such as demand deposits, NOW accounts, and automatic transfer balances) at depository institutions. The M1 measure does not include all funds that can be used for transactions purposes. For example, checks can be written against a **money market deposit account (MMDA)** offered by depository institutions or against a money market mutual fund. In addition, funds can easily be withdrawn from savings accounts to make transactions. For this reason, a broader measure of money, called **M2**, also deserves consideration. It includes everything in M1 as well as savings accounts and small time deposits, MMDAs, and some other items. Another measure of money, called **M3**, includes everything in M2 in addition to large time deposits and other items. Although there are even a few broader measures of money, it is M1, M2, and M3 that receive the most attention. A comparison of these measures of money is provided in Exhibit 4.4.

The M1 money measure is more volatile than M2 or M3. Since M1 can change owing simply to changes in the types of deposits maintained by households, M2 and M3 are more reliable measures for monitoring and controlling the money supply.

Consideration of Technical Factors The money supply can shift abruptly as a result of so-called technical factors, such as currency in circulation and Federal Reserve

www.federalreserve.gov
Click on "Economic Research & Data" to obtain Federal Reserve statistical releases.

Exhibit 4.4 Comparison of Money Supply Measures

MONEY SUPPLY MEASURES
M1 = currency + checking deposits
M2 = M1 + savings deposits, MMDAs, overnight repurchase agreements, Eurodollars, no institutional money market mutual funds, and small time deposits
M3 = M2 + institutional money market mutual funds, large time deposits, and repurchase agreements and Eurodollars lasting more than one day

float. When the amount of currency in circulation increases (such as during the holiday season), the corresponding increase in net deposit withdrawals reduces funds; when it decreases, the net addition to deposits increases funds. Federal Reserve float is the amount of checks credited to bank funds that have not yet been collected. A rise in float causes an increase in bank funds, and a decrease in float causes a reduction in bank funds.

The manager of the Trading Desk incorporates the expected impact of technical factors on funds into the instructions to traders. If the policy directive calls for growth in funds but technical factors are expected to increase funds, the instructions will call for a smaller injection of funds than if the technical factors did not exist. Conversely, if technical factors are expected to reduce funds, the instructions will call for a larger injection of funds to offset the impact of the technical factors.

Dynamic versus Defensive Open Market Operations Depending on the intent, open market operations can be classified as either **dynamic** or **defensive**. Dynamic operations are implemented to increase or decrease the level of funds, whereas defensive operations offset the impact of other conditions that affect the level of funds. For example, if the Fed expected a large inflow of cash into commercial banks then it could offset this inflow by selling some of its Treasury security holdings.

4-3c How Fed Operations Affect All Interest Rates

Even though most interest rates are market determined, the Fed can have a strong influence on these rates by controlling the supply of loanable funds. The use of open market operations to increase bank funds can affect various market-determined interest rates. First, the federal funds rate may decline because some banks have a larger supply of excess funds to lend out in the federal funds market. Second, banks with excess funds may offer new loans at a lower interest rate in order to make use of these funds. Third, these banks may also lower interest rates offered on deposits because they have more than adequate funds to conduct existing operations.

Because open market operations commonly involve the buying or selling of Treasury bills, the yields on Treasury securities are influenced along with the yields (interest rates) offered on bank deposits. For example, when the Fed buys Treasury bills as a means of increasing the money supply, it places upward pressure on their prices. Since these securities offer a fixed value to investors at maturity, a higher price translates into a lower yield for investors who buy them and hold them until maturity. While Treasury yields are affected directly by open market operations, bank rates are also affected because of the change in the money supply that open market operations bring about.

As the yields on Treasury bills and bank deposits decline, investors search for alternative investments such as other debt securities. As more funds are invested in these securities, the yields will decline. Thus open market operations used to increase bank funds influence not only bank deposit and loan rates but also the yields on other debt securities. The reduction in yields on debt securities lowers the cost of borrowing for the issuers of new debt securities. This can encourage potential borrowers (including corporations and individuals) to borrow and make expenditures that they might not have made if interest rates were higher.

If open market operations are used to reduce bank funds, the opposite effects occur. There is upward pressure on the federal funds rate, on the loan rates charged to individuals and firms, and on the rates offered to bank depositors. As bank deposit rates rise, some investors may be encouraged to create bank deposits rather than invest in other debt securities. This activity reduces the amount of funds available for these debt instruments, thereby increasing the yield offered on the instruments.

Open Market Operations in Response to the Economy During the 2001–2003 period, when economic conditions were weak, the Fed frequently used open market operations to reduce interest rates. During 2004–2007 the economy improved, and the Fed's concern shifted from a weak economy to high inflation. Therefore, it used a policy of raising interest rates in an attempt to keep the economy from overheating and to reduce inflationary pressure.

In 2008, the credit crisis began, and the economy remained weak through 2012. During this period, the Fed used open market operations and reduced interest rates in an attempt to stimulate the economy. Its operations brought short-term T-bill rates down to close to zero percent in an effort to reduce loan rates charged by financial institutions, and thus encourage more borrowing and spending. The impact of monetary policy on economic conditions is given much more attention in the following chapter.

4-3d Adjusting the Reserve Requirement Ratio

Depository institutions are subject to a **reserve requirement ratio**, which is the proportion of their deposit accounts that must be held as required reserves (funds held in reserve). This ratio is set by the Board of Governors. Depository institutions have historically been forced to maintain between 8 and 12 percent of their transactions accounts (such as checking accounts) and a smaller proportion of their other savings accounts as required reserves. The **Depository Institutions Deregulation and Monetary Control Act (DIDMCA)** of 1980 established that all depository institutions are subject to the Fed's reserve requirements. Required reserves were held in a non–interest-bearing form until 2008, when the rule was changed. Now the Fed pays interest on required reserves maintained by depository institutions.

Because the reserve requirement ratio affects the degree to which the money supply can change, it is considered a monetary policy tool. By changing it, the Board of Governors can adjust the money supply. When the board reduces the reserve requirement ratio, it increases the proportion of a bank's deposits that can be lent out by depository institutions. As the funds loaned out are spent, a portion of them will return to the depository institutions in the form of new deposits. The lower the reserve requirement ratio, the greater the lending capacity of depository institutions; for this reason, any initial change in bank required reserves can cause a larger change in the money supply. In 1992, the Fed reduced the reserve requirement ratio on transactions accounts from 12 to 10 percent, where it has remained.

Impact of Reserve Requirements on Money Growth An adjustment in the reserve requirement ratio changes the proportion of financial institution funds that can be lent out, and this affects the degree to which the money supply can grow.

EXAMPLE Assume the following conditions in the banking system:

Assumption 1. Banks obtain all their funds from demand deposits and use all funds except required reserves to make loans.

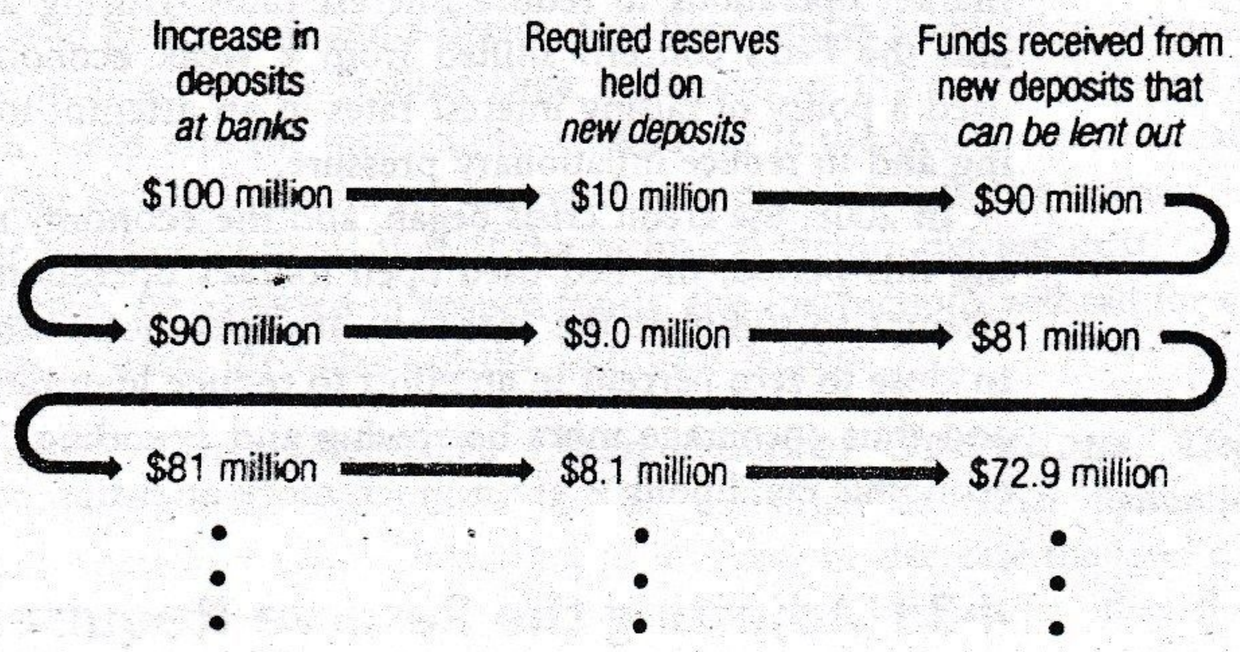
Assumption 2. The public does not store any cash; any funds withdrawn from banks are spent; and any funds received are deposited in banks.

Assumption 3. The reserve requirement ratio on demand deposits is 10 percent.

Based on these assumptions, 10 percent of all bank deposits are maintained as required reserves and the other 90 percent are loaned out (zero excess reserves). Now assume that the Fed initially uses open market operations by purchasing $100 million worth of Treasury securities.

As the Treasury securities dealers sell securities to the Fed, their deposit balances at commercial banks increase by $100 million. Banks maintain 10 percent of the $100 million, or $10 million, as

Exhibit 4.5 Illustration of Multiplier Effect



required reserves and lend out the rest. As the $90 million lent out is spent, it returns to banks as new demand deposit accounts (by whoever received the funds that were spent). Banks maintain 10 percent, or $9 million, of these new deposits as required reserves and lend out the remainder ($81 million). The initial increase in demand deposits (money) multiplies into a much larger amount.

This process, illustrated in Exhibit 4.5, will not continue forever. Every time the funds lent out return to a bank, a portion (10 percent) is retained as required reserves. Thus the amount of new deposits created is less for each round. Under the previous assumptions, the initial money supply injection of $100 million would multiply by 1 divided by the reserve requirement ratio, or 1/0.10, to equal 10; hence the total change in the money supply, once the cycle is complete, is $100 million × 10 = $1 billion. ●

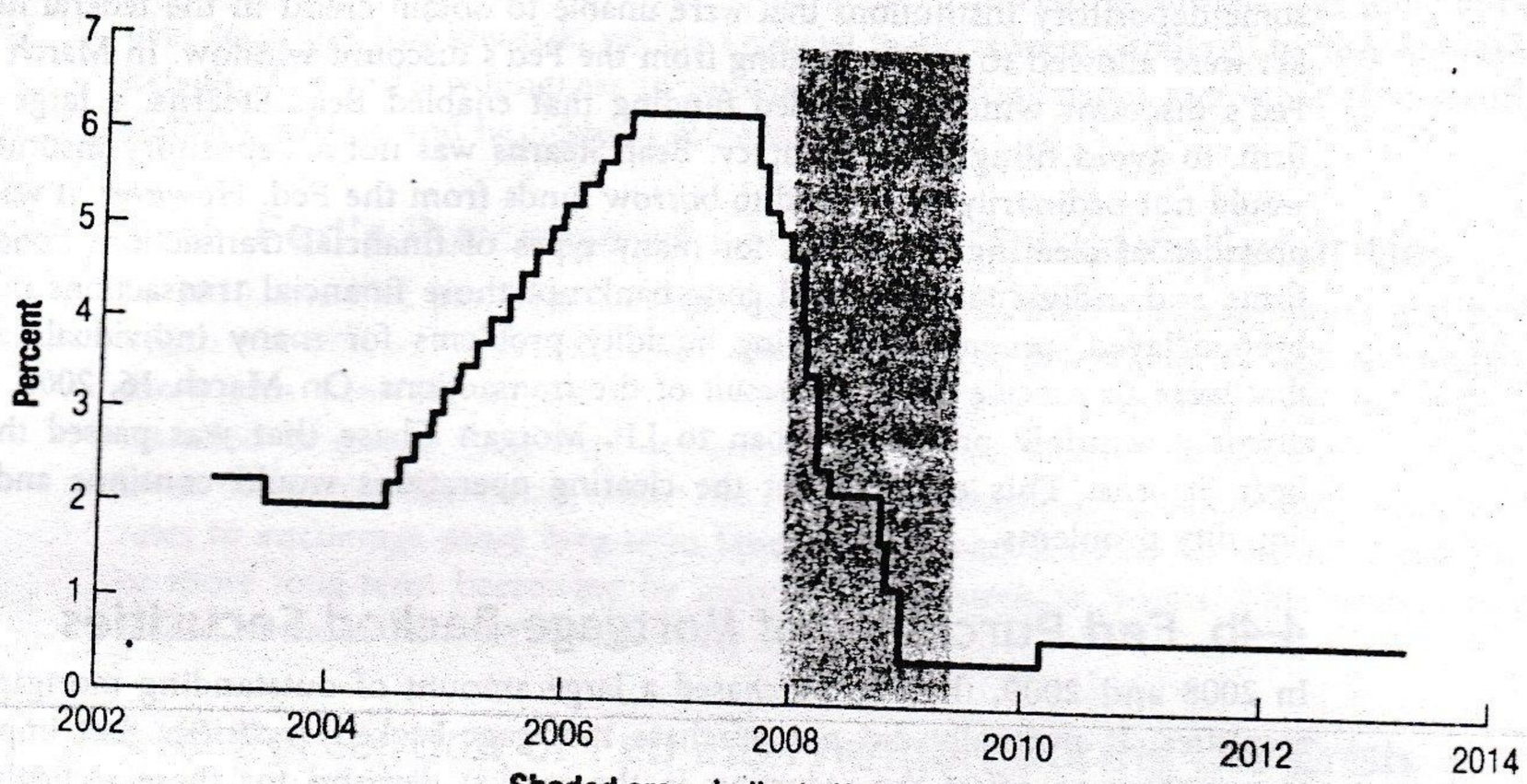
As this simplified example demonstrates, an initial injection of funds will multiply into a larger amount. The reserve requirement controls the amount of loanable funds that can be created from new deposits. A higher reserve requirement ratio causes an initial injection of funds to multiply by a smaller amount. Conversely, a lower reserve requirement ratio causes it to multiply by a greater amount. In this way, the Fed can adjust money supply growth by changing the reserve requirement ratio.

In reality, households sometimes hold cash and banks sometimes hold excess reserves, contrary to the example's initial assumptions. Hence major leakages occur, and money does not multiply to the extent shown in the example. The money multiplier can change over time because of changes in the excess reserve level and in household preferences for demand deposits versus time deposits, as time deposits are not included in the most narrow definition of money. This complicates the task of forecasting how an initial adjustment in bank-required reserves will ultimately affect the money supply level. Another disadvantage of using the reserve requirement as a monetary policy tool is that an adjustment in its ratio can cause erratic shifts in the money supply. Thus the probability of missing the target money supply level is higher when using the reserve requirement ratio. Because of these limitations, the Fed normally relies on open market operations rather than adjustments in the reserve requirement ratio when controlling the money supply.

4-3e Adjusting the Fed's Loan Rate

The Fed has traditionally provided short-term loans to depository institutions through its discount window. Before 2003, the Fed set its loan rate (then called the "discount rate") at low levels when it wanted to encourage banks to borrow, since this activity increased

Exhibit 4.6 Primary Credit Rate over Time



Source: *Board of Governors, Federal Reserve.*

the amount of funds injected into the financial system. The discount rate was viewed as a monetary policy tool because it could have been used to affect the money supply (although it was not an effective tool).

Since 2003, the Fed's rate on short-term loans to depository institutions has been called the *primary credit lending rate*, which is set slightly above the federal funds rate (the rate charged on short-term loans between depository institutions). Depository institutions therefore rely on the Fed only as a backup for loans, since they should be able to obtain short-term loans from other institutions at a lower interest rate.

The primary credit rate is shown in Exhibit 4.6. The Fed periodically increased this rate during the 2003–2007 period when economic conditions were strong. It then periodically reduced this rate during the 2008–2010 period when economic conditions were weak, to keep it in line with the targeted federal funds rate.

In 2003, the Fed began classifying the loans it provides into primary and secondary credit. *Primary credit* may be used for any purpose and is available only to depository institutions that satisfy specific criteria reflecting financial soundness. The loans are typically for a one-day period. *Secondary credit* is provided to depository institutions that do not satisfy those criteria, so they must pay a premium above the loan rate charged on primary credit. The Fed's lending facility can be an important source of liquidity for some depository institutions, but it is no longer used to control the money supply.

4-4 The Fed's Intervention during the Credit Crisis

During and after the credit crisis, the Fed not only engaged in traditional open market operations (purchasing Treasury securities) to reduce interest rates, but also implemented various nontraditional strategies in an effort to improve economic conditions.

4-4a Fed Loans to Facilitate Rescue of Bear Stearns

Normally, depository institutions use the federal funds market rather than the Fed's discount window to borrow short-term funds. During the credit crisis in 2008, however, some depository institutions that were unable to obtain credit in the federal funds market were allowed to obtain funding from the Fed's discount window. In March 2008, the Fed's discount window provided funding that enabled Bear Stearns, a large securities firm, to avoid filing for bankruptcy. Bear Stearns was not a depository institution, so it would not ordinarily be allowed to borrow funds from the Fed. However, it was a major provider of clearing operations for many types of financial transactions conducted by firms and individuals. If it had gone bankrupt those financial transactions might have been delayed, potentially creating liquidity problems for many individuals and firms that were to receive cash as a result of the transactions. On March 16, 2008, the Fed's discount window provided a loan to J.P. Morgan Chase that was passed through to Bear Stearns. This ensured that the clearing operations would continue and avoided liquidity problems.

4-4b Fed Purchases of Mortgage-Backed Securities

In 2008 and 2009, the Fed purchased a large amount of outstanding mortgage-backed securities. It normally did not purchase mortgage-backed securities, but implemented this strategy to offset the reduction in the market demand for these securities due to investor fears. These fears were partially triggered by the failure of Lehman Brothers (a very large financial institution) in 2008, which suffered serious losses in its investments in mortgages and mortgage-backed securities. The market values of these securities had weakened substantially due to the high default rate on mortgages. The Fed's strategy was intended to create a demand for mortgages and securities backed by mortgages in order to stimulate the housing market. The Fed has continued to periodically purchase mortgage-backed securities in recent years.

4-4c Fed's Purchase of Bonds Backed by Loans

In November 2008, the Federal Reserve created a term asset-backed security loan facility (TALF) that provided financing to financial institutions purchasing high-quality bonds backed by consumer loans, credit card loans, or automobile loans. The market for these types of bonds became inactive during the credit crisis, and this discouraged lenders from making consumer loans because they could not easily sell the loans in the secondary market. The facility provided loans to institutional investors that purchased these types of loans. In this way, the Fed encouraged financial institutions to return to this market and thereby increased its liquidity. This was important because it indirectly ensured that more funding would be available to support consumer loans.

4-4d Fed's Purchase of Commercial Paper

During 2008 and 2009, the Fed purchased a large amount of commercial paper. It normally did not purchase commercial paper, but implemented this strategy to offset the reduction in the market demand for commercial paper due to investor fears of defaults on commercial paper. Those fears were partially triggered by the failure of Lehman Brothers, which caused Lehman to default on the commercial paper that it had previously issued. Investors presumed that if Lehman's asset quality was so weak that it could not cover its payments on commercial paper, other financial institutions that issued commercial paper and had large holdings of mortgage-backed securities might have the same outcome.

Furthermore, the issuance of commercial paper and other debt securities in the primary market declined because institutional investors were unwilling to purchase securities that could not be sold in the secondary market. Hence credit was no longer easily accessible, and this made the credit crisis worse. The Fed recognized that some of these debt securities had low risk, yet the financial markets were paralyzed by fear of potential default. The Fed's willingness to purchase commercial paper and other debt securities restored trading and liquidity in some debt markets.

4-4e Fed's Purchase of Long-term Treasury Securities

In 2010, the Fed purchased a large amount of long-term Treasury notes and bonds, which was different from its normal open market operations that focused on purchasing short-term Treasury securities. The emphasis on purchasing long-term securities was intended to reduce long-term Treasury bond yields, which would indirectly result in lower long-term borrowing rates. The Fed was attempting to reduce long-term interest rates to encourage more long-term borrowing by corporations for capital expenditures, or more long-term borrowing by individuals to purchase homes. This strategy is discussed in more detail in the following chapter.

4-4f Perception of Fed Intervention During the Crisis

Most people would agree that the Fed took much initiative to improve economic conditions during the credit crisis. However, opinions vary on exactly what the Fed should have done to improve the economy. Many of the Fed's actions during the credit crisis reflected the purchasing of securities to either lower interest rates (traditional monetary policy) or to restore liquidity in the markets for various types of debt securities. The Fed's focus was on improving conditions in financial markets, which can increase the flow of funds from financial markets to corporations or individuals.

However, some critics argue that the actions taken by the Fed were focused on the financial institutions and not on other sectors in the economy. A portion of the criticism is linked to the very high compensation levels paid by some financial institutions (such as some securities firms) to their employees. Critics contend that if these securities firms can afford to pay such high salaries, they should not need to be bailed out by the government.

The Fed might respond that it did not bail out Lehman Brothers (a securities firm), which is why Lehman failed. In addition, the Fed's actions to restore liquidity in debt markets did not just help financial institutions, but were necessary to ensure that all types of corporations and individuals could obtain funding. That funding is needed for corporations and individuals to increase their spending, which can stimulate the economy and create jobs.

It might seem from the previous discussion that there are primarily two opinions regarding the Fed's intervention. In reality, there are many other opinions not covered here. Consider a classroom exercise in which all students are allowed to express their opinion about what the Fed (or U.S. government in general) should have done to correct the credit crisis. Answers will likely range from "the U.S. government should do nothing and let the market fix itself" to "the U.S. government should completely manage all banks and should control salaries." Many students might suggest that the U.S. government should intervene by directing more of its funds to the automotive, health care, or other industries in which they have a personal interest. Some answers might even suggest that major trade barriers should be imposed to correct the credit crisis, which leads to another set of opposing arguments. The point is that during a severe credit crisis, many critics will believe that intervention taken by the Fed is not serving their own interests

because they have diverse special interests. Students would likely agree more on the causes of the credit crisis (which are discussed in detail in Chapter 9) than on how the Fed or U.S. government in general should have resolved the crisis.

4-5 Global Monetary Policy

GLOBAL ASPECTS

Each country has its own central bank that conducts monetary policy. The central banks of industrialized countries tend to have somewhat similar goals, which essentially reflect price stability (low inflation) and economic growth (low unemployment). Resources and conditions vary among countries, however, so a given central bank may focus more on a particular economic goal.

Like the Fed, central banks of other industrialized countries use open market operations and reserve requirement adjustments as monetary tools. They also make adjustments in the interest rate they charge on loans to banks as a monetary policy tool. The monetary policy tools are generally used as a means of affecting local market interest rates in order to influence economic conditions.

Because country economies are integrated, the Fed must consider economic conditions in other major countries when assessing the U.S. economy. The Fed may be most effective when it coordinates its activities with those of central banks of other countries. Central banks commonly work together when they intervene in the foreign exchange market, but conflicts of interest can make it difficult to coordinate monetary policies.

4-5a A Single Eurozone Monetary Policy

One of the goals of the European Union (EU) has been to establish a single currency for its members. In 2002, the following European countries replaced their national currencies with the euro: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain. Since that time, five more countries have also adopted the euro: Slovenia in 2007, Cyprus and Malta in 2008, Slovakia in 2009, and Estonia in 2011. When the euro was introduced, three of the EU's members at that time (Denmark, Sweden, and the United Kingdom) decided not to adopt the euro, although they may join later. Since the euro was introduced, 12 emerging countries in Europe have joined the EU (10 countries, including the Czech Republic and Hungary, joined in 2004; Bulgaria and Romania joined in 2007). Five of these new members have already adopted the euro, and others may eventually do so after satisfying the limitations imposed on government deficits.

The European Central Bank (ECB), based in Frankfurt, is responsible for setting monetary policy for all European countries that use the euro as their currency. This bank's objective is to control inflation in the participating countries and to stabilize (within reasonable boundaries) the value of the euro with respect to other major currencies. Thus the ECB's monetary goals of price and currency stability are similar to those of individual countries around the world; they differ in that they are focused on a group of countries rather than a single country. Because participating countries are subject to the monetary policy imposed by the ECB, a given country no longer has full control over the monetary policy implemented within its borders at any given time. The implementation of a common monetary policy may lead to more political unification among participating countries and encourage them to develop similar national defense and foreign policies.

WEB

www.ecb.int
Provides links on the European Central Bank and other foreign central banks.

Impact of the Euro on Monetary Policy As just described, the use of a common currency forces countries to abide by a common monetary policy. Changes in the money supply affect all European countries that use the euro as their currency. A single currency also means that the risk-free interest rate offered on government securities must

be similar across the participating European countries. Any discrepancy in risk-free rates would encourage investors within these countries to invest in the country with the highest rate, which would realign the interest rates among the countries.

Although having a single monetary policy may allow for more consistent economic conditions across the euro zone countries, it prevents any participating country from solving local economic problems with its own unique monetary policy. Euro zone governments may disagree on the ideal monetary policy for their local economies, but they must nevertheless agree on a single monetary policy. Yet any given policy used in a particular period may enhance economic conditions in some countries and adversely affect others. Each participating country is still able to apply its own fiscal policy (tax and government expenditure decisions), however.

One concern about the euro is that each of the participating countries has its own agenda, which may prevent unified decisions about the future direction of the euro zone economies. Each country was supposed to show restraint on fiscal policy spending so that it could improve its budget deficit situation. Nevertheless, some countries have ignored restraint in favor of resolving domestic unemployment problems. The euro's initial instability was partially attributed to political maneuvering as individual countries tried to serve their own interests at the expense of the other participating countries. This lack of solidarity is exactly the reason why there was some concern about using a single currency (and therefore monetary policy) among several European countries. Disagreements over policy intensified as the European economies weakened during 2008 and 2009.

4-5b Global Central Bank Coordination

In some cases, the central banks of various countries coordinate their efforts for a common cause. Shortly after the terrorist attack on the United States on September 11, 2001, the central banks of several countries injected money denominated in their respective currencies into the banking system to provide more liquidity. This strategy was intended to ensure that sufficient money would be available in case customers began to withdraw funds from banks or cash machines. On September 17, 2001, the Fed's move to reduce interest rates before the U.S. stock market reopened was immediately followed by similar decisions by the Bank of Canada (Canada's central bank) and the European Central Bank.

Sometimes, however, central banks have conflicting objectives. For example, it is not unusual for two countries to simultaneously experience weak economies. In this situation, each central bank may consider intervening to weaken its home currency, which could increase foreign demand for exports denominated in that currency. But if both central banks attempt this type of intervention simultaneously, the exchange rate between the two currencies will be subject to conflicting forces.

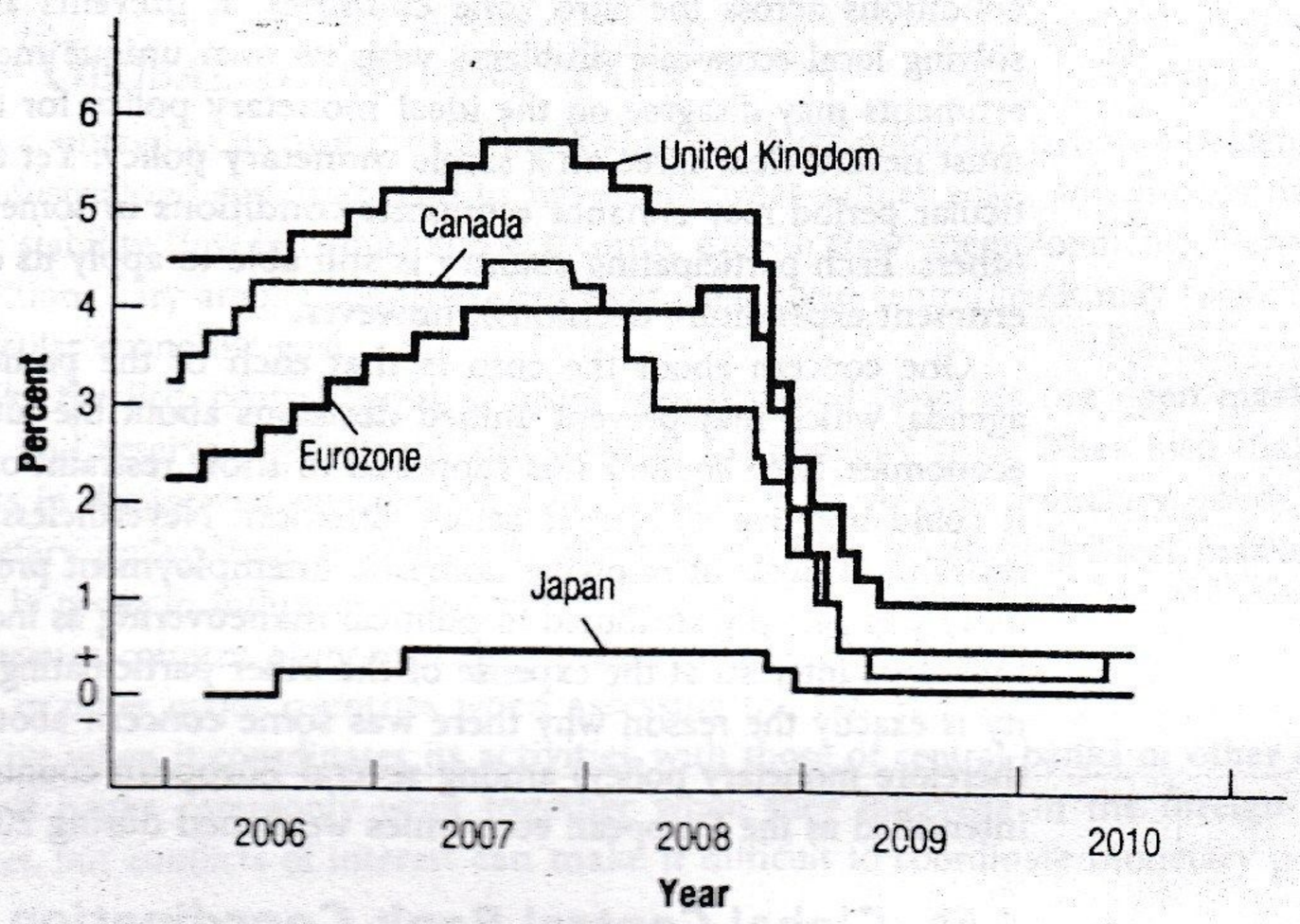
EXAMPLE

Today, the Fed plans to intervene directly in the foreign exchange market by selling dollars for yen in an attempt to weaken the dollar. Meanwhile, the Bank of Japan plans to sell yen for dollars in the foreign exchange market in an attempt to weaken the yen. The effects are offsetting. One central bank can attempt to have a greater impact by selling more of its home currency in the foreign exchange market, but the other central bank may respond to offset that force. ●

Global Monetary Policy during the Credit Crisis During 2008, the effects of the credit crisis began to spread internationally. During August–October, stock market prices in the United States, Canada, China, France, Germany, Italy, Japan, Mexico, Russia, Spain, and many other countries declined by more than 25 percent. Each central bank has its own local interest rate that it might influence with monetary policy in order to control its local economy. Exhibit 4.7 shows how the targeted interest rate level by

B.F.M.I-11th-9A

Exhibit 4.7 Targeted Interest Rates by Central Banks over Time



Source: *Federal Reserve.*

various central banks changed over time. Notice how these banks increased their targeted interest rate level during the 2006–2007 period because their economies were strong at that time. However, during the financial crisis in 2008, these economies weakened, and the central banks (like the Fed) reduced their interest rates in an effort to stimulate their respective economies.

SUMMARY

- The key components of the Federal Reserve System are the Board of Governors and the Federal Open Market Committee. The Board of Governors determines the reserve requirements on account balances at depository institutions. It is also an important subset of the Federal Open Market Committee (FOMC), which determines U.S. monetary policy. The FOMC's monetary policy has a major influence on interest rates and other economic conditions.
- The Fed uses open market operations (the buying and selling of securities) as a means of adjusting the money supply. The Fed purchases securities to increase the money supply and sells them to reduce the money supply.
- In response to the credit crisis, the Fed provided indirect funding to Bear Stearns (a large securities firm) so that it did not have to file for bankruptcy. It also created various facilities for providing funds to financial institutions and other corporations. One facility allowed primary dealers that serve as financial intermediaries for bonds and other securities to obtain overnight loans. Another facility purchased commercial paper issued by corporations.
- Each country has its own central bank, which is responsible for conducting monetary policy to achieve economic goals such as low inflation and low unemployment. Seventeen countries in Europe have adopted a single currency, which means that all of these countries are subject to the same monetary policy.

POINT COUNTER-POINT

Should There Be a Global Central Bank?

Point Yes. A global central bank could serve all countries in the manner that the European Central Bank now serves several European countries. With a single central bank, there could be a single monetary policy across all countries.

Counter-Point No. A global central bank could create a global monetary policy only if a single currency were used throughout the world. Moreover, all countries would not agree on the monetary policy that would be appropriate.

Who Is Correct? Use the Internet to learn more about this issue and then formulate your own opinion.

QUESTIONS AND APPLICATIONS

1. The Fed Briefly describe the origin of the Federal Reserve System. Describe the functions of the Fed district banks.

2. FOMC What are the main goals of the Federal Open Market Committee (FOMC)? How does it attempt to achieve these goals?

3. Open Market Operations Explain how the Fed increases the money supply through open market operations.

4. Policy Directive What is the policy directive, and who carries it out?

Beige Book What is the Beige Book, and why is it important to the FOMC?

6. Reserve Requirements How is money supply growth affected by an increase in the reserve requirement ratio?

7. Control of Money Supply Describe the characteristics that a measure of money should have if it is to be manipulated by the Fed.

8. FOMC Economic Presentations What is the purpose of economic presentations during an FOMC meeting?

9. Open Market Operations Explain how the Fed can use open market operations to reduce the money supply.

10. Effect on Money Supply Why do the Fed's open market operations have a different effect on the money supply than do transactions between two depository institutions?

11. Discount Window Lending during Credit Crisis Explain how and why the Fed extended its discount window lending to nonbank financial institutions during the credit crisis.

12. The Fed versus Congress Should the Fed or Congress decide the fate of large financial institutions that are near bankruptcy?

13. Bailouts by the Fed Do you think that the Fed should have bailed out large financial institutions during the credit crisis?

14. The Fed's Impact on Unemployment Explain how the Fed's monetary policy affects the unemployment level.

15. The Fed's Impact on Home Purchases Explain how the Fed influences the monthly mortgage payments on homes. How might the Fed indirectly influence the total demand for homes by consumers?

16. The Fed's Impact on Security Prices Explain how the Fed's monetary policy may indirectly affect the price of equity securities.

17. Impact of FOMC Statement How might the FOMC statement (following the committee's meeting) stabilize financial markets more than if no statement were provided?

18. Fed Facility Programs during the Credit Crisis Explain how the Fed's facility programs improved liquidity in some debt markets.

19. Consumer Financial Protection Bureau As a result of the Financial Reform Act of 2010, the Consumer Financial Protection Bureau was established and housed within the Federal Reserve. Explain the role of this bureau.

20. Euro zone Monetary Policy Explain why participating in the euro zone causes a country to give up its independent monetary policy and control over its domestic interest rates.

21. The Fed's Power What should be the Fed's role? Should it be focused only on monetary policy? Or should it be allowed to engage in the trading of various types of securities in order to stabilize the financial system when securities markets are suffering from investor fears and the potential for high default risk?

22. The Fed and Mortgage-Backed Securities How has the Fed used mortgage-backed securities in recent years, and what has it been trying to accomplish?

23. The Fed and Commercial Paper Why and how did the Fed intervene in the commercial paper market during the credit crisis?

24. The Fed and Long-term Treasury Securities Why did the Fed purchase long-term Treasury securities in 2010, and how did this strategy differ from the Fed's usual operations?

25. The Fed and TALF What was TALF, and why did the Fed create it?

Interpreting Financial News

Interpret the following statements made by Wall Street analysts and portfolio managers.

a. "The Fed's future monetary policy will be dependent on the economic indicators to be reported this week."

b. "The Fed's role is to take the punch bowl away just as the party is coming alive."

c. "Inflation will likely increase because real short-term interest rates currently are negative."

Managing in Financial Markets

Anticipating the Fed's Actions As a manager of a large U.S. firm, one of your assignments is to monitor U.S. economic conditions so that you can forecast the demand for products sold by your firm. You realize that the Federal Reserve implements monetary policy—and that the federal government implements spending and tax policies, or fiscal policy—to affect economic growth and inflation. However, it is difficult to achieve high economic growth without igniting inflation. Although the Federal Reserve is often said to be independent of the administration in office, there is much interaction between monetary and fiscal policies.

Assume that the economy is currently stagnant and that some economists are concerned about the possibility of a recession. Yet some industries are experiencing high growth, and inflation is higher this year than in the previous five years. Assume that the Federal Reserve chairman's term will expire in four months and that the President of the United States will have to appoint a new chairman (or reappoint the existing chairman). It is widely known that the existing chairman would like to be reappointed. Also assume that next year is an election year for the administration.

a. Given the circumstances, do you expect that the administration will be more concerned about increasing economic growth or reducing inflation?

b. Given the circumstances, do you expect that the Fed will be more concerned about increasing economic growth or reducing inflation?

c. Your firm is relying on you for some insight on how the government will influence economic conditions and hence the demand for your firm's products. Given the circumstances, what is your forecast of how the government will affect economic conditions?

Flow of Funds Exercise

Monitoring the Fed

Recall that Carson Company has obtained substantial loans from finance companies and commercial banks. The interest rate on the loans is tied to market interest rates and is adjusted every six months. Expecting a strong U.S. economy, Carson plans to grow by expanding its business and by making acquisitions. The company expects that it will need substantial long-term financing, and it plans to borrow additional funds either through loans or by issuing bonds. The Carson Company is also considering issuing stock to raise funds in the next year.

Given its large exposure to interest rates charged on its debt, Carson closely monitors Fed actions. It subscribes to a special service that attempts to monitor the

Fed's actions in the Treasury security markets. It recently received an alert from the service that suggested the Fed has been selling large holdings of its Treasury securities in the secondary Treasury securities market.

a. How should Carson interpret the actions by the Fed? That is, will these actions place upward or downward pressure on the price of Treasury securities? Explain.

b. Will these actions place upward or downward pressure on Treasury yields? Explain.

c. Will these actions place upward or downward pressure on interest rates? Explain.

INTERNET/EXCEL EXERCISE

Assess the current structure of the Federal Reserve System by using the website www.federalreserve.gov/monetarypolicy/fomc.htm.

Go to the minutes of the most recent meeting. Who is the current chairman? Who is the current vice chairman? How many people attended the meeting? Describe the main issues discussed at the meeting.

WSJ EXERCISE

Reviewing Fed Policies

Review recent issues of the *Wall Street Journal* and search for any comments that relate to the Fed. Does it appear that the Fed may attempt to revise the federal funds rate? If so, how and why?

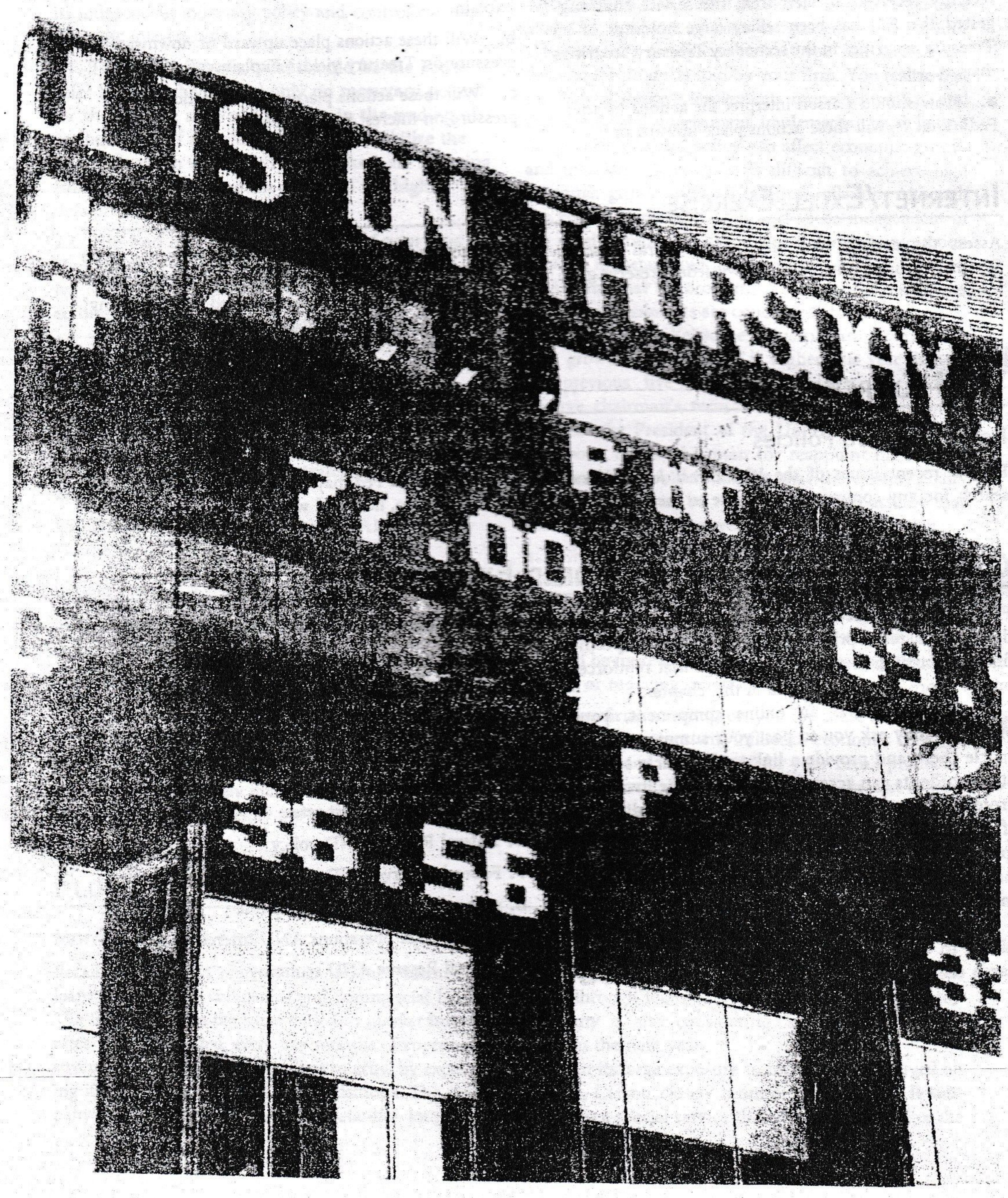
ONLINE ARTICLES WITH REAL-WORLD EXAMPLES

Find a recent practical article available online that describes a real-world example regarding a specific financial institution or financial market that reinforces one or more concepts covered in this chapter.

If your class has an online component, your professor may ask you to post your summary of the article there and provide a link to the article so that other students can access it. If your class is live, your professor may ask you to summarize your application of the article in class. Your professor may assign specific students to complete this assignment or may allow any students to do the assignment on a volunteer basis.

For recent online articles and real-world examples related to this chapter, consider using the following search terms (be sure to include the prevailing year as a search term to ensure that the online articles are recent):

1. Federal Reserve AND interest rate
2. Federal Reserve AND monetary policy
3. Board of Governors
4. FOMC meeting
5. FOMC AND interest rate
6. Federal Reserve AND policy
7. Federal Reserve AND open market operations
8. money supply AND interest rate
9. open market operations AND interest rate
10. Federal Reserve AND economy


IS ON THURSDAY
77.00
69
56

5
Monetary Policy

CHAPTER OBJECTIVES

The specific objectives of this chapter are to:

- describe the mechanics of monetary policy,
- explain the trade-offs involved in monetary policy,
- describe how financial market participants respond to the Fed's policies, and
- explain how monetary policy is affected by the global environment.

The previous chapter discussed the Federal Reserve System and how it controls the money supply, information essential to financial market participants. It is just as important for participants to know how changes in the money supply affect the economy, which is the subject of this chapter.

5-1 Mechanics of Monetary Policy

Recall from Chapter 4 that the Federal Open Market Committee (FOMC) is responsible for determining the monetary policy. Also recall that the Fed's goals are to achieve a low level of inflation and a low level of unemployment. This goal is consistent with the goals of most central banks, although the stated goals of some central banks are more broadly defined (e.g., "achieving economic stability"). Given the Fed's goals of controlling economic growth and inflation, it must assess the prevailing indicators of these economic variables before determining its monetary policy.

5-1a Monitoring Indicators of Economic Growth

The Fed monitors indicators of economic growth because high economic growth creates a more prosperous economy and can result in lower unemployment. Gross domestic product (GDP), which measures the total value of goods and services produced during a specific period, is measured each month. It serves as the most direct indicator of economic growth in the United States. The level of production adjusts in response to changes in consumers' demand for goods and services. A high production level indicates strong economic growth and can result in an increased demand for labor (lower unemployment).

The Fed also monitors national income, which is the total income earned by firms and individual employees during a specific period. A strong demand for U.S. goods and services results in a large amount of revenue for firms. In order to accommodate demand, firms hire more employees or increase the work hours of their existing employees. Thus the total income earned by employees rises.

The unemployment rate is monitored as well, because one of the Fed's primary goals is to maintain a low rate of unemployment in the United States. However, the unemployment rate does not necessarily indicate the degree of economic growth: it measures only the number and not the types of jobs that are being filled. It is possible to have a substantial reduction in unemployment during a period of weak economic growth if new, low-paying jobs are created during that period.

Several other indexes serve as indicators of growth in specific sectors of the U.S. economy; these include an industrial production index, a retail sales index, and a home sales index. A composite index combines various indexes to indicate economic growth across sectors. In addition to the many indicators reflecting recent conditions, the Fed may also use forward-looking indicators (such as consumer confidence surveys) to forecast future economic growth.

Index of Leading Economic Indicators Among the economic indicators widely followed by market participants are the indexes of leading, coincident, and lagging economic indicators, which are published by the Conference Board. **Leading economic indicators** are used to predict future economic activity. Usually, three consecutive monthly changes in the same direction in these indicators suggest a turning point in the economy. **Coincident economic indicators** tend to reach their peaks and troughs at the same time as business cycles. **Lagging economic indicators** tend to rise or fall a few months after business-cycle expansions and contractions.

The Conference Board is an independent, not-for-profit, membership organization whose stated goal is to create and disseminate knowledge about management and the marketplace to help businesses strengthen their performance and better serve society. The Conference Board conducts research, convenes conferences, makes forecasts, assesses trends, and publishes information and analyses. A summary of the Conference Board's leading, coincident, and lagging indexes is provided in Exhibit 5.1.

Exhibit 5.1 The Conference Board's Indexes of Leading, Coincident, and Lagging Indicators

Leading Index
1. Average weekly hours, manufacturing
2. Average weekly initial claims for unemployment insurance
3. Manufacturers' new orders, consumer goods and materials
4. Vendor performance, slower deliveries diffusion index
5. Manufacturers' new orders, nondefense capital goods
6. Building permits, new private housing units
7. Stock prices, 500 common stocks
8. Money supply, M2
9. Interest rate spread, 10-year Treasury bonds less federal funds
10. Index of consumer expectations
Coincident Index
1. Employees on nonagricultural payrolls
2. Personal income less transfer payments
3. Industrial production
4. Manufacturing and trade sales
Lagging Index
1. Average duration of unemployment
2. Inventories to sales ratio, manufacturing and trade
3. Labor cost per unit of output, manufacturing
4. Average prime rate
5. Commercial and industrial loans
6. Consumer installment credit to personal income ratio
7. Consumer price index for services

5-1b Monitoring Indicators of Inflation

The Fed closely monitors price indexes and other indicators to assess the U.S. inflation rate.

Producer and Consumer Price Indexes The producer price index represents prices at the wholesale level, and the consumer price index represents prices paid by consumers (retail level). There is a lag time of about one month after the period being measured due to the time required to compile price information for the indexes. Nevertheless, financial markets closely monitor the price indexes because they may be used to forecast inflation, which affects nominal interest rates and the prices of some securities. Agricultural price indexes reflect recent price movements in grains, fruits, and vegetables. Housing price indexes reflect recent price movements in homes and rental properties.

Other Inflation Indicators In addition to price indexes, there are several other indicators of inflation. Wage rates are periodically reported in various regions of the United States. Because wages and prices are highly correlated over the long run, wages can indicate price movements. Oil prices can signal future inflation because they affect the costs of some forms of production as well as transportation costs and the prices paid by consumers for gasoline.

The price of gold is closely monitored because gold prices tend to move in tandem with inflation. Some investors buy gold as a hedge against future inflation. Therefore, a rise in gold prices may signal the market's expectation that inflation will increase.

Indicators of economic growth might also be used to indicate inflation. For example, the release of several favorable employment reports may arouse concern that the economy will overheat and lead to **demand-pull inflation**, which occurs when excessive spending pulls up prices. Although these reports offer favorable information about economic growth, their information about inflation is unfavorable. The financial markets can be adversely affected by such reports, because investors anticipate that the Fed will have to increase interest rates in order to reduce the inflationary momentum.

5-2 Implementing Monetary Policy

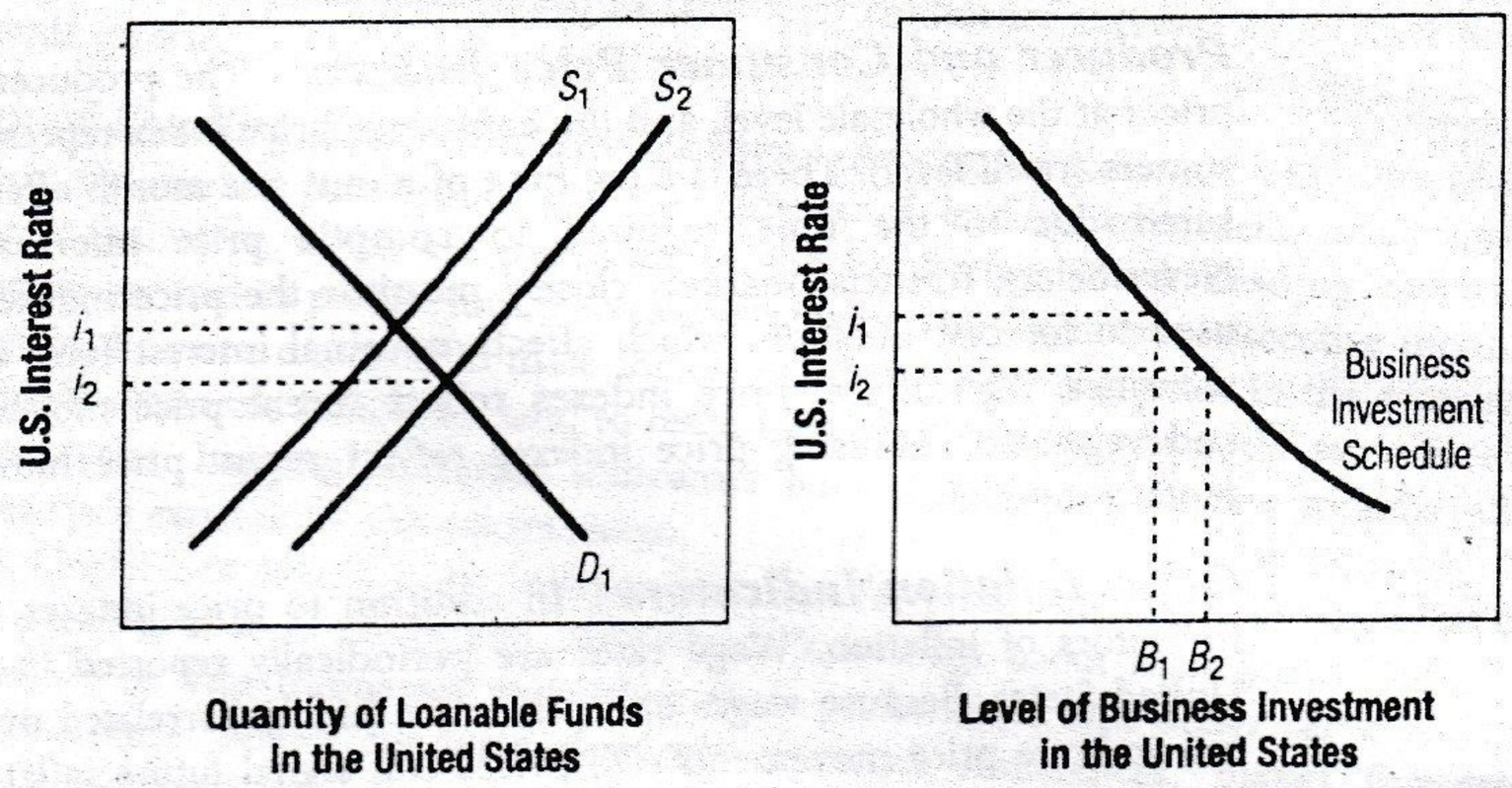
The Federal Open Market Committee assesses economic conditions, and identifies its main concerns about the economy to determine the monetary policy that would alleviate its concerns. Its monetary policy changes the money supply in order to influence interest rates, which affect the level of aggregate borrowing and spending by households and firms. The level of aggregate spending affects demand for products and services, and therefore affects both price levels (inflation) and the unemployment level.

5-2a Effects of a Stimulative Monetary Policy

The effects of a stimulative monetary policy can be illustrated using the loanable funds framework described in Chapter 2. Recall that the interaction between the supply of loanable funds and the demand for loanable funds determines the interest rate charged on such funds. Much of the demand for loanable funds is by households, firms, and government agencies that need to borrow money. Recall that the demand curve indicates the quantity of funds that would be demanded (at that time) at various possible interest rates. This curve is downward sloping because many potential borrowers would borrow a larger quantity of funds at lower interest rates.

The supply curve of loanable funds indicates the quantity of funds that would be supplied (at that time) at various possible interest rates. This curve is upward sloping

Exhibit 5.2 Effects of an Increased Money Supply



because suppliers of funds tend to supply a larger amount of funds when the interest rate is higher. Assume that, as of today, the demand and supply curves for loanable funds are those labeled D_1 and S_1 (respectively) in the left graph of Exhibit 5.2. This plot reveals that the equilibrium interest rate is i_1. The right graph of Exhibit 5.2 depicts the typical relationship between the interest rate on loanable funds and the current level of business investment. The relation is inverse because firms are more willing to expand when interest rates are relatively low. Given an equilibrium interest rate of i_1, the level of business investment is B_1.

With a stimulative monetary policy, the Fed increases the supply of funds in the banking system, which can increase the level of business investment, and hence aggregate spending in the economy.

The Fed purchases Treasury securities in the secondary market. As the investors who sell their Treasury securities receive payment from the Fed, their account balances at financial institutions increase without any offsetting decrease in the account balances of any other financial institutions. Thus there is a net increase in the total supply of loanable funds in the banking system.

Impact on Interest Rates If the Fed's action results in an increase of $5 billion in loanable funds, then the quantity of loanable funds supplied will now be $5 billion higher at any possible interest rate level. This means that the supply curve for loanable funds shifts outward to S_2 in Exhibit 5.2. The difference between S_2 and S_1 is that S_2 incorporates the $5 billion of loanable funds added as a result of the Fed's actions.

Given the shift in the supply curve for loanable funds, the quantity of loanable funds supplied exceeds the quantity of loanable funds demanded at the interest rate level i_1. The interest rate will therefore decline to i_2, the level at which the quantities of loanable funds supplied and demanded are equal.

Logic Behind the Impact on Interest Rates The graphic effects are supplemented here with a logical explanation for why the interest rates decline in response to the monetary policy. When depository institutions experience an increase in supply of funds due to the Fed's stimulative monetary policy, they have more funds than they

need at prevailing interest rates. Those depository institutions that commonly obtain very short-term loans (such as one day) in the so-called federal funds may not need to borrow as many funds. Those depository institutions that commonly lend to others in this market may be more willing to accept a lower interest rate (called the federal funds rate) when providing short-term loans in this market. The federal funds rate is directly affected by changes to the supply of money in the banking system. The Fed's monetary policy is commonly intended to alter the supply of funds in the banking system in order to achieve a specific targeted federal funds rate, such as reducing that rate from 3 to 2.75 percent or to a value within the range from 2.75 to 3 percent.

The Fed's monetary policy actions not only have a direct effect on the federal funds rate, but also affect the Treasury yield (or rate). When the Fed purchases a large amount of Treasury securities, it raises the price of Treasury securities, and therefore lowers the yield (or rate) to be earned by any investors who invest in Treasury securities at the higher prevailing price.

Most importantly, the impact of the Fed's stimulative monetary policy indirectly affects other interest rates as well, including loan rates paid by businesses. The lower interest rate level causes an increase in the level of business investment from B_1 to B_2. That is, businesses are willing to pursue additional projects now that their cost of financing is lower. The increase in business investment represents new business spending triggered by lower interest rates, which reduced the corporate cost of financing new projects.

Logic Behind the Effects on Business Cost of Debt Depository institutions are willing to charge a lower loan rate in response to the stimulative monetary policy, since their cost of funds (based on the rate they pay on deposits) is now lower. The institutions also reduce their rates on loans in order to attract more potential borrowers to make use of the newly available funds.

Another way to understand the effects of a stimulative monetary policy on the business cost of debt is to consider the influence of the risk-free rate on all interest rates. Recall from Chapter 3 that the yield for a security with a particular maturity is primarily based on the risk-free rate (the Treasury rate) for that same maturity plus a credit risk premium. Thus the financing rate on a business loan is based on the risk-free rate plus a premium that reflects the credit risk of the business that is borrowing the money. So if the prevailing Treasury (risk-free) security rate is 5 percent on an annualized basis, a business has a low level of risk that pays a 3 percent credit risk premium when borrowing money would be able to obtain funds at 8 percent (5 percent risk-free rate plus 3 percent credit risk premium).. However, if the Fed implements a stimulative monetary policy that reduces the Treasury security rate to 4 percent, the business would be able to borrow funds at 7 percent (4 percent risk-free rate plus 3 percent credit risk premium).

Businesses with other degrees of credit risk will also be affected by the Fed's monetary policy. Consider a business with moderate risk that pays a credit premium of 4 percent above the risk-free rate to obtain funds. When the Treasury (risk-free) rate was 5 percent, this business would be able to borrow funds at 9 percent (5 percent risk-free rate plus 4 percent credit risk premium). However, if the Fed implements a stimulative monetary policy that reduces the Treasury security rate to 4 percent, the business would be able to borrow funds at 8 percent (4 percent risk-free rate plus 4 percent credit risk premium).

The point here is that all businesses (regardless of their risk level) will be able to borrow funds at lower rates as a result of the Fed's stimulative monetary policy. Therefore, when they consider possible projects such as expanding their product line or building a new facility, they may be more willing to implement some projects as a result of the lower cost of funds. As firms implement more projects, they spend more money, and that extra

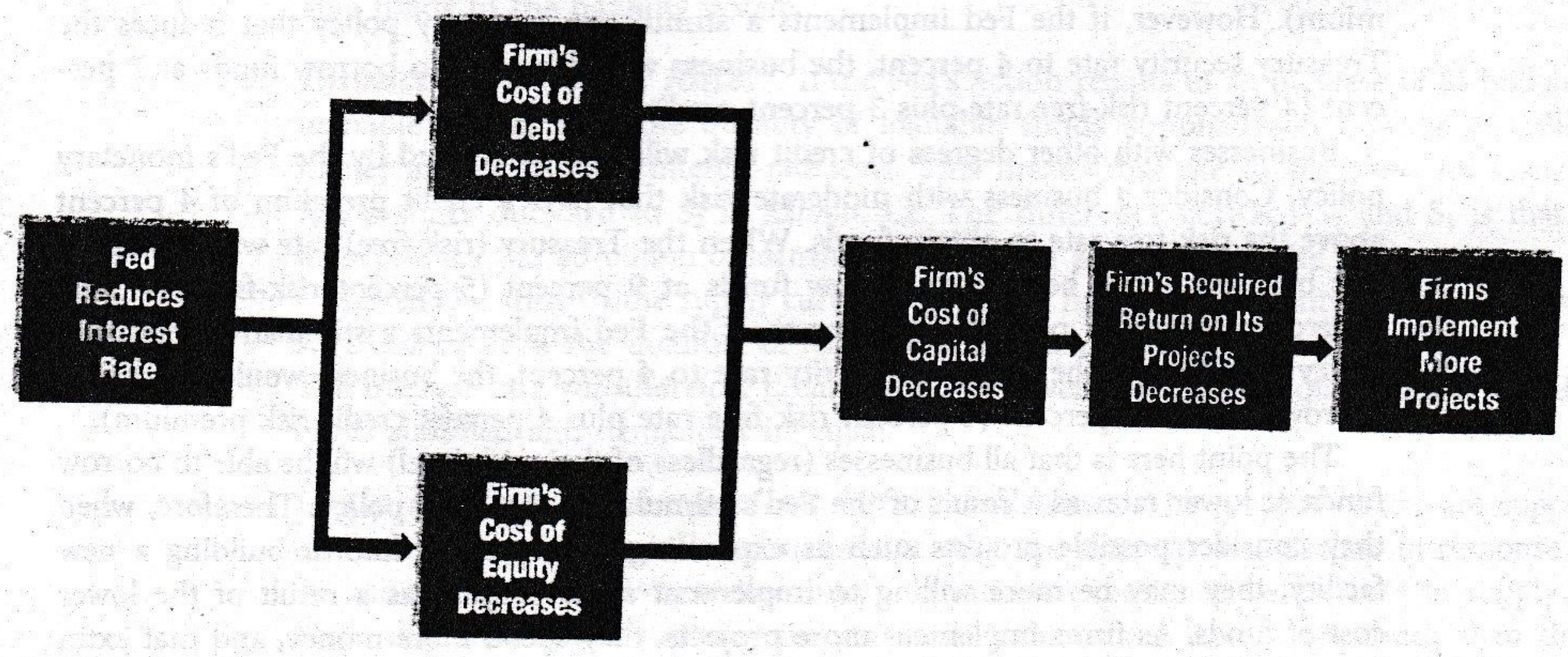
spending results in higher income to individuals or other firms who receive the proceeds. They may also hire more employees in order to expand their businesses. This generates more income for those new employees, who will spend some of their new income, and that spending provides income to the individuals or firms who receive the proceeds.

Effects on Business Cost of Equity Many businesses also rely on equity as another key source of capital. Monetary policy can also influence the cost of equity. The cost of a firm's equity is based on the risk-free rate, plus a risk premium that reflects the sensitivity of the firm's stock price movements to general stock market movements. This concept is discussed in more detail in Chapter 11, but the main point for now is that the firm's cost of equity is positively related to the risk-free rate. Therefore, if the Fed can reduce the risk-free by 1 percent, it can reduce a firm's cost of equity by 1 percent.

Summary of Effects In summary, the Fed's ability to stimulate the economy are due to its effects on the Treasury (risk-free) rate, which influences the cost of debt and the cost of equity in Exhibit 5.3. As the Fed reduces the risk-free rate, it reduces the firm's cost of borrowing (debt) and the firm's cost of equity, and therefore reduces the firm's cost of capital. If a firm's cost of capital is reduced, its required return on potential projects is reduced. Thus, more of the possible projects that a firm considers will be judged as feasible and will be implemented. As firms in the U.S. implement more projects that they now believe are feasible, they increase their spending, and this can stimulate the economy and create jobs.

Notice that for the Fed to stimulate the economy and create more jobs, it is not using its money to purchase products. It is not telling firms that they must hire more employees. Instead, its stimulative monetary policy reduces the cost of funds, which encourages firms to spend more money. In a similar manner, the Fed's stimulative monetary policy can reduce the cost of borrowing for households as well. As with firms, their cost of borrowing is based on the prevailing risk-free rate plus a credit risk premium. When the Fed's stimulative monetary policy results in a lower Treasury (risk-free) rate, it lowers the cost of borrowing for households, which encourages households to spend more money. As firms and households increase their spending, they stimulate the economy and create jobs.

Exhibit 5.3 How the Fed Can Stimulate the Economy



5-2b Fed's Policy Focuses on Long-term Maturities

Yields on Treasury securities can vary among maturities. If the yield curve (discussed in Chapter 3) is upward sloping, this implies that longer-term Treasury securities have higher annualized yields than shorter-term Treasury securities. The Fed had already been able to reduce short-term Treasury rates to near zero with its stimulative monetary policy over the 2010–2012 period. However, this did not have much impact on the firms that borrow at long-term fixed interest rates. These borrowers incur a cost of debt that is highly influenced by the long-term Treasury rates, not the short-term Treasury rates.

To the extent that the Fed wants to encourage businesses to increase their spending on long-term projects, it may need to use a stimulative policy that is focused on reducing the long-term Treasury yields, which would reduce the long-term debt rates. So if the Fed wants to reduce the rate that these potential borrowers would pay for fixed-rate loans with 10-year maturities, it would attempt to use a monetary policy that reduces the yield on Treasury securities with 10-year maturities (which reflects the 10-year risk-free rate).

In some periods, the Fed has directed its monetary policy at the trading of Treasury securities with specific maturities so that it can cause a bigger change for some maturities than others. In 2011 and 2012, the Fed periodically implemented an "operation twist" strategy (which it also implemented in 1961). It sold some holdings of short-term Treasury securities, and used the proceeds to purchase long-term Treasury securities. In theory, the strategy would increase short-term interest rates and reduce long-term interest rates, which would reflect a twist of the yield curve.

The logic behind the strategy is that the Fed should focus on reducing long-term interest rates rather than short-term interest rates in order to encourage firms to borrow and spend more funds. Since firms should be more willing to increase their spending on new projects when long-term interests are reduced, the strategy could help stimulate the economy and create jobs. In addition, potential home buyers might be more willing to purchase homes if long-term interest rates were lower. However, there is not complete agreement on whether this strategy would really have a substantial and sustained effect on long-term interest rates. Money flows between short-term and long-term Treasury markets, which means that it is difficult for the Fed to have one type of impact in the long-term market that is different from that in the short-term market. The operation twist strategy was able to reduce long-term Treasury rates, but its total impact may have been limited for other reasons explained later in this chapter.

5-2c Why a Stimulative Monetary Policy Might Fail

While a stimulative monetary policy is normally desirable when the economy is weak, it is not always effective, for the reasons provided next.

Limited Credit Provided by Banks The ability of the Fed to stimulate the economy is partially influenced by the willingness of depository institutions to lend funds. Even if the Fed increases the level of bank funds during a weak economy, banks may be unwilling to extend credit to some potential borrowers; the result is a *credit crunch*.

Banks provide loans only after confirming that the borrower's future cash flows will be adequate to make loan repayments. In a weak economy, the future cash flows of many potential borrowers are more uncertain, causing a reduction in loan applications (demand for loans) and in the number of loan applicants that meet a bank's qualification standards.

Banks and other lending institutions have a responsibility to their depositors, shareholders, and regulators to avoid loans that are likely to default. Because default risk rises during a weak economy, some potential borrowers will be unable to obtain loans. Others may qualify only if they pay high risk premiums to cover their default risk. Thus the

effects of the Fed's monetary policy may be limited if potential borrowers do not qualify or are unwilling to incur the high-risk premiums. If banks do not lend out the additional funds that have been pumped into the banking system by the Fed, the economy will not be stimulated.

EXAMPLE

During the credit crisis that began in 2008, the Fed attempted to stimulate the economy by using monetary policy to reduce interest rates. Initially, however, the effect of the monetary policy was negligible. Firms were unwilling to borrow even at low interest rates because they did not want to expand while economic conditions were so weak. In addition, commercial banks raised the standards necessary to qualify for loans so that they would not repeat any of the mistakes (such as liberal lending standards) that led to the credit crisis. Consequently, the amount of new loans resulting from the Fed's stimulative monetary policy was limited, and therefore the amount of new spending was limited as well. ●

Low Return on Savings Although the Fed's policy of reducing interest rates allows for lower borrowing rates, it also results in lower returns on savings. The interest rates on bank deposits are close to zero, which limits the potential returns that can be earned by investors who want to save money. This might encourage individuals to borrow (and spend) rather than save, which could allow for a greater stimulative effect on the economy. However, some individuals that are encouraged to borrow because of lower interest rates may not be able to repay their debt. Therefore, the very low interest rates might lead to more personal bankruptcies.

Furthermore, some savers, such as retirees, rely heavily on their interest income to cover their periodic expenses. When interest rates are close to zero, interest income is close to zero, and retirees that rely on interest income have to restrict their spending. This effect can partially offset the expected stimulative effect of lower interest rates. Some retirees may decide to invest their money in alternative ways (such as in stocks) instead of as bank deposits when interest rates are low. However, many alternative investments are risky, and could cause retirees to experience losses on their retirement funds.

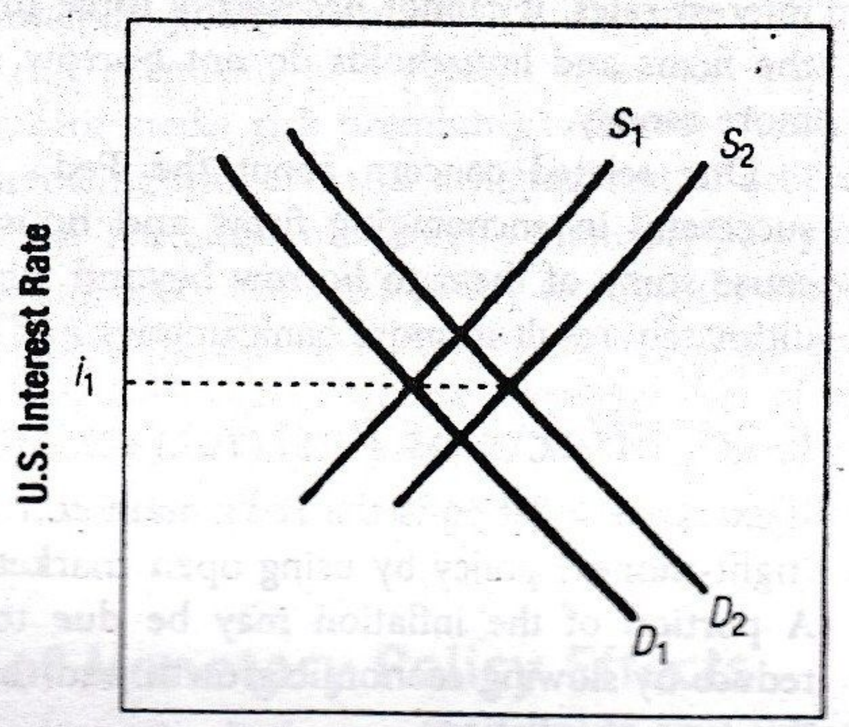
Adverse Effects on Inflation When a stimulative monetary policy is used, the increase in money supply growth may cause an increase in inflationary expectations, which may limit the impact on interest rates.

EXAMPLE

Assume that the U.S. economy is very weak, and suppose the Fed responds by using open market operations (purchasing Treasury securities) to increase the supply of loanable funds. This action is supposed to reduce interest rates and increase the level of borrowing and spending. However, there is some evidence that high money growth may also lead to higher inflation over time. To the extent that businesses and households recognize that an increase in money growth will cause higher inflation, they will revise their inflationary expectations upward as a result. This effect is often referred to as the theory of rational expectations. Higher inflationary expectations encourage businesses and households to increase their demand for loanable funds (as explained in Chapter 2) in order to borrow and make planned expenditures before price levels increase. This increase in demand reflects a rush to make planned purchases now.

These effects of the Fed's monetary policy are shown in Exhibit 5.4. The result is an increase in both the supply of loanable funds and the demand for those funds. The effects are offsetting, so the Fed may not be able to reduce interest rates for a sustained period of time. If the Fed cannot force interest rates lower with an active monetary policy, it will be unable to stimulate an increase in the level of business investment. Business investment will increase only if the cost of financing is reduced, making some proposed business projects feasible. If the increase in business investment does not occur, economic conditions will not improve. ●

Exhibit 5.4 Effects of an Increased Money Supply According to Rational Expectations Theory



Because the effects of a stimulative policy could be disrupted by expected inflation, an alternative approach is a passive monetary policy that allows the economy to correct itself rather than rely on the Fed's intervention. Interest rates should ultimately decline in a weak economy even without a stimulative monetary policy because the demand for loanable funds should decline as economic growth weakens. In this case, interest rates would decline without a corresponding increase in inflationary expectations, so the interest rates may stay lower for a sustained period of time. Consequently, the level of business investment should ultimately increase, which should lead to a stronger economy and more jobs.

The major criticism of a passive monetary policy is that the weak economy could take years to correct itself. During a slow economy, interest rates might not decrease until a year later if the Fed played a passive role and did not intervene to stimulate the economy. Most people would probably prefer that the Fed take an active role in improving economic conditions—rather than take a passive role and simply hope that the economy will correct itself.

Even if the Fed's stimulative policy does not affect inflation and if banks are willing to lend the funds received, it is possible that firms and businesses will not be willing to borrow more money. Some firms may have already reached their debt capacity, so that they are restricted from borrowing more money, even if loan rates are reduced. They may believe that any additional debt could increase the likelihood of bankruptcy. Thus they may delay their spending until the economy has improved.

Similarly, households that commonly borrow to purchase vehicles, homes, and other products may also prefer to avoid borrowing more money during weak economies, even if interest rates are low. Households who are unemployed are not in a position to borrow more money. And even if employed households can obtain loans from financial institutions, they may believe that they are already at their debt capacity. The economic conditions might make them worry that their job is not stable, and they prefer not to increase their debt until their economic conditions improve and their job is more secure.

So while the Fed hopes that the lower interest rates will encourage more borrowing and spending to stimulate the economy, the potential spenders (firms and households) may delay their borrowing until the economy improves. But the economy may not improve unless firms and households increase their spending. While the Fed can lower interest rates, it cannot necessarily force firms or households to borrow more money. If the firms and households do not borrow more money, they will not be able to spend more money.

One related concern about the Fed's stimulative monetary policy is that if it is successful in encouraging firms and households to borrow funds, it might indirectly cause some of them to borrow beyond what they can afford to borrow. Thus it might ultimately result in more bankruptcies and cause a new phase of economic problems.

5-2d Effects of Restrictive Monetary Policy

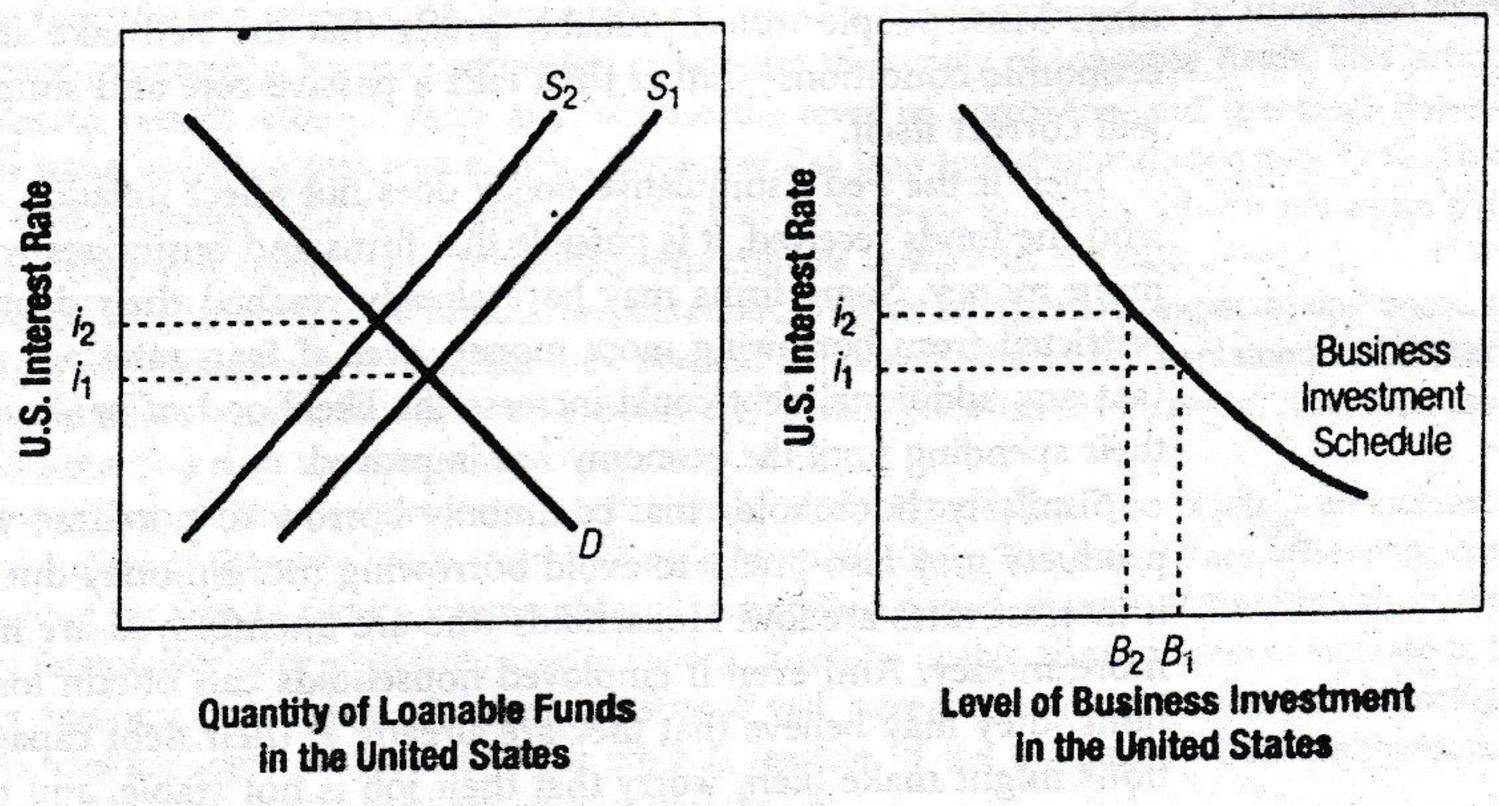
If excessive inflation is the Fed's main concern, then the Fed can implement a restrictive (tight-money) policy by using open market operations to reduce money supply growth. A portion of the inflation may be due to demand-pull inflation, which the Fed can reduce by slowing economic growth and thereby the excessive spending that can lead to this type of inflation.

To slow economic growth and reduce inflationary pressures, the Fed can sell some of its holdings of Treasury securities in the secondary market. As investors make payments to purchase these Treasury securities, their account balances decrease without any offsetting increase in the account balances of any other financial institutions. Thus there is a net decrease in deposit accounts (money), which results in a net decrease in the quantity of loanable funds.

Assume that the Fed's action causes a decrease of $5 billion in loanable funds. The quantity of loanable funds supplied will now be $5 billion lower at any possible interest rate level. This reflects an inward shift in the supply curve from S1 to S2, as shown in Exhibit 5.5.

Given the inward shift in the supply curve for loanable funds, the quantity of loanable funds demanded exceeds the quantity of loanable funds supplied at the original interest

Exhibit 5.5 Effects of a Reduced Money Supply



rate level ($i1$). Thus the interest rate will increase to $i2$, the level at which the quantities of loanable funds supplied and demanded are equal.

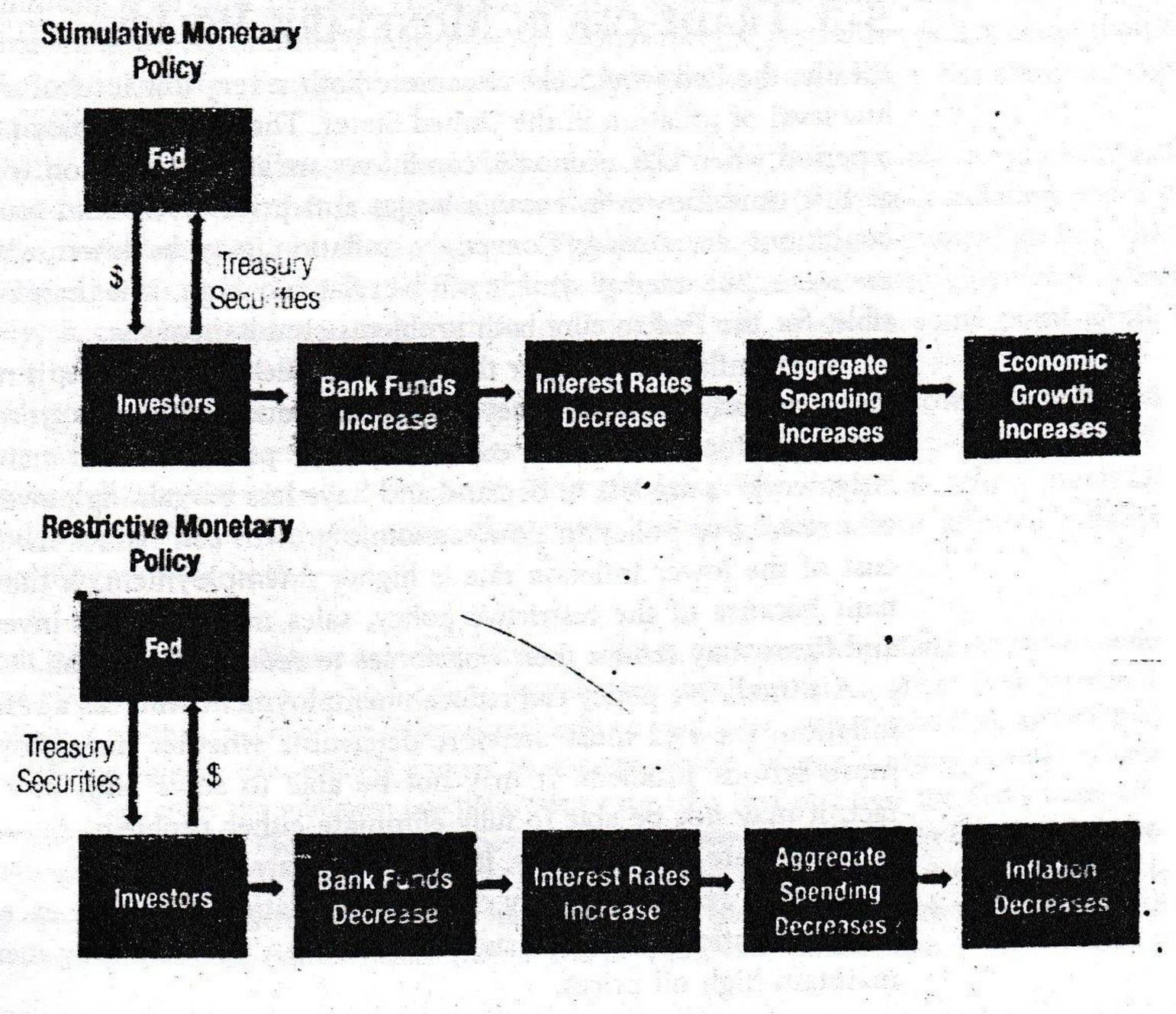
Depository institutions raise not only the rate charged on loans in the federal funds market but also the interest rates on deposits and on household and business loans. If the Fed's restrictive monetary policy increases the Treasury rate from 5 to 6 percent, a firm that must pay a risk premium of 4 percent must now pay 10 percent (6 percent risk-free rate plus 4 percent credit risk premium) to borrow funds. All firms and households who consider borrowing money incur a higher cost of debt as a result of the Fed's restrictive monetary policy. The effect of the Fed's monetary policy on loans to households and businesses is important, since the Fed's ability to affect the amount of spending in the economy stems from influencing the rates charged on household and business loans.

The higher interest rate level increases the corporate cost of financing new projects and therefore causes a decrease in the level of business investment from B1 to B2. As economic growth is slowed by this reduction in business investment, inflationary pressure may be reduced.

5-2e Summary of Monetary Policy Effects

Exhibit 5.6 summarizes how the Fed can affect economic conditions through its influence on the supply of loanable funds. The top part of the exhibit illustrates a stimulative (loose-money) monetary policy intended to boost economic growth, and the bottom part illustrates a restrictive (tight-money) monetary policy intended to reduce inflation.

Exhibit 5.6 How Monetary Policy Can Affect Economic Conditions



Lagged Effects of Monetary Policy There are three lags involved in monetary policy that can make the Fed's job more challenging. First, there is a **recognition lag**, or the lag between the time a problem arises and the time it is recognized. Most economic problems are initially revealed by statistics, not actual observation. Because economic statistics are reported only periodically, they will not immediately signal a problem. For example, the unemployment rate is reported monthly. A sudden increase in unemployment may not be detected until the end of the month, when statistics finally reveal the problem. Even if unemployment increases slightly each month for two straight months, the Fed might not act on this information because it may not seem significant. A few more months of steadily increasing unemployment, however, would force the Fed to recognize that a serious problem exists. In such a case, the recognition lag may be four months or longer.

The lag from the time a serious problem is recognized until the time the Fed implements a policy to resolve that problem is known as the **implementation lag**. Then, even after the Fed implements a policy, there will be an **impact lag** until the policy has its full impact on the economy. For example, an adjustment in money supply growth may have an immediate impact on the economy to some degree, but its full impact may not occur until a year or so after the adjustment.

These lags hinder the Fed's control of the economy. Suppose the Fed uses a stimulative policy to stimulate the economy and reduce unemployment. By the time the implemented monetary policy begins to take effect, the unemployment rate may have already reversed itself and may now be trending downward as a result of some other outside factors (such as a weakened dollar that increased foreign demand for U.S. goods and created U.S. jobs). Without monetary policy lags, implemented policies would be more effective.

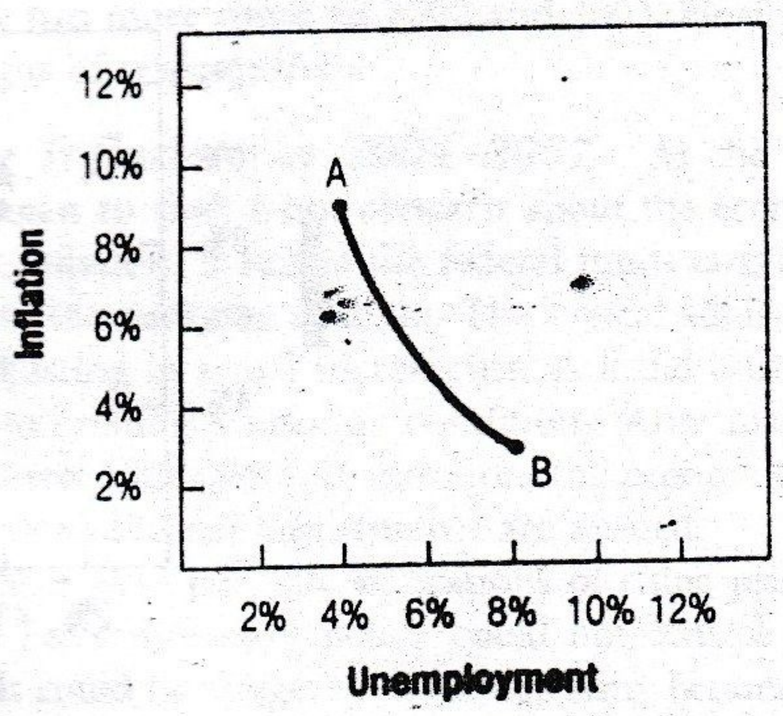
5-3 Trade-off in Monetary Policy

Ideally, the Fed would like to achieve both a very low level of unemployment and a very low level of inflation in the United States. The U.S. unemployment rate should be low in a period when U.S. economic conditions are strong. Inflation will likely be relatively high at this time, however, because wages and price levels tend to increase when economic conditions are strong. Conversely, inflation may be lower when economic conditions are weak, but unemployment will be relatively high. It is therefore difficult, if not impossible, for the Fed to cure both problems simultaneously.

When inflation is higher than the Fed deems acceptable, it may consider implementing a restrictive (tight-money) policy to reduce economic growth. As economic growth slows, producers cannot as easily raise their prices and still maintain sales volume. Similarly, workers are less in demand and have less bargaining power on wages. Thus the use of a restrictive policy to slow economic growth can reduce the inflation rate. A possible cost of the lower inflation rate is higher unemployment. If the economy becomes stagnant because of the restrictive policy, sales may decrease, inventories may accumulate, and firms may reduce their workforces to reduce production.

A stimulative policy can reduce unemployment whereas a restrictive policy can reduce inflation; the Fed must therefore determine whether unemployment or inflation is the more serious problem. It may not be able to solve both problems simultaneously. In fact, it may not be able to fully eliminate either problem. Although a stimulative policy can stimulate the economy, it does not guarantee that unskilled workers will be hired. Although a restrictive policy can reduce inflation caused by excessive spending, it cannot reduce inflation caused by such factors as an agreement by members of an oil cartel to maintain high oil prices.

Exhibit 5.7 Trade-off between Reducing Inflation and Unemployment



5-3a Impact of Other Forces on the Trade-off

Other forces may also affect the trade-off faced by the Fed. Consider a situation where, because of specific cost factors (e.g., an increase in energy costs), inflation will be at least 3 percent. In other words, this much inflation will exist no matter what type of monetary policy the Fed implements. Assume that, because of the number of unskilled workers and people "between jobs," the unemployment rate will be at least 4 percent. A stimulative policy will stimulate the economy sufficiently to maintain unemployment at that minimum level of 4 percent. However, such a stimulative policy may also cause additional inflation beyond the 3 percent level. Conversely, a restrictive policy could maintain inflation at the 3 percent minimum, but unemployment would likely rise above the 4 percent minimum.

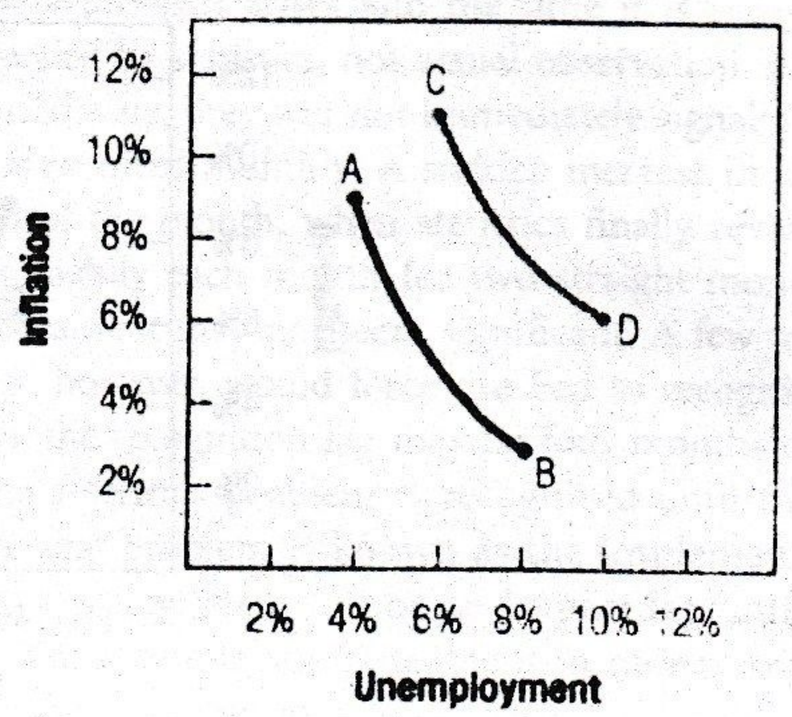
This trade-off is illustrated in Exhibit 5.7. Here the Fed can use a very stimulative (loose-money) policy that is expected to result in point A (9 percent inflation and 4 percent unemployment), or it can use a highly restrictive (tight-money) policy that is expected to result in point B (3 percent inflation and 8 percent unemployment). Alternatively, it can implement a compromise policy that will result in some point along the curve between A and B.

Historical data on annual inflation and unemployment rates show that when one of these problems worsens, the other does not automatically improve. Both variables can rise or fall simultaneously over time. Nevertheless, this does not refute the trade-off faced by the Fed. It simply means that some outside factors have affected inflation or unemployment or both.

EXAMPLE

Recall that the Fed could have achieved point A, point B, or somewhere along the curve connecting these two points during a particular time period. Now assume that oil prices have increased substantially such that the minimum inflation rate will be, say, 6 percent. In addition, assume that various training centers for unskilled workers have been closed, leaving a higher number of unskilled workers. This forces the minimum unemployment rate to 6 percent. Now the Fed's trade-off position has changed. The Fed's new set of possibilities is shown as curve CD in Exhibit 5.8. Note that the points reflected on curve CD are not as desirable as the points along curve AB that were previously attainable. No matter what type of monetary policy the Fed uses, both the inflation rate and the unemployment rate will be higher than in the previous time period. This is not the Fed's fault.

Exhibit 5.8 Adjustment in the Trade-off between Unemployment and Inflation over Time



In fact, the Fed is still faced with a trade-off: between point C (11 percent inflation, 6 percent unemployment) and point D (6 percent inflation, 10 percent unemployment), or some other point along curve CD. ●

For example, during the financial crisis of 2008–2009 and during 2010–2013 when the economy was still attempting to recover, the Fed focused more on reducing unemployment than on inflation. While it recognized that a stimulative monetary policy could increase inflation, it viewed inflation as the lesser of two evils. It would rather achieve a reduction in unemployment by stimulating the economy even if that resulted in a higher inflation rate.

When FOMC members are primarily concerned with either inflation or unemployment, they tend to agree on the type of monetary policy that should be implemented. When both inflation and unemployment are relatively high, however, there is more disagreement among the members about the proper monetary policy to implement. Some members would likely argue for a restrictive policy to prevent inflation from rising, while other members would suggest that a stimulative policy should be implemented to reduce unemployment even if it results in higher inflation.

www.federalreserve.gov/monetarypolicy/openmarket.htm
Shows recent changes in the federal funds target rate.

5-3b Shifts in Monetary Policy over Time

The trade-offs involved in monetary policy can be understood by considering the Fed's decisions over time. In some periods, the Fed's focus is on stimulating economic growth and reducing the unemployment level, with less concern about inflation. In other periods, the Fed's focus is on reducing inflationary pressure, with less concern about the unemployment level. A brief summary of the following economic cycles illustrates this point.

Focus on Improving Weak Economy in 2001–2003 In 2001, when economic conditions were weak, the Fed reduced the targeted federal funds rate 10 times; this resulted in a cumulative decline of 4.25 percent in the targeted federal funds rate. As the federal funds rate was reduced, other short-term market interest rates declined as well. Despite these interest rate reductions, the economy did not respond. The Fed's effects on the economy might have been stronger had it been able to reduce long-term

interest rates. After the economy failed to respond as hoped in 2001, the Fed reduced the federal funds target rate two more times in 2002 and 2003. Finally, in 2004 the economy began to show some signs of improvement.

Focus on Reducing Inflation in 2004–2007 As the economy improved in 2004, the Fed's focus began to shift from concern about the economy to concern about the possibility of higher inflation. It raised the federal funds target rate 17 times over the period from mid-2004 to the summer of 2006. The typical adjustment in the target rate was 0.25 percent. By adjusting in small increments, as it did during this period, the Fed is unlikely to overreact to existing economic conditions. After making each small adjustment in the targeted federal funds rate, it monitors the economic effects and decides at the next meeting whether additional adjustments are needed.

During 2004–2007, there were periodic indications of rising prices, mostly due to high oil prices. Although the Fed's monetary policy could not control oil prices, it wanted to prevent any inflation that could be triggered if the economy became strong and there were either labor shortages or excessive demand for products. Thus the Fed tried to maintain economic growth without letting it become so strong that it could cause higher inflation.

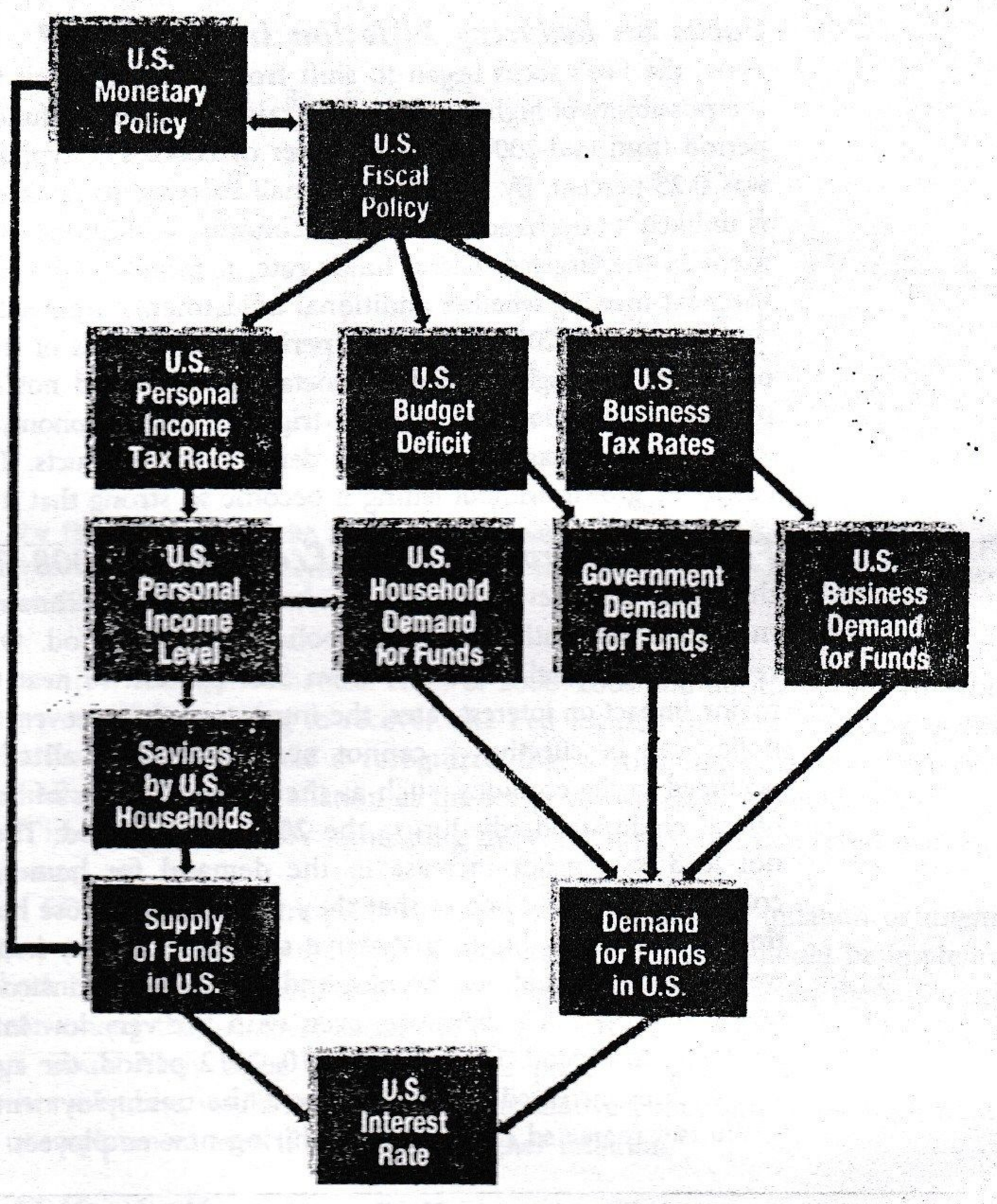
Focus on Improving Weak Economy in 2008–2013 Near the end of 2008, the credit crisis developed and resulted in a severe economic slowdown. The Fed implemented a stimulative monetary policy in this period. Over the 2008–2013 period, it reduced the federal funds rate from 5.25 percent to near 0. However, even with such a major impact on interest rates, the impact on the recovery was slow. Although monetary policy can be effective, it cannot necessarily solve all of the structural problems that occurred in the economy, such as the excess number of homes that were built based on liberal credit standards during the 2004–2007 period. Thus lowering interest rates did not lead to a major increase in the demand for homes, because many homeowners could not afford the homes that they were in. For those households who were in a position to purchase a home, a massive surplus of empty homes was available. Thus there was no need to build new homes, and no need for construction companies to hire additional employees. Furthermore, even with the very low interest rates, many firms were unwilling to expand. During the 2010–2012 period, the aggregate demand for products and services increased slowly. However, the unemployment rate remained high, because businesses remained cautious about hiring new employees.

5-3c How Monetary Policy Responds to Fiscal Policy

The Fed's assessment of the trade-off between improving the unemployment situation versus the inflation situation becomes more complicated when considering the prevailing fiscal policy. Although the Fed has the power to make decisions without the approval of the presidential administration, the Fed's monetary policy is commonly influenced by the administration's fiscal policies. If fiscal policies create large budget deficits, this may place upward pressure on interest rates. Under these conditions, the Fed may be concerned that the higher interest rates caused by fiscal policy could dampen the economy, and it may therefore feel pressured to use a stimulative monetary policy in order to reduce interest rates.

A framework for explaining how monetary policy and fiscal policies affect interest rates is shown in Exhibit 5.9. Although fiscal policy typically shifts the demand for loanable funds, monetary policy normally has a larger impact on the supply of loanable funds. In some situations, the administration has enacted a fiscal policy that causes the Fed to reassess its trade-off between focusing on inflation versus unemployment, as explained below.

Exhibit 5.9 Framework for Explaining How Monetary Policy and Fiscal Policy Affect Interest Rates over Time



5-3d Proposals to Focus on Inflation

Recently, some have proposed that the Fed should focus more on controlling inflation than unemployment. Ben Bernanke, the current chairman of the Fed, has made some arguments in favor of inflation targeting. If this proposal were adopted in its strictest form, then the Fed would no longer face a trade-off between controlling inflation and controlling unemployment. It would not have to consider responding to any fiscal policy actions such as those shown in Exhibit 5.9. It might be better able to control inflation if it could concentrate on that problem without having to worry about the unemployment rate. In addition, the Fed's role would be more transparent, and there would be less uncertainty in the financial markets about how the Fed would respond to specific economic conditions.

Nevertheless, inflation targeting also has some disadvantages. First, the Fed could lose credibility if the U.S. inflation rate deviated substantially from the Fed's target inflation rate. Factors such as oil prices could cause high inflation regardless of the Fed's targeted

inflation rate. Second, focusing only on inflation could result in a much higher unemployment level. Bernanke has argued, however, that inflation targeting could be flexible enough that the employment level would still be given consideration. He believes that inflation targeting may not only satisfy the inflation goal but could also achieve the employment stabilization goal in the long run. For example, if unemployment were slightly higher than normal and inflation were at the peak of the target range, then an inflation targeting approach might be to leave monetary policy unchanged. In this situation, stimulating the economy with lower interest rates might reduce the unemployment rate temporarily but could ultimately lead to excessive inflation. This would require the Fed to use a restrictive policy (higher interest rates) to correct the inflation, which could ultimately lead to a slower economy and an increase in unemployment. In general, the inflation targeting approach would discourage such "quick fix" strategies to stimulate the economy.

Although some Fed members have publicly said that they do not believe in inflation targeting, their opinions are not necessarily much different from those of Bernanke. Flexible inflation targeting would allow changes in monetary policy to increase employment. Fed members disagree on how high unemployment would have to be before monetary policy would be used to stimulate the economy at the risk of raising inflation. In fact, discussion of inflation targeting declined during the credit crisis when the economy weakened and unemployment increased in the United States. This suggests that, though some Fed members might argue for an inflation targeting policy in the long run, they tend to change their focus toward reducing unemployment when the United States is experiencing very weak economic conditions.

5-4 Monitoring the Impact of Monetary Policy

The Fed's monetary policy affects many parts of the economy, as shown in Exhibit 5.10. The effects of monetary policy can vary with the perspective. Households monitor the Fed because their loan rates on cars and mortgages will be affected. Firms monitor the Fed because their cost of borrowing from loans and from issuing new bonds will be affected. Some firms are affected to a greater degree if their businesses are more sensitive to interest rate movements. The Treasury monitors the Fed because its cost of financing the budget deficit will be affected.

5-4a Impact on Financial Markets

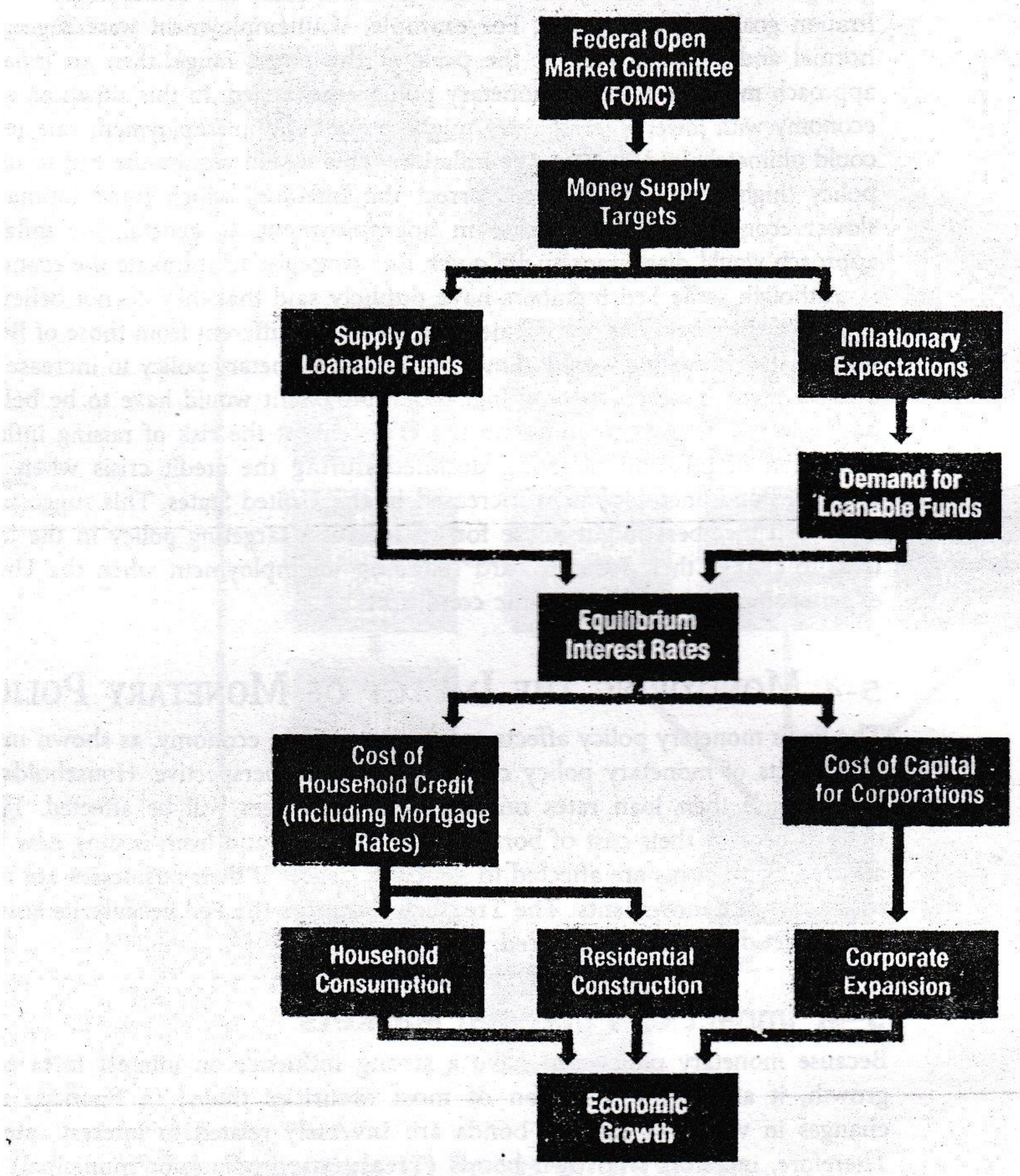
Because monetary policy can have a strong influence on interest rates and economic growth, it affects the valuation of most securities traded in financial markets. The changes in values of existing bonds are inversely related to interest rate movements. Therefore, investors who own bonds (Treasury, corporate, or municipal) or fixed-rate mortgages are adversely affected when the Fed raises interest rates, but they are favorably affected when the Fed reduces interest rates (as explained in Chapter 8).

The values of stocks (discussed in Chapter 11) also are commonly affected by interest rate movements, but the effects are not as consistent as they are for bonds.

EXAMPLE

Suppose the Fed lowers interest rates because the economy is weak. If investors anticipate that this action will enhance economic growth, they may expect that firms will generate higher sales and earnings in the future. Thus the values of stocks would increase in response to this favorable information. However, the Fed's decision to reduce interest rates could make investors realize that economic conditions are worse than they thought. In this case, the Fed's actions could signal that corporate sales and earnings may weaken, and the values of stocks would decline because of the negative information. ●

Exhibit 5.10 How Monetary Policy Affects Financial Conditions



WEB

www.federalreserve.gov/monetarypolicy/fomccalendars.htm Schedule of FOMC meetings and minutes of previous FOMC meetings.

To appreciate the potential impact of the Fed's actions on financial markets, go to any financial news website during the week in which the FOMC holds its meeting. You will see predictions of whether the Fed will change the target federal funds rate, by how much, and how that change will affect the financial markets.

Fed's Communication to Financial Markets After the Federal Open Market Committee holds a meeting to determine its monetary policy, it announces its conclusion through an *FOMC statement*. The statement is available at www.federalreserve.gov, and it may offer relevant implications about security prices. The following example of an FOMC statement reflects a decision to implement a stimulative monetary policy.

The Federal Open Market Committee decided to reduce its target for the federal funds rate by 0.25% to 2.75%. Economic growth has weakened this year, and indicators suggest more pronounced weakness in the last four months. The Committee expects that the weakness will continue. Inventories at manufacturing firms have risen, which reflects the recent decline in sales by these firms. Inflation is presently low and is expected to remain at very low levels. Thus, there is presently a bias toward correcting the economic growth, without as much concern about inflation. Voting for the FOMC monetary policy action were [list of voting members provided here].

This example could possibly cause the prices of debt securities such as bonds to rise because it suggests that interest rates will decline.

The following example of a typical statement reflects the decision to use a restrictive monetary policy.

The Federal Open Market Committee decided to raise its target for the federal funds rate by 0.25% to 3.25%. Economic growth has been strong so far this year. The Committee expects that growth will continue at a more sustainable pace, partly reflecting a cooling of the housing market. Energy prices have had a modest impact on inflation. Unit labor costs have been stable. Energy prices have the potential to add to inflation. The Committee expects that a more restrictive monetary policy may be needed to address inflation risks, but [it] emphasizes that the extent and timing of any tightening of money supply will depend on future economic conditions. The Committee will respond to changes in economic prospects as needed to support the attainment of its objectives. Voting for the FOMC monetary policy action were [list of voting members provided here].

The type of influence that monetary policy can have on each financial market is summarized in Exhibit 5.11. The financial market participants closely review the FOMC statements to interpret the Fed's future plans and to assess how the monetary policy will affect security prices. Sometimes the markets fully anticipate the Fed's actions. In this case, prices of securities should adjust to the anticipated news before the meeting, and they will not adjust further when the Fed's decision is announced.

Recently, the Fed has been more transparent in its communication to financial markets about its future policy. In the fall of 2012, it emphasized its focus on stimulating the U.S. economy. The Fed also announced that it would continue to purchase Treasury bonds in the financial markets (increase money supply) until unemployment conditions are substantially improved, unless there are strong indications of higher inflation. This statement is unusual because it represents a much stronger commitment to fix one particular problem (unemployment) rather than the other (inflation). The Fed also stated that it planned to keep long-term interest rates low for at least the next three years. This was important because it signaled to potential borrowers who obtain floating-rate loans (such as many firms and some home buyers) that the cost of financing would remain low for at least the next three years.

Perhaps the Fed was comfortable in taking this position because the unemployment problem was clearly causing more difficulties in the economy than inflation. The Fed's strong and clear communication may have been intended to restore confidence in the economy, so that people were more willing to spend money rather than worrying that they need to save money in case they lose their job. The Fed was hoping that heavy spending by households could stimulate the economy and create jobs.

Exhibit 5.11 Impact of Monetary Policy across Financial Markets

TYPE OF FINANCIAL MARKET	RELEVANT FACTORS INFLUENCED BY MONETARY POLICY	KEY INSTITUTIONAL PARTICIPANTS
Money market	• Secondary market values of existing money market securities • Yields on newly issued money market securities	Commercial banks, savings institutions, credit unions, money market funds, insurance companies, finance companies, pension funds
Bond market	• Secondary market values of existing bonds • Yields offered on newly issued bonds	Commercial banks, savings institutions, bond mutual funds, insurance companies, finance companies, pension funds
Mortgage market	• Demand for housing and therefore the demand for mortgages • Secondary market values of existing mortgages • Interest rates on new mortgages • Risk premium on mortgages	Commercial banks, savings institutions, credit unions, insurance companies, pension funds
Stock market	• Required return on stocks and therefore the market values of stocks • Projections for corporate earnings and therefore stock values	Stock mutual funds, insurance companies, pension funds
Foreign exchange	• Demand for currencies and therefore the values of currencies, which in turn affect currency option prices	Institutions that are exposed to exchange rate risk

Impact of the Fed's Response to Oil Shocks A month rarely goes by without the financial press reporting a potential inflation crisis, such as a hurricane that could affect oil production and refining in Louisiana or Texas, or friction in the Middle East or Russia that could disrupt oil production there. Financial market participants closely monitor oil shocks and the Fed's response to those shocks. Any event that might disrupt the world's production of oil triggers concerns about inflation. Oil prices affect the prices of gasoline and airline fuel, which affect the costs of transporting many products and supplies. In addition, oil is also used in the production of some products. Firms that experience higher costs due to higher oil expenses may raise their prices.

When higher oil prices trigger concerns about inflation, the Fed is pressured to use a restrictive monetary policy. The Fed does not have control over oil prices, but it reasons that it can at least dampen any inflationary pressure on prices if it slows economic growth. In other words, a decline in economic growth may discourage firms from increasing prices of their products because they know that raising prices may cause their sales to drop.

The concerns that an oil price shock will occur and that the Fed will raise interest rates to offset the high oil prices tend to have the following effects. First, bond markets may react negatively because bond prices are inversely related to interest rates. Stock prices are affected by expectations of corporate earnings. If firms incur higher costs of production and transportation due to higher oil prices, then their earnings could decrease. In addition, if the Fed increases interest rates in order to slow economic growth (to reduce inflationary pressure), firms will experience an increase in the cost of financing. This also would reduce their earnings. Consequently, investors who expect a reduction in earnings may sell their holdings of stock, in which case stock prices will decline.

5-4b Impact on Financial Institutions

Many depository institutions obtain most of their funds in the form of short-term loans and then use some of their funds to provide long-term, fixed-rate, mortgage loans. When interest rates rise, their cost of funds rises faster than the return they receive on their loans. Thus they are adversely affected when the Fed increases interest rates.

Financial institutions such as commercial banks, bond mutual funds, insurance companies, and pension funds maintain large portfolios of bonds, so their portfolios are adversely affected when the Fed raises interest rates. Financial institutions such as stock mutual funds, insurance companies, and pension funds maintain large portfolios of stocks, and their stock portfolios are also indirectly affected by changes in interest rates. Thus, all of these financial institutions must closely monitor the Fed's monetary policy so that they can manage their operations based on expectations of future interest rate movements.

5-5 Global Monetary Policy

GLOBAL ASPECTS

Financial market participants must recognize that the type of monetary policy implemented by the Fed is somewhat dependent on various international factors, as explained next.

5-5a Impact of the Dollar

A weak dollar can stimulate U.S. exports because it reduces the amount of foreign currency needed by foreign companies to obtain dollars in order to purchase U.S. exports. A weak dollar also discourages U.S. imports because it increases the dollars needed to obtain foreign currency in order to purchase imports. Thus a weak dollar can stimulate the U.S. economy. In addition, it tends to exert inflationary pressure in the United States because it reduces foreign competition. The Fed can afford to be less aggressive with a stimulative monetary policy if the dollar is weak, because a weak dollar can itself provide some stimulus to the U.S. economy. Conversely, a strong dollar tends to reduce inflationary pressure but also dampens the U.S. economy. Therefore, if U.S. economic conditions are weak, a strong dollar will not provide the stimulus needed to improve conditions and so the Fed may need to implement a stimulative monetary policy.

5-5b Impact of Global Economic Conditions

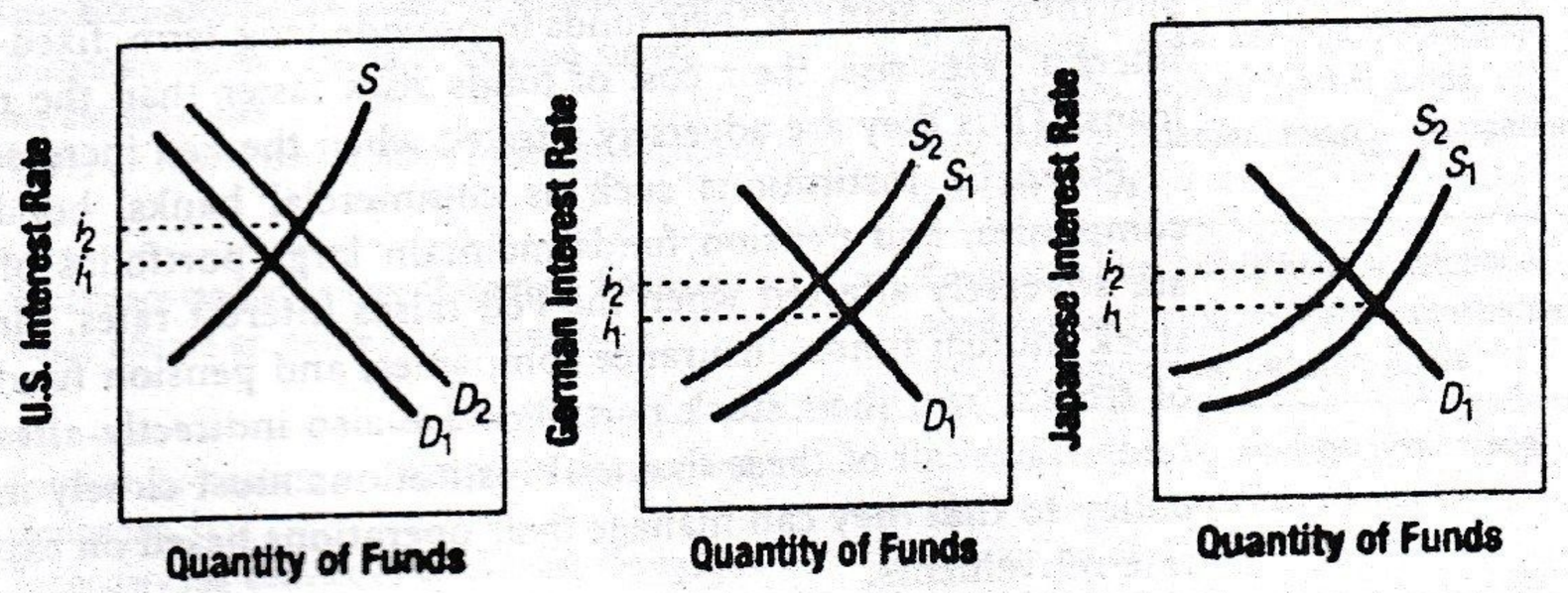
The Fed recognizes that economic conditions are integrated across countries, so it considers prevailing global economic conditions when conducting monetary policy. When global economic conditions are strong, foreign countries purchase more U.S. products and can stimulate the U.S. economy. When global economic conditions are weak, the foreign demand for U.S. products weakens.

During the credit crisis that began in 2008, the United States and many other countries experienced very weak economic conditions. The Fed's decision to lower U.S. interest rates and stimulate the U.S. economy was partially driven by these weak global economic conditions. The Fed recognized that the United States would not receive any stimulus (such as a strong demand for U.S. products) from other countries where income and aggregate spending levels were also relatively low.

5-5c Transmission of Interest Rates

Each country has its own currency (except for countries in the euro zone) and its own interest rate, which is based on the supply of and demand for loanable funds in that currency. Investors residing in one country may attempt to capitalize on high interest rates

Exhibit 5.12 Illustration of Global Crowding Out



in another country. If there is upward pressure on U.S. interest rates that can be offset by foreign inflows of funds, then the Fed may not feel compelled to use a stimulative policy. However, if foreign investors reduce their investment in U.S. securities, the Fed may be forced to intervene in order to prevent interest rates from rising.

Given the international integration in money and capital markets, a government's budget deficit can affect interest rates of various countries. This concept, referred to as **global crowding out**, is illustrated in Exhibit 5.12. An increase in the U.S. budget deficit causes an outward shift in the federal government's demand for U.S. funds and therefore in the aggregate demand for U.S. funds (from D_1 to D_2). This crowding-out effect forces the U.S. interest rate to increase from i_1 to i_2 if the supply curve (S) is unchanged. As U.S. rates rise, they attract funds from investors in other countries, such as Germany and Japan. As foreign investors use more of their funds to invest in U.S. securities, the supply of available funds in their respective countries declines. Consequently, there is upward pressure on non-U.S. interest rates as well. The impact will be most pronounced in countries whose investors are most likely to find the higher U.S. interest rates attractive. The possibility of global crowding out has caused national governments to criticize one another for large budget deficits.

5-5d Impact of the Crisis in Greece on European Monetary Policy

In the spring of 2010, Greece experienced a weak economy and a large budget deficit. Creditors were less willing to lend the Greece government funds because they feared that the government may be unable to repay the loans. There were even concerns that Greece would abandon the euro, which caused many investors to liquidate their euro-denominated investments and move their money into other currencies. Overall, the lack of demand for euros in the foreign exchange market caused the euro's value to decline by about 20 percent during the spring of 2010.

The debt repayment problems in Greece adversely affected creditors from many other countries in Europe. In addition, Portugal and Spain had large budget deficit problems (because of excessive government spending) and experienced their own financial crises in 2012. The weak economic conditions in these countries caused fear of a financial crisis throughout Europe. The fear discouraged corporations, investors, and creditors outside of Europe from moving funds into Europe, and also encouraged some European

investors to move their money out of the euro and out of Europe. Thus, just the fear by itself reduced the amount of capital available within Europe, which resulted in lower growth and lower security prices in Europe.

Since euro zone country governments do not have their own monetary policy, they are restricted from using their own stimulative monetary policy to strengthen economic conditions. They have control of their own fiscal policy, but given that the underlying problems were attributed to heavy government spending, they did not want to attempt stimulating their economy with more deficit spending.

The European Central Bank (ECB) was forced to use a more stimulative monetary policy than desired in order to ease concerns about the Greek crisis, even though this caused other concerns about potential inflation in the euro zone. The Greek crisis illustrated how the ECB's efforts to resolve one country's problems could create more problems in other euro zone countries that are subject to the same monetary policy. The ECB also stood ready to provide credit to help countries in the eurozone experiencing a financial crisis. When the ECB provides credit to a country, it imposes austerity conditions that can correct the government's budget deficit such as reducing government spending and imposing higher tax rates on its citizens.

Like any central bank, the ECB faces a dilemma when trying to resolve a financial crisis. If it provides funding and imposes the austerity conditions that force a country to reduce its budget deficit, it may temporarily weaken the country's economy further. The austerity conditions that reduce a government's budget deficit may also result in a lower level of aggregate spending and higher taxes (less disposable income for households).

SUMMARY

- By using monetary policy, the Fed can affect the interaction between the demand for money and the supply of money, which affects interest rates, aggregate spending, and economic growth. As the Fed increases the money supply, interest rates should decline and result in more aggregate spending (because of cheaper financing rates) and higher economic growth. As the Fed decreases the money supply, interest rates should increase and result in less aggregate spending (because of higher financing rates), lower economic growth, and lower inflation.
- A stimulative monetary policy can increase economic growth, but it could ignite demand-pull inflation. A restrictive monetary policy is likely to reduce inflation but may also reduce economic growth. Thus the Fed faces a trade-off when implementing monetary policy. Given a possible trade-off, the Fed tends to pinpoint its biggest concern (unemployment versus inflation) and assess whether the potential benefits of any proposed monetary policy outweigh the potential adverse effects.
- Because monetary policy can have a strong influence on interest rates and economic growth, it affects the valuation of most securities traded in financial markets. Financial market participants attempt to forecast the Fed's future monetary policies and the effects of these policies on economic conditions. When the Fed implements monetary policy, financial market participants attempt to assess how their security holdings will be affected and adjust their security portfolios accordingly.
- The Fed's monetary policy must take into account the global economic environment. A weak dollar may increase U.S. exports and thereby stimulate the U.S. economy. If economies of other countries are strong, this can also increase U.S. exports and boost the U.S. economy. Thus the Fed may not have to implement a stimulative monetary policy if international conditions can provide some stimulus to the U.S. economy. Conversely, the Fed may consider a more aggressive monetary policy to fix a weak U.S. economy if international conditions are weak, since in that case the Fed cannot rely on other economies to boost the U.S. economy.

POINT COUNTER-POINT

Can the Fed Prevent U.S. Recessions?

Point Yes. The Fed has the power to reduce market interest rates and can therefore encourage more borrowing and spending. In this way, it stimulates the economy.

Counter-Point No. When the economy is weak, individuals and firms are unwilling to borrow regardless of the interest rate. Thus the borrowing (by those who are qualified) and spending will not be influenced by the Fed's actions. The Fed should not intervene but rather allow the economy to work itself out of a recession.

Who Is Correct? Use the Internet to learn more about this issue and then formulate your own opinion.

QUESTIONS AND APPLICATIONS

1. **Impact of Monetary Policy** How does the Fed's monetary policy affect economic conditions?

2. **Trade-offs of Monetary Policy** Describe the economic trade-off faced by the Fed in achieving its economic goals.

3. **Choice of Monetary Policy** When does the Fed use a stimulative monetary policy, and when does it use a restrictive monetary policy? What is a criticism of a stimulative monetary policy? What is the risk of using a monetary policy that is too restrictive?

4. **Active Monetary Policy** Describe an active monetary policy.

5. **Passive Monetary Policy** Describe a passive monetary policy.

6. **Fed Control** Why may the Fed have difficulty controlling the economy in the manner desired? Be specific.

7. **Lagged Effects of Monetary Policy** Compare the recognition lag and the implementation lag.

8. **Fed's Control of Inflation** Assume that the Fed's primary goal is to reduce inflation. How can it use open market operations to achieve this goal? What is a possible adverse effect of such action by the Fed (even if it achieves the goal)?

9. **Monitoring Money Supply** Why do financial market participants closely monitor money supply movements?

10. **Monetary Policy during the Credit Crisis** Describe the Fed's monetary policy response to the credit crisis.

11. **Impact of Money Supply Growth** Explain why an increase in the money supply can affect interest rates in different ways. Include the potential impact of the money supply on the supply of and the demand for loanable funds when answering this question.

12. **Confounding Effects** What factors might be considered by financial market participants who are assessing whether an increase in money supply growth will affect inflation?

13. **Fed Response to Fiscal Policy** Explain how the Fed's monetary policy could depend on the fiscal policy that is implemented.

Advanced Questions

14. **Interpreting the Fed's Monetary Policy** When the Fed increases the money supply to lower the federal funds rate, will the cost of capital to U.S. companies be reduced? Explain how the segmented markets theory regarding the term structure of interest rates (as explained in Chapter 3) could influence the degree to which the Fed's monetary policy affects long-term interest rates.

15. **Monetary Policy Today** Assess the economic situation today. Is the administration more concerned with reducing unemployment or inflation? Does the Fed have a similar opinion? If not, is the administration publicly criticizing the Fed? Is the Fed publicly criticizing the administration? Explain.

16. **Impact of Foreign Policies** Why might a foreign government's policies be closely monitored by investors in other countries, even if the investors plan no investments in that country? Explain how monetary

policy in one country can affect interest rates in other countries.

17. Monetary Policy during a War Consider a discussion during FOMC meetings in which there is a weak economy and a war, with potential major damage to oil wells. Explain why this possible effect would have received much attention at the FOMC meetings. If this possibility was perceived to be highly likely at the time of the meetings, explain how it may have complicated the decision about monetary policy at that time. Given the conditions stated in this question, would you suggest that the Fed use a restrictive monetary policy, or a stimulative monetary policy? Support your decision logically and acknowledge any adverse effects of your decision.

18. Economic Indicators Stock market conditions serve as a leading economic indicator. If the U.S. economy is in a recession, what are the implications of this indicator? Why might this indicator be inaccurate?

19. How the Fed Should Respond to Prevailing Conditions Consider the current economic conditions, including inflation and economic growth. Do you think the Fed should increase interest rates, reduce interest rates, or leave interest rates at their present levels? Offer some logic to support your answer.

20. Impact of Inflation Targeting by the Fed Assume that the Fed adopts an inflation targeting strategy. Describe how the Fed's monetary policy would be affected by an abrupt 15 percent rise in oil prices in response to an oil shortage. Do you think an inflation targeting strategy would be more or less effective in this situation than a strategy of balancing inflation concerns with unemployment concerns? Explain.

21. Predicting the Fed's Actions Assume the following conditions. The last time the FOMC met, it decided to raise interest rates. At that time, economic growth was very strong and so inflation was relatively high. Since the last meeting, economic growth has weakened, and the unemployment rate will likely rise by 1 percentage point over the quarter. The FOMC's next meeting is tomorrow. Do you think the FOMC will revise its targeted federal funds rate? If so, how?

22. The Fed's Impact on the Housing Market In periods when home prices declined substantially, some homeowners blamed the Fed. In other periods, when home prices increased, homeowners gave credit to the Fed. How can the Fed have such a large impact on home prices? How could news of a substantial increase in the general inflation level affect the Fed's monetary policy and thereby affect home prices?

23. Targeted Federal Funds Rate The Fed uses a targeted federal funds rate when implementing monetary policy. However, the Fed's main purpose in its monetary policy is typically to have an impact on the aggregate demand for products and services. Reconcile the Fed's targeted federal funds rate with its goal of having an impact on the overall economy.

24. Monetary Policy during the Credit Crisis During the credit crisis, the Fed used a stimulative monetary policy. Why do you think the total amount of loans to households and businesses did not increase as much as the Fed had hoped? Are the lending institutions to blame for the relatively small increase in the total amount of loans extended to households and businesses?

25. Stimulative Monetary Policy during a Credit Crunch Explain why a stimulative monetary policy might not be effective during a weak economy in which there is a credit crunch.

26. Response of Firms to a Stimulative Monetary Policy In a weak economy, the Fed commonly implements a stimulative monetary policy to lower interest rates, and presumes that firms will be more willing to borrow. Even if banks are willing to lend, why might such a presumption about the willingness of firms to borrow be wrong? What are the consequences if the presumption is wrong?

27. Fed Policy Focused on Long-term Interest Rates Why might the Fed want to focus its efforts on reducing long-term interest rates rather than short-term interest rates during a weak economy? Explain how it might use a monetary policy focused on influencing long-term interest rates. Why might such a policy also affect short-term interest rates in the same direction?

28. Impact of Monetary Policy on Cost of Capital Explain the effects of a stimulative monetary policy on a firm's cost of capital.

29. Effectiveness of Monetary Policy What circumstances might cause a stimulative monetary policy to be ineffective?

30. Impact of ECB Response to Greece Crisis How did the debt repayment problems in Greece affect creditors from other countries in Europe? How did the ECB's stimulative monetary policy affect the Greek crisis?

Interpreting Financial News

Interpret the following statements made by Wall Street analysts and portfolio managers.

a. "Lately, the Fed's policies are driven by gold prices and other indicators of the future rather than by recent economic data."

b. "The Fed cannot boost money growth at this time because of the weak dollar."

c. "The Fed's fine-tuning may distort the economic picture."

Managing in Financial Markets

Forecasting Monetary Policy As a manager of a firm, you are concerned about a potential increase in interest rates, which would reduce the demand for your firm's products. The Fed is scheduled to meet in one week to assess economic conditions and set monetary policy. Economic growth has been high, but inflation has also increased from 3 to 5 percent (annualized) over the last four months. The level of unemployment is so low that it cannot go much lower.

a. Given the situation, is the Fed likely to adjust monetary policy? If so, how?

b. Recently, the Fed has allowed the money supply to expand beyond its long-term target range. Does this affect your expectation of what the Fed will decide at its upcoming meeting?

c. Suppose the Fed has just learned that the Treasury will need to borrow a larger amount of funds than originally expected. Explain how this information may affect the degree to which the Fed changes the monetary policy.

Flow of Funds Exercise

Anticipating Fed Actions

Recall that Carson Company has obtained substantial loans from finance companies and commercial banks. The interest rate on the loans is tied to market interest rates and is adjusted every six months. Because of its expectations of a strong U.S. economy, Carson plans to grow in the future by expanding the business and by making acquisitions. It expects that it will need substantial long-term financing and plans to borrow additional funds either through loans or by issuing bonds. The company may also issue stock to raise funds in the next year.

An economic report recently highlighted the strong growth in the economy, which has led to nearly full employment. In addition, the report estimated that the annualized inflation rate increased to 5 percent, up from 2 percent last month. The factors that caused the higher inflation (shortages of products and shortages of labor) are expected to continue.

a. How will the Fed's monetary policy change based on the report?

b. How will the likely change in the Fed's monetary policy affect Carson's future performance? Could it affect Carson's plans for future expansion?

c. Explain how a tight monetary policy could affect the amount of funds borrowed at financial institutions by deficit units such as Carson Company. How might it affect the credit risk of these deficit units? How might it affect the performance of financial institutions that provide credit to such deficit units as Carson Company?

Internet/Excel Exercises

1. Go to the website www.federalreserve.gov/monetarypolicy/fomc.htm to review the activities of the FOMC. Succinctly summarize the minutes of the last FOMC meeting. What did the FOMC discuss at that meeting? Did the FOMC make any changes in the current monetary policy? What is the FOMC's current monetary policy?

2. Is the Fed's present policy focused more on stimulating the economy or on reducing inflation? Or is the present policy evenly balanced? Explain.

3. Using the website http://research.stlouisfed.org/fred2, retrieve interest rate data at the beginning of the last 20 quarters for the federal funds rate and the three-month Treasury bill rate, and place the

data in two columns of an Excel spreadsheet. Derive the change in interest rates on a quarterly basis. Apply regression analysis in which the quarterly change in the T-bill rate is the dependent variable (see Appendix B for more information about using regression analysis). If the Fed's effect on the federal funds rate influences other interest rates (such as the T-bill rate), there should be a positive and significant relationship between the interest rates. Is there such a relationship? Explain.

WSJ Exercise

Market Assessment of Fed Policy

Review a recent issue of the *Wall Street Journal* and then summarize the market's expectations about future interest rates. Are these expectations based primarily on the Fed's monetary policy or on other factors?

Online Articles with Real-World Examples

Find a recent practical article available online that describes a real-world example regarding a specific financial institution or financial market that reinforces one or more concepts covered in this chapter.

If your class has an online component, your professor may ask you to post your summary of the article there and provide a link to the article so that other students can access it. If your class is live, your professor may ask you to summarize your application of the article in class. Your professor may assign specific students to complete this assignment or may allow any students to do the assignment on a volunteer basis.

For recent online articles and real-world examples related to this chapter, consider using the following search terms (be sure to include the prevailing year as a search term to ensure that the online articles are recent):

1. index of leading economic indicators
2. consumer price index AND Federal Reserve
3. inflation AND Federal Reserve
4. inflation AND monetary policy
5. Fed policy AND economy
6. federal funds rate AND economy
7. federal funds rate AND inflation
8. monetary policy AND budget deficit
9. monetary policy AND press release
10. monetary policy AND value of the dollar

PART 2 INTEGRATIVE PROBLEM

Fed Watching

This problem requires an understanding of the Fed (Chapter 4) and monetary policy (Chapter 5). It also requires an understanding of how economic conditions affect interest rates and securities' prices (Chapters 2 and 3).

Like many other investors, you are a "Fed watcher" who constantly monitors any actions taken by the Fed to revise monetary policy. You believe that three key factors affect interest rates. Assume that the most important factor is the Fed's monetary policy. The second most important factor is the state of the economy, which influences the demand for loanable funds. The third factor is the level of inflation, which also influences the demand for loanable funds. Because monetary policy can affect interest rates, it affects economic growth as well. By controlling monetary policy, the Fed influences the prices of all types of securities.

The following information is available to you.

- Economic growth has been consistently strong over the past few years but is beginning to slow down.
- Unemployment is as low as it has been in the past decade, but it has risen slightly over the past two quarters.
- Inflation has been about 5 percent annually for the past few years.
- The dollar has been strong.
- Oil prices have been very low.

Yesterday, an event occurred that you believe will cause much higher oil prices in the United States and a weaker U.S. economy in the near future. You plan to determine whether the Fed will respond to the economic problems that are likely to develop.

You have reviewed previous economic slowdowns caused by a decline in the aggregate demand for goods and services and found that each slowdown precipitated a stimulative policy by the Fed. Inflation was 3 percent or less in each of the previous economic slowdowns. Interest rates generally declined in response to these policies, and the U.S. economy improved.

Assume that the Fed's philosophy regarding monetary policy is to maintain economic growth and low inflation. There does not appear to be any major fiscal policy forthcoming that will have a major effect on the economy. Thus the future economy is up to the Fed. The Fed's present policy is to maintain a 2 percent annual growth rate in the money supply. You believe that the economy is headed toward a recession unless the Fed uses a

very stimulative monetary policy, such as a 10 percent annual growth rate in the money supply.

The general consensus of economists is that the Fed will revise its monetary policy to stimulate the economy for three reasons: (1) it recognizes the potential costs of higher unemployment if a recession occurs, (2) it has consistently used a stimulative policy in the past to prevent recessions, and (3) the administration has been pressuring the Fed to use a stimulative monetary policy. Although you will consider the economists' opinions, you plan to make your own assessment of the Fed's future policy. Two quarters ago, GDP declined by 1 percent. Last quarter, GDP declined again by 1 percent. Thus there is clear evidence that the economy has recently slowed down.

Questions

1. Do you think that the Fed will use a stimulative monetary policy at this point? Explain.
2. You maintain a large portfolio of U.S. bonds. You believe that if the Fed does not revise its monetary policy, the U.S. economy will continue to decline. If the Fed stimulates the economy at this point, you believe that you would be better off with stocks than with bonds. Based on this information, do you think you should switch to stocks? Explain.