

Monetary Policy

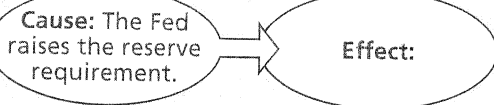
Study Guide

Main Idea

Federal Reserve actions intended to stabilize the economy make up what is called monetary policy.

Reading Strategy

Graphic Organizer As you read the section, complete a graphic organizer similar to the one below.



Key Terms

monetary policy, fractional reserve system, legal reserves, reserve requirement, excess reserves, liabilities, assets, balance sheet, net worth, liquidity, savings

account, time deposit, member bank reserve, easy money policy, tight money policy, open market operations, discount rate, margin requirement, moral suasion, selective credit controls

Objectives

After studying this section, you will be able to:

1. **Describe** the use of fractional reserves.
2. **Understand** the tools used to conduct monetary policy.

Applying Economic Concepts

Fractional Bank Reserves Did you know that most of our money supply exists in the form of intangible computer entries? Read to find out how the fractional reserve system works.

Cover Story

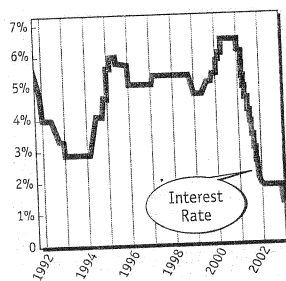
Greenspan Argues Against Strict Rules for Fed

JACKSON HOLE—Fending off critics who say the nation's monetary policy has become too personalized, . . . Alan Greenspan, chairman of the Fed, [said] that the Fed should have broad discretion and not be hemmed in by formal rules.

In speaking out against formal rules for Fed decision-making, Mr. Greenspan said the world economy was so complex that policymakers could not assume that the economy would behave in [a predictable] way.

Critics have argued that Fed policy is too dependent on the instincts of the chairman and that it needs to be anchored in principles that can reliably guide policy after he has retired.

—The New York Times, August 29, 2003



Interest rate

One of the Federal Reserve System's most important responsibilities is that of monetary policy. **Monetary policy** is the expansion or contraction of the money supply in order to influence the cost and the availability of credit. The Fed, as you read in the cover story, does not hesitate to change interest rates whenever the economy's health is threatened.

Monetary policy is a structured process. In order to understand it better, it helps to understand the fractional reserve system that our banking system is based on.

Fractional Bank Reserves

The United States has a **fractional reserve system**, which requires banks and other depository institutions to keep a fraction of their deposits in the form of legal reserves. **Legal reserves** consist of coins and currency that depository institutions hold in their vaults, plus deposits with Federal Reserve district banks. Under this system, banks are subject to a **reserve requirement**, a rule stating that a percentage of every deposit be set aside as legal reserves.

To illustrate, the banking system today operates with a 12 percent reserve requirement against demand deposit accounts. That means that whenever someone deposits \$100 to open a checking account, \$12 must be set aside as vault cash or kept as a deposit at the Fed. The other \$88 is called **excess reserves**—legal reserves in excess of the reserve requirement. The excess reserves are the funds the bank can lend to others who may want a loan.

How Banks Operate

To understand how a bank operates, it helps to examine the bank's liabilities and assets. Its **liabilities** are the debts and obligations to others. Its **assets** are the properties, possessions, and claims on others. Liabilities and assets generally are put together in the form of a **balance sheet**—a condensed statement showing all assets and liabilities at a given time. The balance sheet also reflects **net worth**—the excess of assets over liabilities, which is a measure of the value of a business.

Organizing a Bank

Suppose someone obtains a charter to start the hypothetical State Bank of Highland Heights. The bank is organized as a corporation, and the owners supply \$20 so that the bank can obtain buildings and furniture before it opens for business. In return for this investment, the owners receive stock, which shows as net worth or equity. **Panel A in Figure 15.3** shows how the balance sheet of the bank might look as soon as it is organized.

The balance sheet shows the assets on the left and the liabilities and net worth on the right. To see why

net worth is placed on the right side of the balance sheet, rearrange the definition of net worth from

$$\begin{aligned} \text{Assets} - \text{Liabilities} &= \text{Net Worth} \\ &\text{to} \\ \text{Assets} &= \text{Liabilities} + \text{Net Worth} \end{aligned}$$

The balance sheet in the figure is sometimes called a *T-account* because of its appearance, separating the assets from the liabilities and net worth the same way the equal sign does in the above equation. The T-account also works like an equal sign in that the entries on the left must always be equal to the entries on the right.

Accepting Deposits

Suppose that now a customer walks in and opens a checking account with \$100 in currency. This transaction, shown in **Panel B of Figure 15.3**, is reflected on the balance sheet in two ways.

First, to indicate that the money is owed to the depositor, the \$100 checking account (or demand deposit) is carried as a liability. Second, to indicate that the cash is the property of the bank, it also appears as an asset on the balance sheet. Actually, the \$100 appears in two places on the asset side—\$90 appears as cash, and \$10 appears as required reserves. The size of the reserve is determined by the reserve requirement, which is assumed to be 10 percent in this example. If the requirement was 15 percent, \$15 would be set aside.

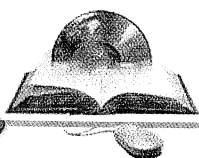
Making Loans

Now that the bank has some cash on hand, it can make loans. Specifically, it is free to loan out \$90 of excess reserves, the cash and currency not needed to fulfill the reserve requirement.

If another person enters the bank and borrows an amount equal to the excess reserves, the \$90 is moved from the cash line to the loans, or accounts receivable, line in the balance sheet. These changes appear in **Panel C**. Note that there is no change in total assets, only in their distribution—a change from a noninterest-earning asset (cash) to an interest-earning one (a consumer loan).

If the bank charged 12 percent interest on the new loan, it would earn 12 percent of \$90, or

ECONOMICS Online



Student Web Activity Visit the *Economics: Principles and Practices* Web site at epp.glencoe.com and click on **Chapter 15—Student Web Activities** for an activity on the Fed's monetary policy.

\$10.80 each year. This income, along with income earned on other loans, would then be used to pay its officers and employees; its utility bills, taxes, other business expenses; and its stock dividends.

Reaching Maturity

In time, the bank would grow and prosper, diversifying its assets and liabilities in the process. Most of the bank's deposits would eventually return to the community in the form of loans, and some of those loans would return to the bank in the form of new deposits.

The bank might even use some of its excess reserves to buy federal, state, or local bonds and other securities. The bonds and securities are helpful for two reasons. They earn interest and, therefore, are more attractive than cash. They also have a high degree of **liquidity**—the potential to be converted into cash in a very short time. Liquidity adds to the bank's ability to serve its customers. When the demand for loans increases, the bank can sell its bonds and then lend the cash to customers.

The bank also might try to attract additional funds by introducing different kinds of products. One product is a certificate of deposit, a receipt showing that an investor has made an interest-bearing loan to a bank. Most banks also offer **savings accounts** and **time deposits**, interest-bearing deposits that cannot be withdrawn by check. The two accounts are similar, except that prior notice must be given to withdraw time deposits, while no prior notice is needed to withdraw savings.

Unless costs are extremely high, the bank should be able to make a

Balance Sheet Entries for a Hypothetical Commercial Bank

A When a bank is organized as a corporation, the owners contribute cash used to buy buildings and furniture. In return, the owners receive stock.

Assets		Liabilities + NW	
Required Reserves:		Demand Deposits:	
Cash:		Net Worth or Equity:	\$20
Loans:			
Bonds:			
Buildings and Furniture:	\$20		
	\$20		\$20

B When a customer opens an account, some of the deposit is set aside as a reserve, while the excess can be loaned out. Note that Net Worth (NW) remains unchanged.

Assets		Liabilities + NW	
Required Reserves:	\$10	Demand Deposits:	\$100
Cash:	\$90	Net Worth or Equity:	\$20
Loans:			
Bonds:			
Buildings and Furniture:	\$20		
	\$120		\$120


C When another person wants to borrow money, the bank can lend all cash in excess of its required reserves.

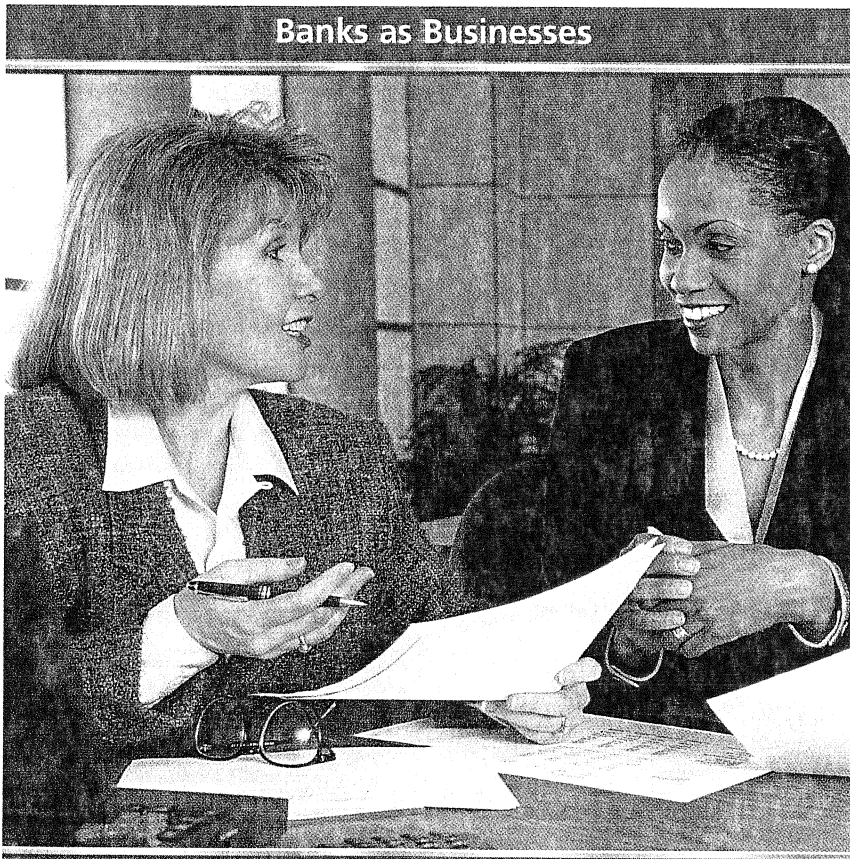
Assets		Liabilities + NW	
Required Reserves:	\$10	Demand Deposits:	\$100
Cash:		Net Worth or Equity:	\$20
Securities:			
Loans:	\$90		
Bonds:			
Buildings and Furniture:	\$20		
	\$120		\$120

Using Charts The T-accounts for the hypothetical bank trace the receipt of deposits through the loan-generating process. If the reserve requirement was 20 percent, how much could the bank loan?

profit if it can maintain a 2- to 3-percent spread between the rate it charges on its loans and the rate it pays for borrowed funds in the form of CDs, savings accounts, and time deposits. If a bank pays 6 percent interest on money it receives, for example, it must loan money at a minimum of 8 or 9 percent to make enough income to pay expenses.

Fractional Reserves and Monetary Expansion

 The fractional reserve system allows the money supply to grow to several times the size of the reserves the banking system keeps. **Figure 15.4** uses a reserve requirement of 20 percent to show how this can happen.



Banks as Businesses

Services to Customers Banks provide a source of loans for individuals and businesses that need to borrow money. Banks also provide safety and interest income for their depositors' money. *What are time deposits?*

Loans and Monetary Growth

In the figure, a depositor named Fred opens a demand deposit account (DDA) on Monday by depositing \$1,000 cash in a bank. By law, \$200 of Fred's deposit must be set aside as a reserve in the form of vault cash or in a **member bank reserve (MBR)**—a deposit a member bank keeps at the Fed to satisfy reserve requirements. The remaining \$800 of excess reserves represents the bank's lending power.

On Tuesday, the bank lends its excess reserves of \$800 to Bill. Bill can take the loan either in cash or in the form of a DDA with the bank. If he decides to take the DDA, the money never leaves the bank. Instead, it is treated as a new deposit, and 20 percent, or \$160, is set aside as a reserve. The remaining \$640 are excess reserves that can be lent to someone else.

On Wednesday, Maria enters the bank and borrows \$640. She, too, can take the loan in cash or a DDA. If she elects to do the latter, the bank has a new \$640 deposit, 20 percent of which must be set aside as a required reserve, leaving \$512 of excess reserves.

By Wednesday, Fred has a \$1,000 DDA, Bill has an \$800 DDA, and Maria has either \$640 in cash or a \$640 DDA. This amounts to \$2,440 in the hands of the nonbank public by the end of the business day—a process that began on Monday with the \$1,000 deposit. As long as the bank continues to have excess reserves, the lending process can continue.

Reserves and the Money Supply

Because each new loan is smaller than the one before, the money supply will stop growing at some point. A mathematical relationship exists between the dollar amount of reserves, the reserve requirement, and the size of the money supply. For example, if the total dollar amount of

reserves equals 20 percent of the money supply, we could write:

$$\begin{aligned} \text{Total Reserves} &= .20 (\text{Money Supply}) \\ \text{or,} \\ \$1,000 \div .20 &= \text{Money Supply} \\ \text{Therefore, } \$5,000 &= \text{Money Supply} \end{aligned}$$

This shows that \$1,000 of total reserves, given a 20 percent reserve requirement, will result in a money supply of \$5,000. This amount is the final outcome of the example in **Figure 15.4**, after Fred made his initial deposit.

After the money supply has reached its full size, further changes in the amount of total reserves can still affect it. Using the symbol Δ , meaning *change in*, we see that:


$$\begin{aligned} \Delta \text{ Reserves} &= .20 (\Delta \text{ Money Supply}) \\ \text{or,} \\ \Delta \text{ Reserves} \div .20 &= \Delta \text{ Money Supply} \end{aligned}$$

Someone, for example, might withdraw \$5 from the bank and keep it permanently in a wallet. The money supply would then change by:

$$\begin{aligned} \Delta \text{ Reserves} \div .20 &= \Delta \text{ Money Supply} \\ \text{or,} \\ -\$5 \div .20 &= -\$25 \end{aligned}$$

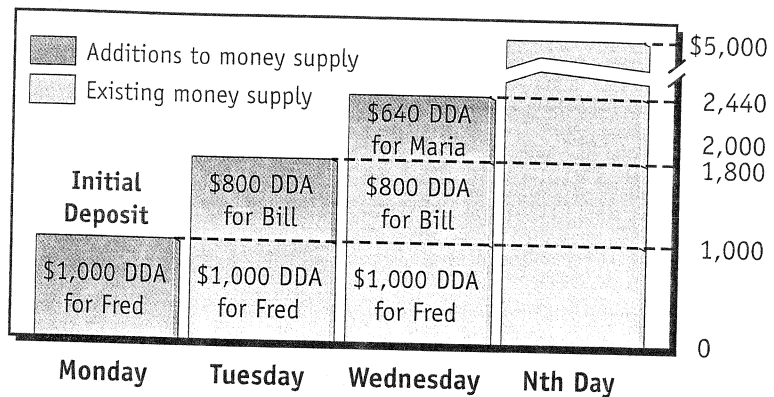
In other words, the money supply would shrink by \$25, from \$5,000 to \$4,975.

Tools of Monetary Policy

 The Fed has three major and two minor tools it can use to conduct monetary policy. Each tool affects the amount of excess reserves in the system, which in turn affects the monetary expansion process described above. The outcome of monetary policy is to influence the cost and availability of credit. The direction of change depends on the objectives of the Federal Reserve System.

Under an **easy money policy**, the Fed allows the money supply to grow and interest rates to fall, which normally stimulates the economy. When interest rates are low, people tend to buy on credit.

Fractional Reserves and the Money Supply



Using Charts With a 20 percent reserve requirement, a \$1,000 cash deposit will result in a fivefold expansion of the money supply. To compute the eventual size of the money supply, use the formula below.

$$\begin{aligned} \text{Total Reserves} \div \text{Reserve Requirement} &= \text{Money Supply} \\ \text{or } \$1,000 \div .20 &= \$5,000 \end{aligned}$$

If the initial reserves were \$2,000, how large could the money supply get?

This encourages sales at stores and production at factories. Businesses also tend to borrow and then invest in new plants and equipment when money is cheap. Under a **tight money policy**, the Fed restricts the growth of the money supply, which drives interest rates up. When interest rates are high, consumers and businesses borrow and spend less, which slows economic growth.

Reserve Requirement

The first tool of monetary policy is the reserve requirement. Within limits that Congress sets, the Fed can change this requirement for all checking, time, or savings accounts in the country.

This tool gives the Fed considerable control over the money supply. For instance, suppose the Fed lowers the reserve requirement in the previous

example from 20 to 10 percent. More money could be loaned to Bill, Maria, and others, and the money supply could reach \$10,000. If the Fed raises the reserve requirement to 40 percent, however, less money would be loaned, and the money supply would be smaller. The effects of different reserve requirements are shown in **Figure 15.5**.

Historically, the Fed has been reluctant to use the reserve requirement as a policy tool, in part because other monetary policy tools work better. Even so, the reserve requirement can be a very powerful tool should the Fed decide to use it. **Figure 15.6** summarizes the impact of a change in the reserve requirement on the money supply in the manner just described, along with the impact of the other monetary tools described below.

Open Market Operations

The second and most popular tool of monetary policy is **open market operations**—the buying and

selling of government securities in financial markets. Open market operations are one of the methods the Federal Reserve can use to influence short-term interest rates. Open market operations involve the purchase or sale of government securities by the Federal Reserve. When the Fed purchases government securities, it increases the supply of money, putting downward pressure on interest rates. When the Fed sells government securities, it decreases the supply of money, putting upward pressure on interest rates. Open market operations affect the amount of excess reserves in the banking system and, therefore, the ability of banks to support new loans.

Suppose the Fed decides to increase the money supply. To do so, it buys government securities from a dealer who specializes in large-volume transactions of those securities. The Fed pays for the securities by writing a check drawn on itself. The dealer then deposits the check with his or her bank. The bank forwards the check to the Fed for payment. At this



THE GLOBAL ECONOMY

THE EURO: TODAY AND IN THE FUTURE

In 2002 European industry transferred to a single currency, the euro. Monetary union means that industries can build plants, sell products, and raise capital in other European markets without worrying about currency fluctuations.

Retooling was costly, however. Most multinational corporations invested millions of dollars. Some converted their entire operations to the *euro* system immediately. Other companies instituted the changes in phases. In step 1, for example, companies adapted their computers to bill customers and pay suppliers in euros. At the same time, they maintained dual accounting in euros and national currencies. Step 2 included converting transactions such

as budget allocations and payments between subsidiaries into euros. Step 3 included the changeover of human resource functions, including payroll and benefits and paying taxes in eurodollars.

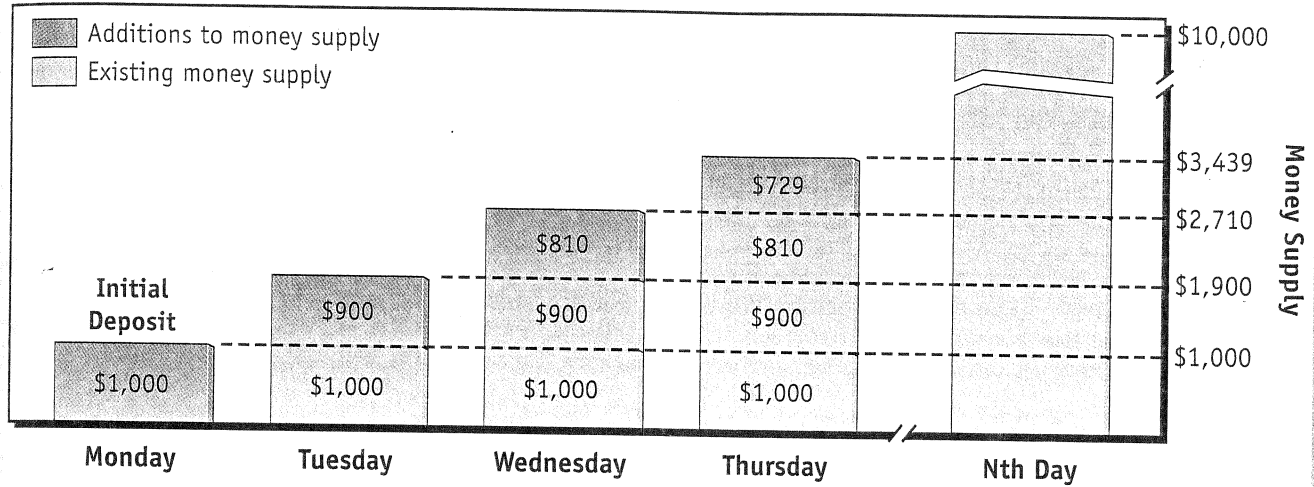
The changeover to the euro proved to be a technical success. European consumers adopted the new currency swiftly. However, according to some financial leaders, the ultimate test of the euro will be economic growth and lower unemployment. Using the single currency as an instrument to conquer inflation will not be enough.

Critical Thinking

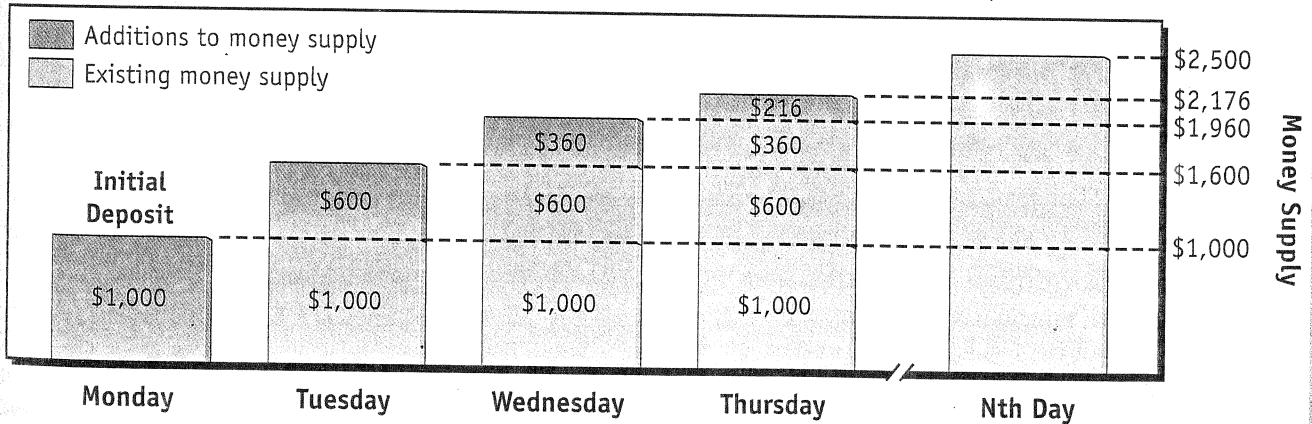
1. **Analyzing Information** What is the purpose of the euro?
2. **Sequencing Information** What steps were involved in the transition to the euro?
3. **Analyzing Information** According to some financial experts, what results will determine whether the euro is a success?

The Reserve Requirement as a Tool of Monetary Policy

A Monetary Expansion (10% Reserve Requirement)



B Monetary Expansion (40% Reserve Requirement)



Understanding Percentages If the Fed wants to control the size of the money supply, it can change the reserve requirement. A low requirement, such as 10 percent, can be used to expand the money supply. A higher requirement, such as 40 percent, has the opposite effect.

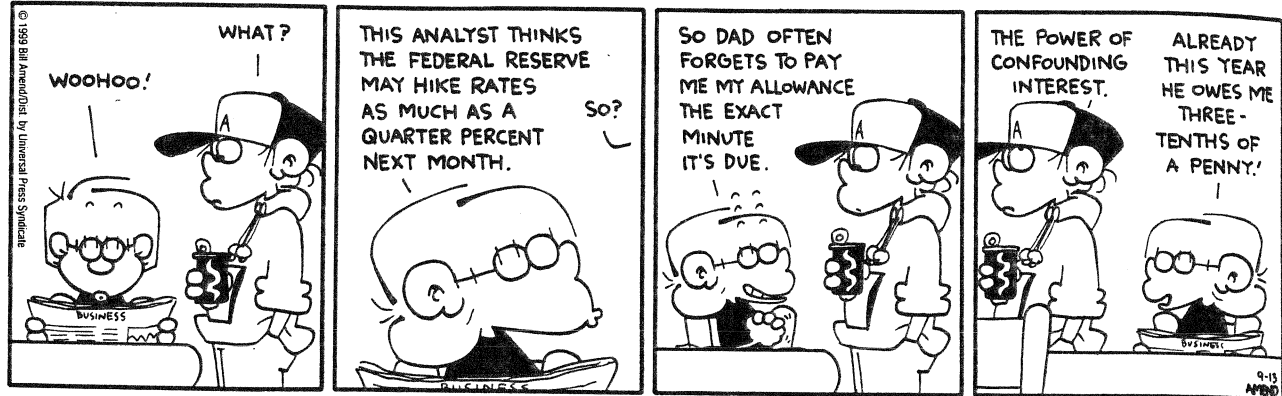
Low reserve requirement:
 $\$1,000 \div .10 = \$10,000$

High reserve requirement:
 $\$1,000 \div .40 = \$2,500$

What is the size of the money supply if the Fed sets the reserve requirement at 25 percent?

Tools of the Federal Reserve

FOX TROT



Changes in Interest The most important job of the Federal Reserve System is to maintain a stable supply of money for the economy. The Fed uses several basic tools to carry out this responsibility. *How do changes in the discount rate affect other interest rates?*

point, the Fed “pays” the check by increasing the bank’s MBR with the Fed.

The result is that whenever the Fed writes a check, more reserves are pumped into the banking system. Because only some of these additional reserves are needed to back existing deposits, the excess reserves can be loaned out, thus increasing the money supply.

If the Fed wants to contract the money supply, it can sell billions of dollars of government securities back to dealers. Dealers pay for the securities with checks drawn on their own banks. The Fed then processes the checks by reducing the MBRs of dealers’ banks. With fewer reserves in the banking system, fewer loans are made and the money supply contracts—driving interest rates up.

The Federal Open Market Committee (FOMC) conducts open-market operations. Normally the FOMC decides if interest rates and monetary growth are too high, too low, or just right. After the committee votes to set targets, officials at the trading desk take over. The trading desk is the physical location at the Fed’s New York district bank where the buying and selling actually takes place. The officials at the desk buy and sell bonds daily to maintain the targets set by the FOMC. The desk is permanently located in New York to be close to the nation’s financial markets.

Discount Rate

As a central bank, the Fed makes loans to other depository institutions. The **discount rate**—the interest the Fed charges on loans to financial institutions—is the third major tool of monetary policy.

Private individuals and businesses cannot borrow from the Fed. Banks can, and frequently do. If the discount rate goes up, fewer banks will want to borrow from the Fed. This will reduce the amount of money these banks have available to loan to their customers and will force interest rates up. Changes in the discount rate usually result in similar changes in other interest rates.

A bank might obtain a loan from the Fed for two reasons. First, it could have an unexpected drop in its MBRs, which would shrink its excess reserves. In this case, the bank could go to the Fed and arrange a short-term loan to cover the shortfall.

Second, a bank could be faced with seasonal demands for loans. A bank in an agricultural area, for example, might face a heavy demand for loans during the planting season. In that case, it would need additional MBRs to support the loans made in the spring.

Most institutions can borrow from the Federal Reserve, including member and nonmember banks, savings institutions, and even credit unions. The Fed, however, views borrowing as a

privilege rather than a right. As a result, the Fed may limit the number of times a borrower can borrow from the Fed.

Margin Requirements

Before the Great Depression, people speculated wildly in the stock market. Easy credit in the form of **margin requirements**, minimum deposits left with a stockbroker to be used as down payments to buy other securities, made much of the speculation possible.

For example, with a margin requirement as low as 10 percent, a person only had to deposit \$100 with a stockbroker to purchase \$1,000 worth of stocks. The stockbroker would supply the remaining \$900. If the stock rose to \$1,300, it could be sold and the investor would net \$400 after repaying \$900 to the broker. If, however, the stock dropped to \$900, the broker would sell the stock to protect his or her own loan if the investor could not come up with additional money.

Because credit was easily obtained and because margins were so low, the margins were easy to forfeit when modest declines in stock prices occurred. In fact, many investors lost everything they had when stock prices crashed in 1929. Today, most margin requirements are set at 50 percent, meaning an investor has to put up at least half the money needed to buy eligible stocks and bonds. The Federal Reserve sets the margin requirement and also monitors activity on the stock market. It also publishes a list of stocks that are eligible for margin loans.

The Fed seldom uses margin requirements as an active tool of monetary policy. Instead, it uses them very selectively to dampen or stimulate spending on equities in the stock market.

Other Tools

The Fed may also use two other methods to control the money supply. These are moral suasion and selective credit controls.

ECONOMICS AT A GLANCE

Figure 15.6

Summary of Monetary Policy Tools

Tool	Fed Action	Effect on Excess Reserves	Money Supply
Reserve Requirement	Lower	Frees excess reserves because fewer are needed to back existing deposits in the system.	Expands
	Raise	More reserves are required to back existing deposits. Excess reserves contract.	Contracts
Open Market Operations	Buy bonds	Checks written by the Fed add to excess reserves in the system.	Expands
	Sell bonds	Checks written by buyers are subtracted from reserves. Excess reserves in the system contract.	Contracts
Discount Rate	Lower	Additional reserves can be obtained at lower cost. Excess reserves expand.	Expands
	Raise	Additional reserves through borrowing are now more expensive. Excess reserves are not added.	Contracts

Using Charts The key to monetary policy is to see how the excess reserves in the system are affected. What happens to the money supply when the Fed lowers the reserve requirement? When it raises the reserve requirement?