31

AFTER READING THIS CHAPTER, YOU SHOULD BE ABLE TO:

1 **Identify and explain the functions of money and the components of the U.S. money supply.**

2 **Describe what "backs" the money supply, making us willing to accept it as payment.**

3 **Discuss the makeup of the Federal Reserve and its relationship to banks and thrifts.**

4 **Identify the functions and responsibilities of the Federal Reserve.**

5 **Identify and explain the main factors that contributed to the financial crisis of 2007–2008.**

6 **Discuss the actions of the U.S. Treasury and the Federal Reserve that helped keep the banking and financial crisis of 2007–2008 from worsening.**

7 **Identify the main subsets of the financial services industry in the United States and provide examples of some firms in each category.**

Money, Banking, and Financial Institutions

Money is a fascinating aspect of the economy:

> Money bewitches people. They fret for it, and they sweat for it. They devise most ingenious ways to get it, and most ingenuous ways to get rid of it. Money is the only commodity that is good for nothing but to be gotten rid of. It will not feed you, clothe you, shelter you, or amuse you unless you spend it or invest it. It imparts value only in parting. People will do almost anything for money, and money will do almost anything for people. Money is a captivating, circulating, masquerading puzzle.[1]

In this chapter and the two chapters that follow, we want to unmask the critical role of money and the monetary system in the economy. When the monetary system is working properly, it provides

[1] "Creeping Inflation," *Business Review*, August 1957, p. 3. Federal Reserve Bank of Philadelphia. Used with permission.

the lifeblood of the circular flows of income and expenditure. A well-operating monetary system helps the economy achieve both full employment and the efficient use of resources. A malfunctioning monetary system distorts the allocation of resources and creates severe fluctuations in the economy's levels of output, employment, and prices.

The Functions of Money

Just what is money? There is an old saying that "money *is* what money *does*." In a general sense, anything that performs the functions of money *is* money. Here are those functions:

- ***Medium of exchange*** First and foremost, money is a **medium of exchange** that is usable for buying and selling goods and services. A bakery worker does not want to be paid 200 bagels per week. Nor does the bakery owner want to receive, say, halibut in exchange for bagels. Money, however, is readily acceptable as payment. As we saw in Chapter 2, money is a social invention with which resource suppliers and producers can be paid and that can be used to buy any of the full range of items available in the marketplace. As a medium of exchange, money allows society to escape the complications of barter. And because it provides a convenient way of exchanging goods, money enables society to gain the advantages of geographic and human specialization.
- ***Unit of account*** Money is also a **unit of account**. Society uses monetary units—dollars, in the United States—as a yardstick for measuring the relative worth of a wide variety of goods, services, and resources. Just as we measure distance in miles or kilometers, we gauge the value of goods in dollars.

  With money as an acceptable unit of account, the price of each item need be stated only in terms of the monetary unit. We need not state the price of cows in terms of corn, crayons, and cranberries. Money aids rational decision making by enabling buyers and sellers to easily compare the prices of various goods, services, and resources. It also permits us to define debt obligations, determine taxes owed, and calculate the nation's GDP.
- ***Store of value*** Money also serves as a **store of value** that enables people to transfer purchasing power from the present to the future. People normally do not spend all their incomes on the day they receive them. To buy things later, they store some of their wealth as money. The money you place in a safe or a checking account will still be available to you a few weeks or months from now. When inflation is nonexistent or mild, holding money is a relatively risk-free way to store your wealth for later use.

People can, of course, choose to hold some or all of their wealth in a wide variety of assets besides money. These include real estate, stocks, bonds, precious metals such as gold, and even collectible items like fine art or comic books. But a key advantage that money has over all other assets is that it has the most *liquidity*, or spendability.

An asset's **liquidity** is the ease with which it can be converted quickly into the most widely accepted and easily spent form of money, cash, with little or no loss of purchasing power. The more liquid an asset is, the more quickly it can be converted into cash and used for either purchases of goods and services or purchases of other assets.

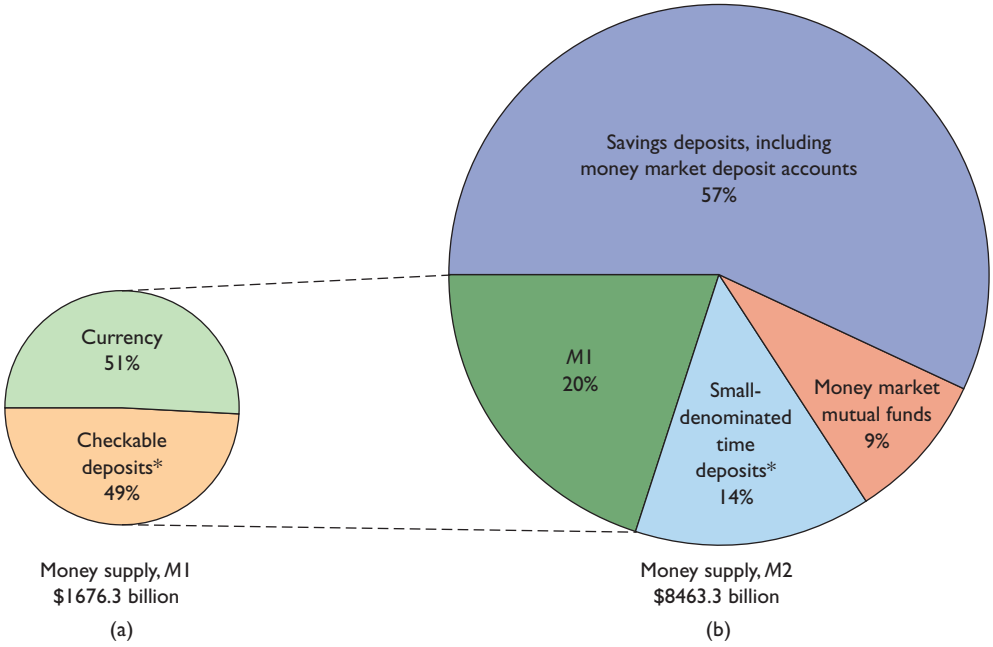
Levels of liquidity vary radically. By definition, cash is perfectly liquid. By contrast, a house is highly illiquid for two reasons. First, it may take several months before a willing buyer can be found and a sale negotiated so that its value can be converted into cash. Second, there is a loss of purchasing power when the house is sold because numerous fees have to be paid to real estate agents and other individuals to complete the sale.

As we are about to discuss, our economy uses several different types of money including cash, coins, checking account deposits, savings account deposits, and even more exotic things like deposits in money market mutual funds. As we describe the various forms of money in detail, take the time to compare their relative levels of liquidity—both with each other and as compared to other assets like stocks, bonds, and real estate. Cash is perfectly liquid. Other forms of money are highly liquid, but less liquid than cash.

The Components of the Money Supply

Money is a "stock" of some item or group of items (unlike income, for example, which is a "flow"). Societies have used many items as money, including whales' teeth, circular stones, elephant-tail bristles, gold coins, furs, and pieces of paper. Anything that is widely accepted as a medium of exchange can serve as money. In the United States, currency is not the only form of money. As you will see, certain debts of government and financial institutions also are used as money.

FIGURE 31.1 Components of money supply *M*1 and money supply *M*2, in the United States.
(a) *M*1 is a narrow definition of the money supply that includes currency (in circulation) and checkable deposits. (b) *M*2 is a broader definition that includes *M*1 along with several other relatively liquid account balances.



*These categories include other, quantitatively smaller components such as traveler's checks.
Source: Federal Reserve System, **www.federalreserve.gov**. Data are for January 2010.

Money Definition *M*1

The narrowest definition of the U.S. money supply is called ***M*1.** It consists of two components:

- Currency (coins and paper money) in the hands of the public.
- All checkable deposits (all deposits in commercial banks and "thrift" or savings institutions on which checks of any size can be drawn).[2]

Government and government agencies supply coins and paper money. Commercial banks ("banks") and savings institutions ("thrifts") provide checkable deposits. Figure 31.1a shows that *M*1 is about equally divided between the two components.

Currency: Coins + Paper Money

The currency of the United States consists of metal coins and paper money. The coins are issued by the U.S. Treasury while the paper money consists of **Federal Reserve Notes** issued by the Federal Reserve System (the U.S. central bank). The coins are minted by the U.S. Mint while the paper money is printed by the Bureau of Engraving and Printing. Both the U.S. Mint and the Bureau of Engraving and Printing are part of the U.S. Department of the Treasury.

As with the currencies of other countries, the currency of the United States is **token money.** This means that the face value of any piece of currency is unrelated to its *intrinsic value*—the value of the physical material (metal or paper and ink) out of which that piece of currency is constructed. Governments make sure that face values exceed intrinsic values to discourage people from destroying coins and bills to resell the material that they are made out of. For instance, if 50-cent pieces each contained 75 cents' worth of metal, then it would be profitable to melt them down and sell the metal. Fifty-cent pieces would disappear from circulation very quickly!

Figure 31.1a shows that currency (coins and paper money) constitutes 51 percent of the *M*1 money supply in the United States.

Checkable Deposits

The safety and convenience of checks has made **checkable deposits** a large component of the *M*1 money supply. You would not think of stuffing $4896 in bills in an envelope and dropping it in a mailbox

[2]In the ensuing discussion, we do not discuss several of the quantitatively less significant components of the definitions of money to avoid a maze of details. For example, traveler's checks are included in the *M*1 money supply. The statistical appendix of any recent *Federal Reserve Bulletin* provides more comprehensive definitions.

to pay a debt. But writing and mailing a check for a large sum is commonplace. The person cashing a check must endorse it (sign it on the reverse side); the writer of the check subsequently receives a record of the cashed check as a receipt attesting to the fulfillment of the obligation. Similarly, because the writing of a check requires endorsement, the theft or loss of your checkbook is not nearly as calamitous as losing an identical amount of currency. Finally, it is more convenient to write a check than to transport and count out a large sum of currency. For all these reasons, checkable deposits (checkbook money) are a large component of the stock of money in the United States. About 49 percent of *M*1 is in the form of checkable deposits, on which checks can be drawn.

It might seem strange that checking account balances are regarded as part of the money supply. But the reason is clear: Checks are nothing more than a way to transfer the ownership of deposits in banks and other financial institutions and are generally acceptable as a medium of exchange. Although checks are less generally accepted than currency for small purchases, for major purchases most sellers willingly accept checks as payment. Moreover, people can convert checkable deposits into paper money and coins on demand; checks drawn on those deposits are thus the equivalent of currency.

To summarize:

$$\text{Money, } M1 = \text{currency} + \text{checkable deposits}$$

Institutions That Offer Checkable Deposits

In the United States, a variety of financial institutions allow customers to write checks in any amount on the funds they have deposited. **Commercial banks** are the primary depository institutions. They accept the deposits of households and businesses, keep the money safe until it is demanded via checks, and in the meantime use it to make available a wide variety of loans. Commercial bank loans provide short-term financial capital to businesses, and they finance consumer purchases of automobiles and other durable goods.

Savings and loan associations (S&Ls), mutual savings banks, and credit unions supplement the commercial banks and are known collectively as savings or **thrift institutions,** or simply "thrifts." *Savings and loan associations* and *mutual savings banks* accept the deposits of households and businesses and then use the funds to finance housing mortgages and to provide other loans. *Credit unions* accept deposits from and lend to "members," who usually are a group of people who work for the same company.

The checkable deposits of banks and thrifts are known variously as demand deposits, NOW (negotiable order of withdrawal) accounts, ATS (automatic transfer service) accounts, and share draft accounts. Their commonality is that depositors can write checks on them whenever, and in whatever amount, they choose.

Two Qualifications

We must qualify our discussion in two important ways. First, currency held by the U.S. treasury, the Federal Reserve banks, commercial banks, and thrift institutions is *excluded* from *M*1 and other measures of the money supply. A paper dollar or four quarters in the billfold of, say, Emma Buck obviously constitutes just $1 of the money supply. But if we counted currency held by banks as part of the money supply, the same $1 would count for $2 of money supply when Emma deposited the currency into her checkable deposit in her bank. It would count for $1 of checkable deposit owned by Buck and also $1 of currency in the bank's cash drawer or vault. By excluding currency held by banks when determining the total supply of money, we avoid this problem of double counting.

Also *excluded* from the money supply are any checkable deposits of the government (specifically, the U.S. Treasury) or the Federal Reserve that are held by commercial banks or thrift institutions. This exclusion is designed to enable a better assessment of the amount of money available *to the private sector* for potential spending. The amount of money available to households and businesses is of keen interest to the Federal Reserve in conducting its monetary policy (a topic we cover in detail in Chapter 33).

Money Definition *M*2

A second and broader definition of money includes *M*1 plus several near-monies. **Near-monies** are certain highly liquid financial assets that do not function directly or fully as a medium of exchange but can be readily converted into currency or checkable deposits. The ***M*2** definition of money includes three categories of near-monies.

- ***Savings deposits, including money market deposit accounts*** A depositor can easily withdraw funds from a **savings account** at a bank or thrift or simply request that the funds be transferred from a savings account to a checkable account. A person can also withdraw funds from a **money market deposit account (MMDA)**, which is an interest-bearing account containing a variety of interest-bearing short-term securities. MMDAs, however, have a minimum-balance requirement and a limit on how often a person can withdraw funds.
- ***Small-denominated (less than $100,000) time deposits*** Funds from **time deposits** become available

at their maturity. For example, a person can convert a 6-month time deposit ("certificate of deposit," or "CD") to currency without penalty 6 months or more after it has been deposited. In return for this withdrawal limitation, the financial institution pays a higher interest rate on such deposits than it does on its MMDAs. Also, a person can "cash in" a CD at any time but must pay a severe penalty.

- ***Money market mutual funds held by individuals*** By making a telephone call, using the Internet, or writing a check for $500 or more, a depositor can redeem shares in a **money market mutual fund (MMMF)** offered by a mutual fund company. Such companies use the combined funds of individual shareholders to buy interest-bearing short-term credit instruments such as certificates of deposit and U.S. government securities. Then they can offer interest on the MMMF accounts of the shareholders (depositors) who jointly own those financial assets. The MMMFs in *M*2 include only the MMMF accounts held by individuals; those held by businesses and other institutions are excluded.

All three categories of near-monies imply substantial liquidity. Thus, in equation form,

$$\text{Money, } M2 = \begin{array}{l} M1 + \text{savings deposits, including} \\ \text{MMDAs} + \text{small-denominated} \\ \text{(less than \$100,000) time deposits} \\ + \text{MMMFs held by individuals} \end{array}$$

In summary, *M*2 includes the immediate medium-of-exchange items (currency and checkable deposits) that constitute *M*1 plus certain near-monies that can be easily converted into currency and checkable deposits. In Figure 31.1b we see that the addition of all these items yields an *M*2 money supply that is about five times larger than the narrower *M*1 money supply.

QUICK REVIEW 31.1

- Money serves as a medium of exchange, a unit of account, and a store of value.
- The narrow *M*1 definition of money includes currency held by the public plus checkable deposits in commercial banks and thrift institutions.
- Thrift institutions as well as commercial banks offer accounts on which checks can be written.
- The *M*2 definition of money includes *M*1 plus savings deposits, including money market deposit accounts, small-denominated (less than $100,000) time deposits, and money market mutual fund balances held by individuals.

CONSIDER THIS . . .

Are Credit Cards Money?

You may wonder why we have ignored credit cards such as Visa and MasterCard in our discussion of how the money supply is defined. After all, credit cards are a convenient way to buy things and account for about 25% of the dollar value of all transactions in the United States. The answer is that a credit card is not money. Rather, it is a convenient means of obtaining a short-term loan from the financial institution that issued the card.

What happens when you purchase an item with a credit card? The bank that issued the card will reimburse the seller by making a money payment and charging the establishment a transaction fee, and later you will reimburse the bank for its loan to you by also making a money payment. Rather than reduce your cash or checking account with each purchase, you bunch your payments once a month. You may have to pay an annual fee for the services provided, and if you pay the bank in installments, you will pay a sizable interest charge on the loan. Credit cards are merely a means of deferring or postponing payment for a short period. Your checking account balance that you use to pay your credit card bill *is* money; the credit card is *not* money.*

Although credit cards are not money, they allow individuals and businesses to "economize" in the use of money. Credit cards enable people to hold less currency in their billfolds and, prior to payment due dates, fewer checkable deposits in their bank accounts. Credit cards also help people coordinate the timing of their expenditures with their receipt of income.

*A bank debit card, however, is very similar to a check in your checkbook. Unlike a purchase with a credit card, a purchase with a debit card creates a direct "debit" (a subtraction) from your checking account balance. That checking account balance is money—it is part of M1.

What "Backs" the Money Supply?

The money supply in the United States essentially is "backed" (guaranteed) by government's ability to keep the value of money relatively stable. Nothing more!

Money as Debt

The major components of the money supply—paper money and checkable deposits—are debts, or promises to pay. In the United States, paper money is the circulating debt of the Federal Reserve Banks. Checkable deposits are the debts of commercial banks and thrift institutions.

Paper currency and checkable deposits have no intrinsic value. A $5 bill is just an inscribed piece of paper. A checkable deposit is merely a bookkeeping entry. And coins, we know, have less intrinsic value than their face value. Nor will government redeem the paper money you hold for anything tangible, such as gold. To many people, the fact that the government does not back the currency with anything tangible seems implausible and insecure. But the decision not to back the currency with anything tangible was made for a very good reason. If the government backed the currency with something tangible like gold, then the supply of money would vary with how much gold was available. By not backing the currency, the government avoids this constraint and indeed receives a key freedom—the ability to provide as much or as little money as needed to maintain the value of money and to best suit the economic needs of the country. In effect, by choosing not to back the currency, the government has chosen to give itself the ability to freely "manage" the nation's money supply. Its monetary authorities attempt to provide the amount of money needed for the particular volume of business activity that will promote full employment, price-level stability, and economic growth.

Nearly all today's economists agree that managing the money supply is more sensible than linking it to gold or to some other commodity whose supply might change arbitrarily and capriciously. For instance, if we used gold to back the money supply so that gold was redeemable for money and vice versa, then a large increase in the nation's gold stock as the result of a new gold discovery might increase the money supply too rapidly and thereby trigger rapid inflation. Or a long-lasting decline in gold production might reduce the money supply to the point where recession and unemployment resulted.

In short, people cannot convert paper money into a fixed amount of gold or any other precious commodity. Money is exchangeable only for paper money. If you ask the government to redeem $5 of your paper money, it will swap one paper $5 bill for another bearing a different serial number. That is all you can get. Similarly, checkable deposits can be redeemed not for gold but only for paper money, which, as we have just seen, the government will not redeem for anything tangible.

Value of Money

So why are currency and checkable deposits money, whereas, say, Monopoly (the game) money is not? What gives a $20 bill or a $100 checking account entry its value? The answer to these questions has three parts.

Acceptability Currency and checkable deposits are money because people accept them as money. By virtue of long-standing business practice, currency and checkable deposits perform the basic function of money: They are acceptable as a medium of exchange. We accept paper money in exchange because we are confident it will be exchangeable for real goods, services, and resources when we spend it.

Legal Tender Our confidence in the acceptability of paper money is strengthened because government has designated currency as **legal tender.** Specifically, each bill contains the statement "This note is legal tender for all debts, public and private." That means paper money is a valid and legal means of payment of any debt that was contracted in dollars. (But private firms and government are not mandated to accept cash. It is not illegal for them to specify payment in noncash forms such as checks, cashier's checks, money orders, or credit cards.)

The general acceptance of paper currency in exchange is more important than the government's decree that money is legal tender, however. The government has never decreed checks to be legal tender, and yet they serve as such in many of the economy's exchanges of goods, services, and resources. But it is true that government agencies—the Federal Deposit Insurance Corporation (FDIC) and the National Credit Union Administration (NCUA)—insure individual deposits of up to $250,000 at commercial banks and thrifts. That fact enhances our willingness to use checkable deposits as a medium of exchange.

Relative Scarcity The value of money, like the economic value of anything else, depends on its supply and demand. Money derives its value from its scarcity relative to its utility (its want-satisfying power). The utility of money lies in its capacity to be exchanged for goods and services, now or in the future. The economy's demand for money thus depends on the total dollar volume of transactions in any period plus the amount of money individuals and businesses want to hold for future transactions. With a reasonably constant demand for money, the supply of money provided by the monetary authorities will determine the domestic value or "purchasing power" of the monetary unit (dollar, yen, peso, or whatever).

Money and Prices

The purchasing power of money is the amount of goods and services a unit of money will buy. When money rapidly loses its purchasing power, it loses its role as money.

The Purchasing Power of the Dollar The amount a dollar will buy varies inversely with the price level; that is, a reciprocal relationship exists between the general price level and the purchasing power of the dollar. When the consumer price index or "cost-of-living" index goes up, the value of the dollar goes down, and vice versa. Higher

prices lower the value of the dollar because more dollars are needed to buy a particular amount of goods, services, or resources. For example, if the price level doubles, the value of the dollar declines by one-half, or 50 percent.

Conversely, lower prices increase the purchasing power of the dollar because fewer dollars are needed to obtain a specific quantity of goods and services. If the price level falls by, say, one-half, or 50 percent, the purchasing power of the dollar doubles.

In equation form, the relationship looks like this:

$$\$V = 1/P$$

To find the value of the dollar $\$V$, divide 1 by the price level P expressed as an index number (in hundredths). If the price level is 1, then the value of the dollar is 1. If the price level rises to, say, 1.20, $\$V$ falls to .833; a 20 percent increase in the price level reduces the value of the dollar by 16.67 percent. Check your understanding of this reciprocal relationship by determining the value of $\$V$ and its percentage rise when P falls by 20 percent from $1 to .80.

Inflation and Acceptability In Chapter 26 we noted situations in which a nation's currency became worthless and unacceptable in exchange. These instances of runaway inflation, or *hyperinflation*, happened when the government issued so many pieces of paper currency that the purchasing power of each of those units of money was almost totally undermined. The infamous post–World War I hyperinflation in Germany is an example. In December 1919 there were about 50 billion marks in circulation. Four years later there were 496,585,345,900 billion marks in circulation! The result? The German mark in 1923 was worth an infinitesimal fraction of its 1919 value.[3]

Runaway inflation may significantly depreciate the value of money between the time it is received and the time it is spent. Rapid declines in the value of a currency may cause it to cease being used as a medium of exchange. Businesses and households may refuse to accept paper money in exchange because they do not want to bear the loss in its value that will occur while it is in their possession. (All this despite the fact that the government says that paper currency is legal tender!) Without an acceptable domestic medium of exchange, the economy may simply revert to barter. Alternatively, more stable currencies such as the U.S. dollar or European euro may come into widespread use. At the extreme, a country may adopt a foreign currency as its own official currency as a way to counter hyperinflation.

[3]Frank G. Graham, *Exchange, Prices, and Production in Hyperinflation Germany, 1920–1923* (Princeton, N.J.: Princeton University Press, 1930), p. 13.

Similarly, people will use money as a store of value only as long as there is no sizable deterioration in the value of that money because of inflation. And an economy can effectively employ money as a unit of account only when its purchasing power is relatively stable. A monetary yardstick that no longer measures a yard (in terms of purchasing power) does not permit buyers and sellers to establish the terms of trade clearly. When the value of the dollar is declining rapidly, sellers do not know what to charge and buyers do not know what to pay.

Stabilizing Money's Purchasing Power

Rapidly rising price levels (rapid inflation) and the consequent erosion of the purchasing power of money typically result from imprudent economic policies. Since the purchasing power of money and the price level vary inversely, stabilization of the purchasing power of a nation's money requires stabilization of the nation's price level. Such price-level stability (2–3 percent annual inflation) mainly necessitates intelligent management or regulation of the nation's money supply and interest rates *(monetary policy)*. It also requires appropriate *fiscal policy* supportive of the efforts of the nation's monetary authorities to hold down inflation. In the United States, a combination of legislation, government policy, and social practice inhibits imprudent expansion of the money supply that might jeopardize money's purchasing power. The critical role of the U.S. monetary authorities (the Federal Reserve) in maintaining the purchasing power of the dollar is the subject of Chapter 33. For now, simply note that they make available a particular quantity of money, such as $M2$ in Figure 31.1, and can change that amount through their policy tools.

QUICK REVIEW 31.2

- In the United States, all money consists essentially of the debts of government, commercial banks, and thrift institutions.
- These debts efficiently perform the functions of money as long as their value, or purchasing power, is relatively stable.
- The value of money is rooted not in specified quantities of precious metals but in the amounts of goods, services, and resources that money will purchase.
- The value of the dollar (its domestic purchasing power) is inversely related to the price level.
- Government's responsibility in stabilizing the purchasing power of the monetary unit calls for (a) effective control over the supply of money by the monetary authorities and (b) the application of appropriate fiscal policies by the president and Congress.

The Federal Reserve and the Banking System

In the United States, the "monetary authorities" we have been referring to are the members of the Board of Governors of the **Federal Reserve System** (the "Fed"). As shown in Figure 31.2, the Board directs the activities of the 12 Federal Reserve Banks, which in turn control the lending activity of the nation's banks and thrift institutions. The Fed's major goal is to control the money supply. But since checkable deposits in banks are such a large part of the money supply, an important part of its duties involves assuring the stability of the banking system.

Historical Background

Early in the twentieth century, Congress decided that centralization and public control were essential for an efficient banking system. Decentralized, unregulated banking had fostered the inconvenience and confusion of numerous private bank notes being used as currency. It also had resulted in occasional episodes of monetary mismanagement such that the money supply was inappropriate to the needs of the economy. Sometimes "too much" money precipitated rapid inflation; other times "too little money" stunted the economy's growth by hindering the production and exchange of goods and services. No single entity was charged with creating and implementing nationally consistent banking policies.

Furthermore, acute problems in the banking system occasionally erupted when banks either closed down or insisted on immediate repayment of loans to prevent their own failure. At such times, a banking crisis could emerge, with individuals and businesses who had lost confidence in their banks attempting to simultaneously withdraw all of their money—thereby further crippling the already weakened banks.

An unusually acute banking crisis in 1907 motivated Congress to appoint the National Monetary Commission to study the monetary and banking problems of the economy and to outline a course of action for Congress. The result was the Federal Reserve Act of 1913.

Let's examine the various parts of the Federal Reserve System and their relationship to one another.

Board of Governors

The central authority of the U.S. money and banking system is the **Board of Governors** of the Federal Reserve System. The U.S. president, with the confirmation of the Senate, appoints the seven Board members. Terms are 14 years and staggered so that one member is replaced every 2 years. In addition, new members are appointed when resignations occur. The president selects the chairperson and vice-chairperson of the Board from among the members. Those officers serve 4-year terms and can be reappointed to new 4-year terms by the president. The long-term appointments provide the Board with continuity, experienced membership, and independence from political pressures that could result in inflation.

The 12 Federal Reserve Banks

The 12 **Federal Reserve Banks,** which blend private and public control, collectively serve as the nation's "central bank." These banks also serve as bankers' banks.

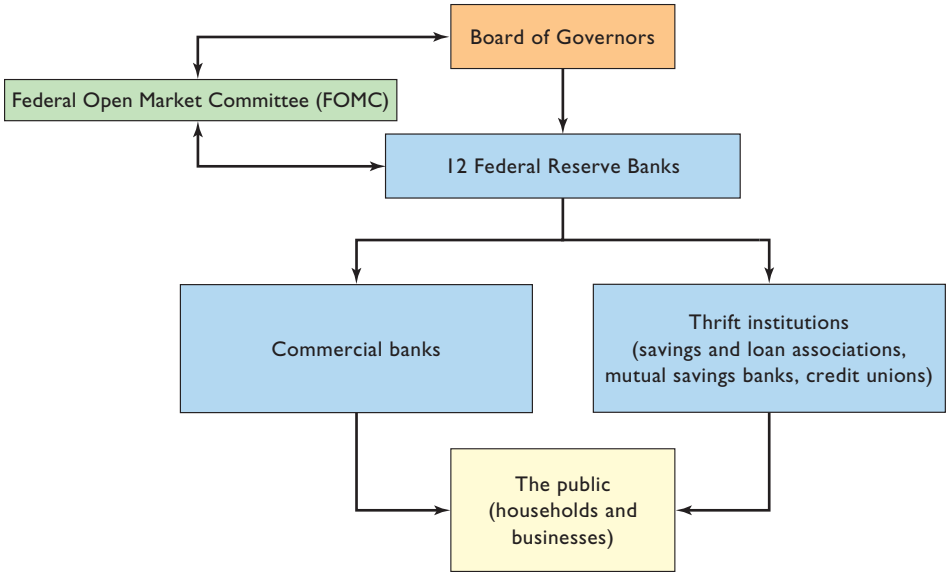


FIGURE 31.2 Framework of the Federal Reserve System and its relationship to the public. The Board of Governors makes the basic policy decisions that provide monetary control of the U.S. money and banking systems. The 12 Federal Reserve Banks implement these decisions. Both the Board of Governors and the 12 Federal Reserve Banks are aided by the Federal Open Market Committee (FOMC).

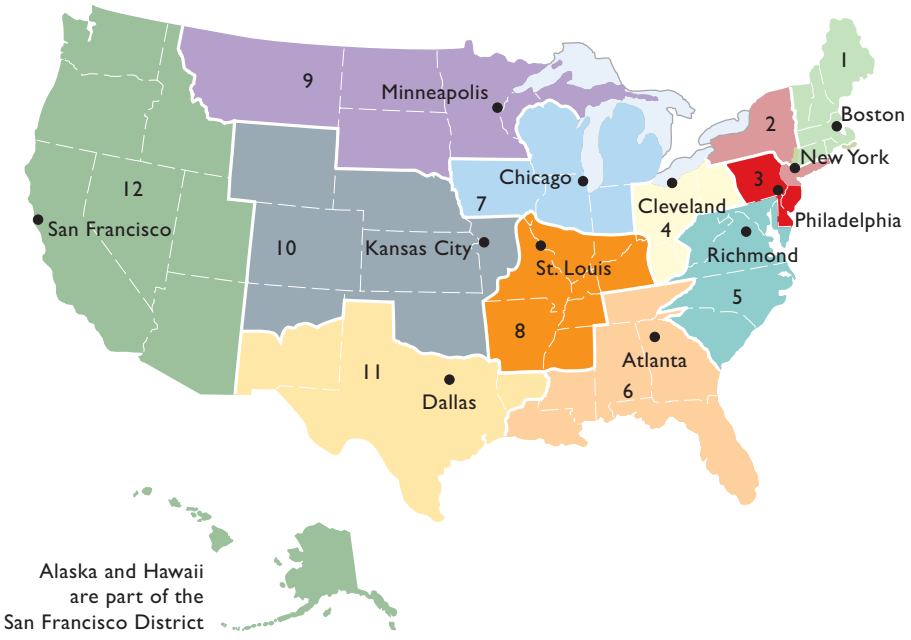


FIGURE 31.3 The 12 Federal Reserve Districts. The Federal Reserve System divides the United States into 12 districts, each having one central bank and in some instances one or more branches of the central bank.

Source: Federal Reserve Bulletin, ***www.federalreserve.gov/pubs/bulletin.***

Central Bank Most nations have a single central bank—for example, Britain's Bank of England or Japan's Bank of Japan. The United States' central bank consists of 12 banks whose policies are coordinated by the Fed's Board of Governors. The 12 Federal Reserve Banks accommodate the geographic size and economic diversity of the United States and the nation's large number of commercial banks and thrifts.

Figure 31.3 locates the 12 Federal Reserve Banks and indicates the district that each serves. These banks implement the basic policy of the Board of Governors.

Quasi-Public Banks The 12 Federal Reserve Banks are quasi-public banks, which blend private ownership and public control. Each Federal Reserve Bank is owned by the private commercial banks in its district. (Federally chartered banks are required to purchase shares of stock in the Federal Reserve Bank in their district.) But the Board of Governors, a government body, sets the basic policies that the Federal Reserve Banks pursue.

Despite their private ownership, the Federal Reserve Banks are in practice public institutions. Unlike private firms, they are not motivated by profit. The policies they follow are designed by the Board of Governors to promote the well-being of the economy as a whole. Thus, the activities of the Federal Reserve Banks are frequently at odds with the profit motive.[4] Also, the Federal Reserve Banks do not compete with commercial banks. In general, they do not deal with the public; rather, they interact with the government and commercial banks and thrifts.

Bankers' Banks The Federal Reserve Banks are "bankers' banks." They perform essentially the same functions for banks and thrifts as those institutions perform for the public. Just as banks and thrifts accept the deposits of and make loans to the public, so the central banks accept the deposits of and make loans to banks and thrifts. Normally, these loans average only about $150 million a day. But in emergency circumstances the Federal Reserve Banks become the "lender of last resort" to the banking system and can lend out as much as needed to ensure that banks and thrifts can meet their cash obligations. On the day after terrorists attacked the United States on September 11, 2001, the Fed lent $45 *billion* to U.S. banks and thrifts. The Fed wanted to make sure that the destruction and disruption in New York City and the Washington, D.C., area did not precipitate a nationwide banking crisis.

[4]Although it is not their goal, the Federal Reserve Banks have actually operated profitably, largely as a result of the Treasury debts they hold. Part of the profit is used to pay 6 percent annual dividends to the commercial banks that hold stock in the Federal Reserve Banks; the remaining profit is usually turned over to the U.S. Treasury.

The Fed assumed an even greater role as a lender of last resort during the financial crisis of 2007–2008. We discuss that crisis and the Fed's emergency response to the crisis later in this chapter.

But the Federal Reserve Banks have a third function, which banks and thrifts do not perform: They issue currency. Congress has authorized the Federal Reserve Banks to put into circulation Federal Reserve Notes, which constitute the economy's paper money supply.

FOMC

The **Federal Open Market Committee (FOMC)** aids the Board of Governors in conducting monetary policy. The FOMC is made up of 12 individuals:

- The seven members of the Board of Governors.
- The president of the New York Federal Reserve Bank.
- Four of the remaining presidents of Federal Reserve Banks on a 1-year rotating basis.

The FOMC meets regularly to direct the purchase and sale of government securities (bills, notes, bonds) in the open market in which such securities are bought and sold on a daily basis. We will find in Chapter 33 that the purpose of these aptly named *open-market operations* is to control the nation's money supply and influence interest rates. The Federal Reserve Bank in New York City conducts most of the Fed's open-market operations.

Commercial Banks and Thrifts

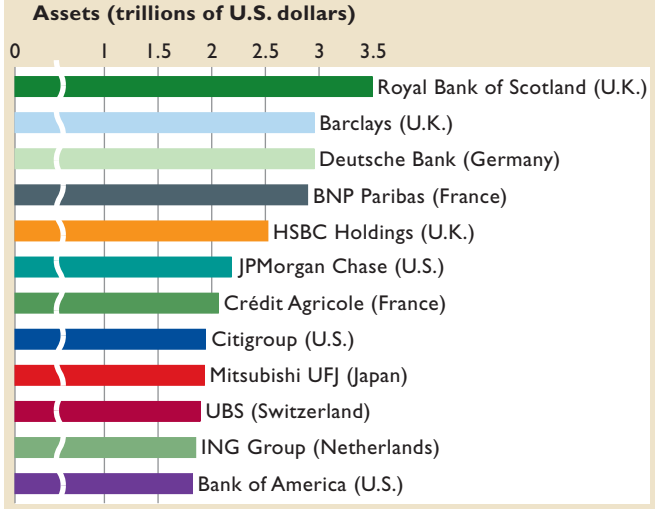
There are about 6800 commercial banks. Roughly three-fourths are state banks. These are private banks chartered (authorized) by the individual states to operate within those states. One-fourth are private banks chartered by the Federal government to operate nationally; these are national banks. Some of the U.S. national banks are very large, ranking among the world's largest financial institutions (see Global Perspective 31.1).

The 8700 thrift institutions—most of which are credit unions—are regulated by agencies in addition to the Board of Governors and the Federal Reserve Banks. For example, credit unions are regulated and monitored by the National Credit Union Administration (NCUA). But the thrifts *are* subject to monetary control by the Federal Reserve System. In particular, like the banks, thrifts are required to keep a certain percentage of their checkable deposits as "reserves." In Figure 31.2 we use arrows to indicate that the thrift institutions are subject to the control of the Board of Governors and the central banks. Decisions concerning monetary policy affect the thrifts along with the commercial banks.

GLOBAL PERSPECTIVE 31.1

The World's 12 Largest Financial Institutions

The world's 12 largest private sector financial institutions are headquartered in Europe, Japan, and the United States (2009 data).



Source: Forbes Global 2000, Total Assets, **http://www.forbes.com/lists/2009/18/global-09_The-Global-2000_Rank.html**. Used with permission of Forbes Media LLC © 2010.

Fed Functions and the Money Supply

The Fed performs several functions, some of which we have already identified but they are worth repeating:

- ***Issuing currency*** The Federal Reserve Banks issue Federal Reserve Notes, the paper currency used in the U.S. monetary system. (The Federal Reserve Bank that issued a particular bill is identified in black in the upper left of the front of the newly designed bills. "A1," for example, identifies the Boston bank, "B2" the New York bank, and so on.)
- ***Setting reserve requirements and holding reserves*** The Fed sets reserve requirements, which are the fractions of checking account balances that banks must maintain as currency reserves. The central banks accept as deposits from the banks and thrifts any portion of their mandated reserves not held as vault cash.
- ***Lending to financial institutions and serving as an emergency lender of last resort*** The Fed makes routine short-term loans to banks and thrifts and charges them an interest rate called the *discount rate*. It also occasionally auctions off loans to banks and thrifts

through its *Term Auction Facility*, discussed in Chapter 33. In times of financial emergencies, the Fed serves as a lender of last resort to critical parts of the U.S. financial industry.

- ***Providing for check collection*** The Fed provides the banking system with a means for collecting on checks. If Sue writes a check on her Miami bank or thrift to Joe, who deposits it in his Dallas bank or thrift, how does the Dallas bank collect the money represented by the check drawn against the Miami bank? Answer: The Fed handles it by adjusting the reserves (deposits) of the two banks.
- ***Acting as fiscal agent*** The Fed acts as the fiscal agent (provider of financial services) for the Federal government. The government collects huge sums through taxation, spends equally large amounts, and sells and redeems bonds. To carry out these activities, the government uses the Fed's facilities.
- ***Supervising banks*** The Fed supervises the operations of banks. It makes periodic examinations to assess bank profitability, to ascertain that banks perform in accordance with the many regulations to which they are subject, and to uncover questionable practices or fraud. Following the financial crisis of 2007–2008, Congress expanded the Fed's supervisory powers over banks.[5]
- ***Controlling the money supply*** Finally, the Fed has ultimate responsibility for regulating the supply of money, and this enables it to influence interest rates. The major task of the Fed under usual economic circumstances is to manage the money supply (and thus interest rates) according to the needs of the economy. This involves making an amount of money available that is consistent with high and rising levels of output and employment *and* a relatively stable price level. While most of the other functions of the Fed are routine activities or have a service nature, managing the nation's money supply requires making basic, but unique, policy decisions. (We discuss those decisions in detail in Chapter 33.)

Federal Reserve Independence

Congress purposely established the Fed as an independent agency of government. The objective was to protect the Fed from political pressures so that it could effectively control the money supply and maintain price stability. Political pressures on Congress and the executive branch may at times result in inflationary fiscal policies, including tax cuts and special-interest spending. If Congress and the executive branch also controlled the nation's monetary policy, citizens and lobbying groups undoubtedly would pressure elected officials to keep interest rates low even though at times high interest rates are necessary to reduce aggregate demand and thus control inflation. An independent monetary authority (the Fed) can take actions to increase interest rates when higher rates are needed to stem inflation. Studies show that countries that have independent central banks like the Fed have lower rates of inflation, on average, than countries that have little or no central bank independence.

[5]The Fed is not alone in this task of supervision. The individual states supervise the banks that they charter. The Office of the Comptroller of the Currency has separate supervisory authority over the banks and the thrifts. Also, the Federal Deposit Insurance Corporation supervises the banks and thrifts whose deposits it insures.

The Financial Crisis of 2007 and 2008

As previously noted, a properly functioning monetary system supports the continuous circular flows of income and expenditures in the economy. In contrast, a malfunctioning monetary system causes major problems in credit markets and can cause severe fluctuations in the economy's levels of output, employment, and prices.

"Malfunctioning" is too gentle an adjective to describe the monetary system in late 2007 and 2008. In that period, the U.S. financial system faced its most serious crisis since the Great Depression of the 1930s. The financial crisis soon spread to the entire economy, culminating in the severe recession of 2007–2009. We discussed the recession in detail in previous chapters, and we now want to examine the financial crisis that led up to it. What was the nature of the financial crisis? What caused it? How has it changed the structure of the U.S. financial services industry?

The Mortgage Default Crisis

In 2007 a major wave of defaults on home mortgage loans threatened the health of not only the original mortgage lenders but of any financial institution that had made such loans or invested in such loans either directly or indirectly. A majority of these mortgage defaults were on **subprime mortgage loans**—high-interest-rate loans to home buyers with higher-than-average credit risk. Ironically, the Federal government had encouraged banks to make these types of loans as part of an effort to broaden home ownership to more Americans. But more directly to the point, several of the biggest indirect investors in these subprime loans had been banks. The banks had lent money to investment companies that had purchased many of the mortgages from mortgage lenders. When the mortgages started to go bad, many investment funds "blew up" and

could not repay the loans they had taken out from the banks. The banks thus had to "write off" (declare unrecoverable) the loans they had made to the investment companies, but doing that meant reducing their banks' reserves and limiting their ability to generate new loans. This greatly threatened the economy, because both consumers and businesses rely on loans to finance consumption and investment expenditures.

A strange thing about the crisis was that before it happened, banks and government regulators had mistakenly believed that an innovation known as the "mortgage-backed security" had eliminated most of the bank exposure to mortgage defaults. **Mortgage-backed securities** are bonds backed by mortgage payments. To create them, banks and other mortgage lenders first made mortgage loans. But then instead of holding all of those loans as assets on their balance sheets and collecting the monthly mortgage payments, the banks and other mortgage lenders bundled hundreds or thousands of them together and sold them off as bonds—in essence selling the right to collect all the future mortgage payments. The banks obtained a single, up-front cash payment for the bond and the bond buyer started to collect the mortgage payments as the return on the investment.

From the banks' perspective, this seemed like a smart business decision, because it transferred any future default risk on those mortgages to the buyer of the bond. The banks thought that they were off the hook for these mortgages. Unfortunately for them, however, they lent a substantial portion of the money they received from selling the bonds to investment funds that invested in mortgage-backed bonds. They also purchased large amounts of mortgage-backed securities as financial investments to help meet bank capital requirements set by bank regulators. So while the banks were no longer directly exposed to major portions of the mortgage default risk, they were still indirectly exposed to it. When many homebuyers started to default on their mortgages, the banks lost money on the mortgages they still held. The banks also lost money on the loans they had made to the investors who had purchased mortgage-backed securities, and also on the mortgage-backed securities the banks had purchased from investment firms.

But what had caused the skyrocketing mortgage default rates in the first place? There were many causes, including certain government programs that greatly encouraged and subsidized home ownership for former renters. Also contributing were declining real estate values that arrived at the end of a long housing boom during which house prices had greatly increased. But an equally important factor was the bad incentives provided by the previously discussed mortgage-backed bonds. Because the banks and other mortgage lenders thought that they were no longer exposed to large portions of their mortgage default risk, they became lax in their lending practices—so much so that people were granted subprime mortgage loans that they were unlikely to be able to repay. Some mortgage companies were so eager to sign up new homebuyers (in order to bundle their loans together to sell bonds) that they stopped running credit checks and even allowed applicants to claim higher incomes than they were actually earning in order to qualify them for big loans. The natural result was that many people took on "too much mortgage" and were soon failing to make their monthly payments.

Securitization

The problems just described relate to **securitization**—the process of slicing up and bundling groups of loans, mortgages, corporate bonds, or other financial debts into distinct new securities. This process was not new and was viewed favorably by government regulators, who thought securitization made the banking system safer by allowing banks to shed risk. As noted in our discussion of mortgages, these securities were sold to financial investors, who purchased them to obtain the interest payments and the eventual return of principal generated by the underlying securities. For example, the mortgage loans provided to the subprime borrowers were bundled together as mortgage-backed securities and sold to private investors, mutual fund firms, and pension funds. These securities were attractive to many private investors and financial institutions alike, because they offered higher-interest returns than securities backed by less-risky mortgages or other safer investments.

Once created, loan-backed securities are bought and sold in financial markets just like other securities such as stocks and bonds. These sorts of securities can therefore end up worldwide in the investment portfolios of banks, thrifts, insurance companies, and pensions, as well as in personal accounts.

To reduce the risk for holders of these securities, a few large insurance companies developed other securities that the holders of loan-backed securities could purchase to insure against losses from defaults. American International Group (AIG), in particular, issued billions of dollars of *collateralized default swaps*—essentially insurance policies—that were designed to compensate the holders of loan-backed securities if the loans underlying these investments went into default and did not pay off. Thus, collateralized default swaps became yet another category of investment security that was highly exposed to mortgage-loan risk.

Securitization is so widespread and so critical to the modern financial system that economists sometimes refer to it as the *shadow banking system*. All sorts of securities backed by loans or other securities are issued, bought, sold, and resold each day in a process that helps to keep credit flowing to the households and firms that rely on it for their personal and business needs. In general, securitization therefore is a positive financial innovation. But mortgage-backed securities, in particular, turned out to contain much more risk than most people thought.

Investors and government regulators failed to ask three related questions about mortgage-backed securities: What would happen if the value of one of the types of loans (say, mortgages) that underlies part of the securitization process unexpectedly plunged? And what then would happen if some of the largest holders of the securities based on these mortgages were major U.S. financial institutions that are vitally important to the day-to-day financing of the credit needed to keep the American economy running smoothly? And what would happen after that if the main insurer of these securities not only was the largest insurance company in the United States but in the world?

All three seemingly improbable "what ifs?" occurred! As previously explained, interest rates on adjustable-rate mortgages increased and house prices fell. Borrowers who had made relatively small down payments on home purchases or had previously cashed out home equity through refinancing discovered that they owed more on their mortgages than their properties were worth. Their loans were said to be "underwater." As interest rates adjusted upward and the economy slowed, borrowers began falling behind on their monthly mortgage payments. Lenders began to foreclose on many houses, while other borrowers literally handed in their house keys and walked away from their houses *and* their mortgages.

Failures and Near-Failures of Financial Firms

When the mortgage loan "card" underpinning mortgage-based securitization fell, the securitization layers above it collapsed like a house of cards. First, the big mortgage lenders faced demise because they still held large amounts of the bad debt. Three huge mortgage lenders collapsed or nearly collapsed. Countrywide, the second largest mortgage lender, was saved from bankruptcy by Bank of America. Regulators also seized Washington Mutual bank, the nation's largest mortgage lender, and arranged a quick takeover by JPMorgan Chase. Wachovia bank's heavy exposure to mortgages through its Golden West subsidiary resulted in near bankruptcy, and it was rescued through acquisition by Wells Fargo.

The exposure to the growing problem of loan defaults quickly jumped from direct mortgage lenders to other financial institutions. Securities firms and investment banks that held large amounts of loan-backed securities began to suffer huge losses. Merrill Lynch lost more in two years than it made in the prior decade and was acquired at a fire-sale price by Bank of America. Lehman Brothers, a major holder of mortgage-backed securities, declared bankruptcy. Goldman Sachs, Morgan Stanley, and other financial firms that had heavy exposures to mortgage-backed securities and collateralized default swaps rushed to become bank holding companies so they could qualify for the massive emergency loans that the Federal Reserve was making available to banks and bank holding companies. Citibank survived through infusions of Federal government loans. Insurance company AIG suffered enormous losses because it had not set aside sufficient reserves to pay off the unexpectedly large losses that accrued on the insurance policies that it had sold to holders of mortgage-backed securities. The nightmarish thought of a total collapse of the U.S. financial system suddenly became a realistic possibility.

The Treasury Bailout: TARP

In late 2008 Congress passed the **Troubled Asset Relief Program (TARP),** which allocated $700 billion—yes, billion—to the U.S. Treasury to make emergency loans to critical financial and other U.S. firms. Most of this "bailout" money eventually was lent out. In fact, as of March 2009, the Federal government and Federal Reserve had spent $170 billion just keeping insurer AIG afloat. Other major recipients of TARP funds included Citibank, Bank of America, JPMorgan Chase, and Goldman Sachs. Later, nonfinancial firms such as General Motors and Chrysler also received several billion dollars of TARP loans.

TARP indeed saved several financial institutions whose bankruptcy would have caused a tsunami of secondary effects that probably would have brought down other financial firms and frozen credit throughout the economy. But this very fact demonstrates the problem of **moral hazard.** As it relates to financial investment, moral hazard is the tendency for financial investors and financial services firms to take on greater risks because they assume they are at least partially insured against losses. Without TARP, several firms would have gone bankrupt and their stockholders, bondholders, and executives all would have suffered large personal losses. With TARP, those outcomes were at least partially avoided. TARP and similar

government bailouts were essentially government-provided insurance payouts to financial firms that never had to pay a single cent in insurance premiums for the massive bailouts that kept them afloat.

The correct assumption by large firms that they were simply too big for government to let them fail may have given them an incentive to make riskier investments than if no government bailouts were likely to be forthcoming.

The Fed's Lender-of-Last-Resort Activities

As noted in our previous list of Fed functions, one of the roles of the Federal Reserve is to serve as the lender of last resort to financial institutions in times of financial emergencies. The Fed performed this vital function well following the 9/11 terrorist attacks. The financial crisis of 2007–2008 presented another, broader-based financial emergency. Under Fed Chair Ben Bernanke, the Fed designed and implemented several highly creative new lender-of-last-resort facilities to pump liquidity into the financial system. These facilities, procedures, and capabilities were in addition to both the TARP efforts by the U.S. Treasury and the Fed's use of standard tools of monetary policy (the subject of Chapter 33) designed to reduce interest rates. All the new Fed facilities had the single purpose and desired outcome of keeping credit flowing.

Total Fed assets rose from $885 billion in February 2008 to $1,903 billion in March 2009. This increase reflected a huge rise in the amount of securities (U.S. securities, mortgage-backed securities, and others) owned by the Fed. In undertaking its lender of last resort functions, the Fed bought these securities from financial institutions. The purpose was to increase liquidity in the financial system by exchanging illiquid bonds (that the firms could not easily sell during the crisis) for cash, the most liquid of all assets.

Many economists believe that TARP and the Fed's actions helped avert a second Great Depression. The following list of new Fed credit facilities underscores the extraordinary extent of the Fed's lender-of-last-resort response to the crisis.

- ***Primary Dealer Credit Facility (PDCF)*** Provides overnight loans to primary dealers who are willing to post loan-backed securities as collateral. (The Fed keeps the collateral on any loan that is not repaid on time.) Primary dealers are the 16 major financial institutions that the Fed uses to buy and sell U.S. securities.
- ***Term Securities Lending Facility (TSLF)*** Lends U.S. securities to primary dealers for one-month terms to promote liquidity in the markets for these U.S. securities. The financial institutions obtain the securities from the Fed through participating in competitive single-bid auctions.
- ***Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility*** Provides loans to U.S. banks and thrifts to finance their purchases of *commercial paper* from money market mutual funds. Commercial paper consists of asset-backed, short-term IOUs that are mainly issued by corporations. These short-term loans are vital for financing the day-to-day operations of businesses.
- ***Commercial Paper Funding Facility (CPFF)*** Purchases commercial paper to support the commercial paper market and therefore the short-term credit needs of businesses.
- ***Money Market Investor Funding Facility (MMIFF)*** Provides funding support to a private-sector initiative designed to ensure the liquidity of U.S. money market mutual funds. Many Americans rely on money market mutual funds as low-risk investments.
- ***Term Asset-Backed Securities Loan Facility (TALF)*** Helps households and business with their credit needs by providing funding support for asset-backed securities collateralized by student loans, auto loans, credit card loans, and loans guaranteed by the Small Business Administration (SBA).
- ***Interest Payments on Reserves*** Bolsters the profitability of banks by paying interest on the reserves they hold in their vaults or in the Federal Reserve Banks.

These extraordinary efforts, like those of the Treasury, helped prevent total disarray in the credit markets. But like TARP, the Fed efforts intensified the moral hazard problem by greatly limiting the losses that otherwise would have resulted from bad financial assumptions and decisions.

The Postcrisis U.S. Financial Services Industry

Table 31.1 lists the major categories of firms within the U.S. financial services industry and gives examples of firms in each category. Note that the main categories of the **financial services industry** are commercial banks, thrifts, insurance companies, mutual fund companies, pension funds, security firms, and investment banks. Even before the financial crisis of 2007–2008, the financial services industry was consolidating into fewer, larger firms, each offering a wider spectrum of services. In 1999 Congress ended the Depression-era prohibition against banks selling stocks, bonds, and mutual funds. Thus, the lines between the subsets of the financial industry began to blur.

TABLE 31.1 Major Categories of Financial Institutions within the U.S. Financial Services Industry

Institution	Description	Examples
Commercial banks	State and national banks that provide checking and savings accounts, sell certificates of deposit, and make loans. The Federal Deposit Insurance Corporation (FDIC) insures checking and savings accounts up to $250,000.	JPMorgan Chase, Bank of America, Citibank, Wells Fargo
Thrifts	Savings and loan associations (S&Ls), mutual saving banks, and credit unions that offer checking and savings accounts and make loans. Historically, S&Ls made mortgage loans for houses while mutual savings banks and credit unions made small personal loans, such as automobile loans. Today, major thrifts offer the same range of banking services as commercial banks. The Federal Deposit Insurance Corporation and the National Credit Union Administration insure checking and savings deposits up to $250,000.	Charter One, New York Community Bank, Pentagon Federal Credit Union, Boeing Employees Credit Union (BECU)
Insurance companies	Firms that offer policies (contracts) through which individuals pay premiums to insure against some loss, say, disability or death. In some life insurance policies and annuities, the funds are invested for the client in stocks and bonds and paid back after a specified number of years. Thus, insurance sometimes has a saving or financial-investment element.	Prudential, New York Life, Northwestern Mutual, Hartford, MetLife
Mutual fund companies	Firms that pool deposits by customers to purchase stocks or bonds (or both). Customers thus indirectly own a part of a particular set of stocks or bonds, say stocks in companies expected to grow rapidly (a growth fund) or bonds issued by state governments (a municipal bond fund).	Fidelity, Vanguard, Putnam, Janus, T. Rowe Price
Pension funds	For-profit or nonprofit institutions that collect savings from workers (or from employers on their behalf) throughout their working years and then buy stocks and bonds with the proceeds and make monthly retirement payments.	TIAA-CREF, Teamsters' Union, CalPERs
Securities firms	Firms that offer security advice and buy and sell stocks and bonds for clients. More generally known as *stock brokerage firms*.	Merrill Lynch, Smith Barney, Charles Schwab
Investment banks	Firms that help corporations and governments raise money by selling stocks and bonds. They also typically offer advisory services for corporate mergers and acquisitions as well as brokerage services and advice.	Goldman Sachs, Morgan Stanley, Deutsche Bank, Nomura Securities

Many banks acquired stock brokerage firms and, in a few cases, insurance companies. For example, Citigroup, which was once only into banking, now owns Smith Barney, a large securities firm. Many large banks (for example, Wells Fargo) and pension funds (for example, TIAA-CREF) now provide mutual funds, including money market mutual funds that pay relatively high interest and on which checks of $500 or more can be written.

The upheaval in the financial markets caused by the financial crisis of 2007–2008 further consolidated the industry and further blurred the lines between its segments. Between September 2007 and September 2009, the FDIC shut down more than 200 U.S. banks and transferred their bank deposits to other, usually larger, banks. In 2009 the three largest U.S. banks (JPMorgan Chase, Bank of America, and Wells Fargo) held roughly $3 of every $10 on deposit in the United States.

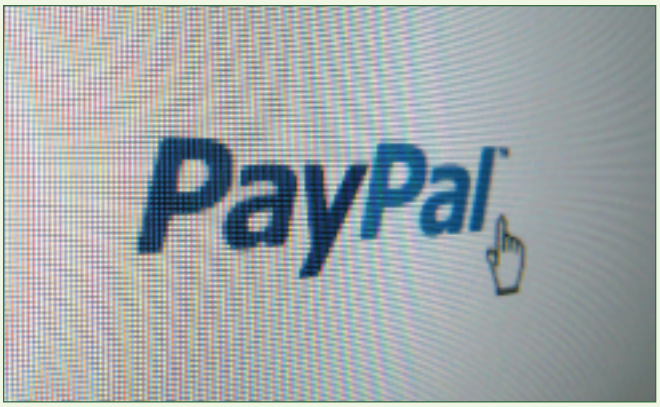
Also, during the financial crisis of 2007–2008, major investment banks Goldman Sachs and Morgan Stanley opted to become commercial banks to gain access to emergency Federal Reserve loans. The nation's largest thrift—Washington Mutual—was absorbed by commercial bank JPMorgan Chase. But even with all this blending, the categories in Table 31.1 remain helpful. The main lines of a firm's businesses often are in one category or another. For example, even though Goldman Sachs is licensed and regulated as a bank, it is first and foremost an investment company. And the insurance companies and pension funds do most of their business as such.

The financial crisis of 2007–2008 generated much introspection about what went wrong and how to prevent anything like it from happening again. Politicians and financial regulators tightened lending rules to offset the "pass the buck" incentives created by mortgage-backed securities and prevent loans from being issued to people who are unlikely to be able to make the required monthly payments. They also passed legislation to help homeowners who were "underwater" on mortgage loans remain in their homes.

LAST Word Electronic Banking

The Rapid Advance of New Payment Forms and Internet Banking Is Transforming Money, Banking, and Financial Markets.

One of the more significant developments in money and banking during the past few decades is the spread of electronic payments. Households and businesses increasingly use electronic payments rather than currency and checks to buy products, pay bills, pay income taxes, transfer bank funds, and handle recurring mortgage and utility payments. Electronic or digital payment is being widely accepted and embraced by households, businesses, government, and financial institutions.



Several electronic-based means of making payments and transferring funds have pushed currency and checks aside. *Credit cards* enable us to make immediate purchases using credit established in advance with the card provider. In most cases, a swipe of the credit card makes the transaction electronically. Credit card balances can be paid via the Internet, rather than by sending a check to the card provider. *Debit cards* work much like credit cards but, because no loan is involved, more closely resemble checks. The swipe of the card authorizes an electronic payment directly to the seller from the buyer's bank account.

Other electronic payments include *Fedwire transfers*. This Federal Reserve–maintained system enables banks to transfer funds to other banks. Individuals and businesses can also "wire" funds between financial institutions, domestically or internationally. Households can similarly "send" funds or payments to businesses using *automated clearinghouse transactions (ACHs)*. For example, they can make monthly utility and mortgage payments and transfer funds among financial institutions. The ACH system also allows sellers to scan checks at point of sale, convert them to ACH payments, and move the funds immediately from the buyer's checking account to the seller's checking account. Then the seller immediately hands the check back to the customer.

Some experts believe the next step will be greater use of *electronic money*, which is simply an entry in an electronic file stored in a computer. Electronic money is deposited, or "loaded," into an account through electronic deposits of paychecks, retirement benefits, stock dividends, and other sources of income. The owner of the account withdraws, or "unloads," the money from his or her account, using the Internet to pay sellers for their goods and services. PayPal—used by 184 million account holders in 190 countries—roughly fits this description and is familiar to eBay users. Buyers and sellers establish accounts based on funds in checking accounts or funds available via credit cards. Customers then can securely make electronic payments or transfer funds to other holders of PayPal accounts.

In the future, the public may be able to use card readers attached to their computers to load electronic money onto so-called smart cards. These plastic cards contain computer chips that store information, including the amount of electronic money the consumer has loaded. When purchases or payments are made, their amounts are automatically deducted from the balance in the card's memory. Consumers will be able to transfer traditional money to their smart cards through computers or cell phones or at automatic teller machines. Thus, it will be possible for nearly all payments to be made through the Internet or a smart card.

A few general-use smart cards with embedded programmable computer chips are available in the United States, including cards issued by Visa, MasterCard, and American Express ("Blue Cards"). More common are *stored-value cards*, which facilitate purchases at the establishments that issued them. Examples are prepaid phone cards, copy-machine cards, mass-transit cards, single-store gift cards, and university meal-service cards. Like the broader smart cards, these cards are "reloadable," meaning the amounts stored on them can be increased. A number of retailers—including FedEx stores, Sears, Starbucks, Walgreens, and Walmart—make stored-value cards available to their customers.

Electronic money also appears poised to make a big impact in developing countries where bank branches are few and far between. Companies like M-PESA in Kenya, Wizzit in South Africa, and G-Cash in the Philippines are now taking advantage of the fact that, while those countries have few banks, they have extensive cellular phone networks. Cell phone subscribers can deposit cash at cell phone stores and then freely send each other electronic payments using their phones. Customers receiving payments can use the electronic money that they receive to make further electronic payments or, if they like, withdraw the money for cash at their local cell phone store. The safety and convenience of these systems is expected to be a substantial aid to local consumers and businesspeople.

In mid-2010 Congress passed and the president signed the **Wall Street Reform and Consumer Protection Act.** This sweeping law includes provisions that:

- Eliminate the Office of Thrift Supervision and give broader authority to the Federal Reserve to regulate all large financial institutions.
- Create a Financial Stability Oversight Council to be on the lookout for risks to the financial system.
- Establish a process for the Federal government to liquidate (sell off) the assets of large failing financial institutions, much like the FDIC does with failing banks.
- Provide Federal regulatory oversight of mortgage-backed securities and other derivatives and require that they be traded on public exchanges.
- Require companies selling asset-backed securities to retain a portion of those securities so the sellers share part of the risk.
- Establish a stronger consumer financial protection role for the Fed through creation of the Bureau of Consumer Financial Protection.

Proponents of the new law say that it will help prevent many of the practices that led up to the financial crisis of 2007–2008. They also contend that the law will send a strong message to stockholders, bondholders, and executives of large financial firms that they will suffer unavoidable and extremely high personal financial losses if they allow their firms to ever again get into serious financial trouble.

Skeptics of the new law say that regulators already had all the tools they needed to prevent the financial crisis. They also point out that the government's own efforts to promote home ownership, via quasi-government institutions that purchased mortgage-backed securities, greatly contributed to the financial crisis. Critics of the new law say that it will simply impose heavy new regulatory costs on the financial industry while doing little to prevent future government bailouts.

Summary

1. Anything that is accepted as (a) a medium of exchange, (b) a unit of monetary account, and (c) a store of value can be used as money.
2. There are two major definitions of the money supply. *M*1 consists of currency and checkable deposits; *M*2 consists of *M*1 plus savings deposits, including money market deposit accounts, small-denominated (less than $100,000) time deposits, and money market mutual fund balances held by individuals.
3. Money represents the debts of government and institutions offering checkable deposits (commercial banks and thrift institutions) and has value because of the goods, services, and resources it will command in the market. Maintaining the purchasing power of money depends largely on the government's effectiveness in managing the money supply.
4. The U.S. banking system consists of (a) the Board of Governors of the Federal Reserve System, (b) the 12 Federal Reserve Banks, and (c) some 6,800 commercial banks and 8,700 thrift institutions (mainly credit unions). The Board of Governors is the basic policymaking body for the entire banking system. The directives of the Board and the Federal Open Market Committee (FOMC) are made effective through the 12 Federal Reserve Banks, which are simultaneously (a) central banks, (b) quasi-public banks, and (c) bankers' banks.
5. The major functions of the Fed are to (a) issue Federal Reserve Notes, (b) set reserve requirements and hold reserves deposited by banks and thrifts, (c) lend money to financial institutions and serve as the lender of last resort in national financial emergencies, (d) provide for the rapid collection of checks, (e) act as the fiscal agent for the Federal government, (f) supervise the operations of the banks, and (g) regulate the supply of money in the best interests of the economy.
6. The Fed is essentially an independent institution, controlled neither by the president of the United States nor by Congress. This independence shields the Fed from political pressure and allows it to raise and lower interest rates (via changes in the money supply) as needed to promote full employment, price stability, and economic growth.
7. The financial crisis of 2007–2008 consisted of an unprecedented rise in mortgage loan defaults, the collapse or near-collapse of several major financial institutions, and the generalized freezing up of credit availability. The crisis resulted from bad mortgage loans together with declining real estate prices. It also resulted from underestimation of risk by holders of mortgage-backed securities and faulty insurance securities designed to protect holders of mortgage-backed securities from the risk of default.
8. In 2008 Congress passed the Troubled Asset Relief Program (TARP), which authorized the U.S. Treasury to spend up to $700 billion to make emergency loans and guarantees to failing financial firms. The Treasury rescue, or bailout, was aided by lender-of-last-resort loans provided by the Federal Reserve to financial institutions through a series of newly established Fed facilities.
9. The TARP loans and the Fed's lender-of-last-resort actions intensify the moral hazard problem. This is the tendency of financial investors and financial firms to take on greater risk when they assume they are at least partially insured against loss.

10. The main categories of the U.S. financial services industry are commercial banks, thrifts, insurance companies, mutual fund companies, pension funds, securities firms, and investment banks. The reassembly of the wreckage from the financial crisis of 2007–2008 has further consolidated the already consolidating financial services industry and has further blurred some of the lines between the subsets of the industry.
11. In response to the financial crisis, Congress passed the Wall Street Reform and Consumer Financial Protection Act of 2010.

Terms and Concepts

medium of exchange
unit of account
store of value
liquidity
*M*1
Federal Reserve Notes
token money
checkable deposits
commercial banks
thrift institutions
near-monies
*M*2
savings account
money market deposit account (MMDA)
time deposits
money market mutual fund (MMMF)
legal tender
Federal Reserve System
Board of Governors
Federal Reserve Banks
Federal Open Market Committee (FOMC)
subprime mortgage loans
mortgage-backed securities
securitization
moral hazard
Troubled Asset Relief Program (TARP)
financial services industry
Wall Street Reform and Consumer Protection Act

Questions

1. What are the three basic functions of money? Describe how rapid inflation can undermine money's ability to perform each of the three functions. LO1
2. Which two of the following financial institutions offer checkable deposits included within the *M*1 money supply: mutual fund companies; insurance companies; commercial banks; securities firms; thrift institutions? Which of the following items is not included in either *M*1 or *M*2: currency held by the public; checkable deposits; money market mutual fund balances; small-denominated (less than $100,000) time deposits; currency held by banks; savings deposits? LO1
3. What are the components of the *M*1 money supply? What is the largest component? Which of the components of *M*1 is legal tender? Why is the face value of a coin greater than its intrinsic value? What near-monies are included in the *M*2 money supply? LO1, LO2
4. Explain and evaluate the following statements: LO2
   a. The invention of money is one of the great achievements of humankind, for without it the enrichment that comes from broadening trade would have been impossible.
   b. Money is whatever society says it is.
   c. In the United States, the debts of government and commercial banks are used as money.
   d. People often say they would like to have more money, but what they usually mean is that they would like to have more goods and services.
   e. When the price of everything goes up, it is not because everything is worth more but because the currency is worth less.
   f. Any central bank can create money; the trick is to create enough, but not too much, of it.
5. What "backs" the money supply in the United States? What determines the value (domestic purchasing power) of money? How does the purchasing power of money relate to the price level? Who in the United States is responsible for maintaining money's purchasing power? LO2
6. How is the chairperson of the Federal Reserve System selected? Describe the relationship between the Board of Governors of the Federal Reserve System and the 12 Federal Reserve Banks. What is the purpose of the Federal Open Market Committee (FOMC)? What is its makeup? LO3
7. The following are two hypothetical ways in which the Federal Reserve Board might be appointed. Would you favor either of these two methods over the present method? Why or why not? LO3
   a. Upon taking office, the U.S. president appoints seven people to the Federal Reserve Board, including a chair. Each appointee must be confirmed by a majority vote of the Senate, and each serves the same 4-year term as the president.
   b. Congress selects seven members from its ranks (four from the House of Representatives and three from the Senate) to serve at congressional pleasure as the Board of Governors of the Federal Reserve System.
8. What is meant when economists say that the Federal Reserve Banks are central banks, quasi-public banks, and bankers' banks? LO3
9. Why do economists nearly uniformly support an independent Fed rather than one beholden directly to either the president or Congress? LO3
10. Identify three functions of the Federal Reserve of your choice, other than its main role of controlling the supply of money. LO4

11. How do each of the following relate to the financial crisis of 2007–2008: declines in real estate values, subprime mortgage loans, mortgage-backed securities, AIG. LO5
12. What is TARP and how was it funded? What is meant by the term "lender of last resort" and how does it relate to the financial crisis of 2007–2008? How do government and Federal Reserve emergency loans relate to the concept of moral hazard? LO6
13. What are the major categories of firms that make up the U.S. financial services industry? Are there more or fewer banks today than before the start of the financial crisis of 2007–2008? Why are the lines between the categories of financial firms even more blurred than they were before the crisis? How did the Wall Street Reform and Consumer Protection Act of 2010 try to address some of the problems that helped cause the crisis? LO7
14. **LAST WORD** How does a debit card differ from a credit card? How does a stored-value card differ from both? Suppose that a person has a credit card, debit card, and stored-value card. Create a fictional scenario in which the person uses all three cards in the same day. Explain the person's logic for using one card rather than one of the others for each transaction. How do Fedwire and ACH transactions differ from credit card, debit card, and stored-value card transactions?

Problems

1. Assume that the following asset values (in millions of dollars) exist in Ironmania: Federal Reserve Notes in circulation = $700; Money market mutual funds (MMMFs) held by individuals = $400; Corporate bonds = $300; Iron ore deposits = $50; Currency in commercial banks = $100; Savings deposits, including money market deposit accounts (MMDAs) = $140; Checkable deposits = $1500; Small-denominated (less than $100,000) time deposits = $100; Coins in circulation = $40. LO1
   a. What is *M*1 in Ironmania?
   b. What is *M*2 in Ironmania?
2. Assume that Jimmy Cash has $2000 in his checking account at Folsom Bank and uses his checking account card to withdraw $200 of cash from the bank's ATM machine. By what dollar amount did the *M*1 money supply change as a result of this single, isolated transaction? LO1
3. Suppose the price level and value of the U.S. dollar in year 1 are 1 and $1, respectively. If the price level rises to 1.25 in year 2, what is the new value of the dollar? If, instead, the price level falls to .50, what is the value of the dollar? LO2
4. Suppose that Lady Gaga goes to Las Vegas to play poker and at the last minute her record company says it will reimburse her for 50 percent of any gambling losses that she incurs. Will Lady Gaga wager more or less as a result of the reimbursement offer? What economic concept does your answer illustrate? LO5
5. Assume that securitization combined with borrowing and irrational exuberance in Hyperville have driven up the value of existing financial securities at a geometric rate, specifically from $2 to $4 to $8 to $16 to $32 to $64 over a six-year time period. Over the same period, the value of the assets underlying the securities rose at an arithmetic rate from $2 to $3 to $4 to $5 to $6 to $7. If these patterns hold for decreases as well as for increases, by how much would the value of the financial securities decline if the value of the underlying asset suddenly and unexpectedly fell by $5? LO5

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