chapter 14 (30)

Money, Banking, and the Federal Reserve System

Chapter Objectives

Students will learn in this chapter:

- The various roles money plays and the many forms it takes in the economy.
- How the actions of private banks and the Federal Reserve determine the money supply.
- How the Federal Reserve uses open-market operations to change the monetary base.

Chapter Outline

Opening Example: In 2004, the FBI and Secret Service intercepted a container with $300,000 in counterfeit $100 bills. The example uses this case of counterfeit bills produced by the government of North Korea to introduce the concept of money.

I. The Meaning of Money

A. What Is Money?

1. *Definition*: **Money** is an asset that can easily be used to purchase goods and services.
2. *Definition*: **Currency in circulation** is cash held by the public.
3. *Definition*: **Checkable bank deposits** are bank accounts on which people can write checks.
4. *Definition*: The **money supply** is the total value of financial assets in the economy that are considered money.
5. The narrowest definition of the money supply is the most liquid as it includes only currency in circulation, traveler's checks, and checkable bank deposits.
6. A broader definition of the money supply includes currency in circulation, traveler's checks, checkable bank deposits, as well as other assets that are "almost" checkable, such as savings account deposits that can easily be transferred into a checking account.

B. Roles of Money

1. *Definition*: A **medium of exchange** is an asset that individuals acquire for the purpose of trading rather than for their own consumption.
2. *Definition*: A **store of value** is a means of holding purchasing power over time.

3. *Definition*: A **unit of account** is a measure used to set prices and make economic calculations.
4. Money plays three main roles in the economy:
   - Medium of exchange
   - Store of value
   - Unit of account

C. Types of Money
1. *Definition*: **Commodity money** is a good used as a medium of exchange that has other uses.
2. *Definition*: A **commodity-backed money** is a medium of exchange with no intrinsic value whose ultimate value is guaranteed by a promise that it can be converted into valuable goods.
3. *Definition*: **Fiat money** is a medium of exchange whose value derives entirely from its official status as a means of payment.
4. *Definition*: A **monetary aggregate** is an overall measure of the money supply.
5. *Definition*: **Near-moneys** are financial assets that can't be directly used as a medium of exchange but can be readily converted into cash or checkable bank deposits.
6. Panels (a) and (b) in Figure 14-1 (Figure 30-1) in the text illustrate the components of M1 and M2, respectively.

II. The Monetary Role of Banks

A. *Definition*: **Bank reserves** are the currency banks hold in their vaults plus their deposits at the Federal Reserve.

B. *Definition*: The **reserve ratio** is the fraction of bank deposits that a bank holds as reserves.

C. A T-account summarizes a bank's financial position.
1. A bank's assets include its reserves as well as any loans it has issued.
2. A bank's liabilities include the deposits it holds.

D. *Definition*: A **bank run** is a phenomenon in which many of a bank's depositors try to withdraw their funds due to fears of a bank failure.

E. *Definition*: **Deposit insurance** guarantees that a bank's depositors will be paid even if the bank can't come up with the funds, up to a maximum per account.

F. Most banks in the United States are members of FDIC—the Federal Deposit Insurance Corporation—which currently guarantees the first $250,000 held in each account at a bank.

G. *Definition*: **Reserve requirements** are rules set by the Federal Reserve that determine the minimum reserve ratio for a bank.

H. *Definition:* The Federal Reserve lends money to banks through an arrangement known as the **discount window**.

III. Determining the Money Supply

A. How Banks Create Money

B. Reserves, Bank Deposits, and the Money Multiplier
1. *Definition*: **Excess reserves** are a bank's reserves over and above its required reserves.
2. Money is created when a bank loans any excess reserves it holds.

3. Bank lending leads to new deposits in the banking system and a multiplier effect on the money supply.
4. In a checkable-deposits-only system, the money supply equals bank reserves divided by the reserve ratio.

C. The Money Multiplier in Reality

1. *Definition*: The **monetary base** is the sum of currency in circulation and bank reserves.
2. *Definition*: The **money multiplier** is the ratio of the money supply to the monetary base.
3. The size of the money multiplier is reduced when funds are held as cash rather than as checkable deposits.
4. In the real world, since much of the monetary base is held in currency, the money multiplier is smaller than the bank reserves divided by the reserve ratio.

IV. The Federal Reserve System

A. The Structure of the Fed

1. *Definition*: A **central bank** is an institution that oversees and regulates the banking system and controls the monetary base.
2. The Federal Reserve, established in 1913, is the central bank of the United States.
3. The Federal Reserve system consists of two parts:
   - The Board of Governors
   - The 12 regional Federal Reserve Banks that provide various banking and supervisory services to commercial banks.
4. The seven members of the Board of Governors are appointed by the president with Senate approval and serve 14-year terms.
5. The chairman of the Fed is appointed by the president with Senate approval and serves a 4-year term with possible reappointment.
6. Federal Open Market Committee comprised of the:
   - Board of Governors
   - President of the New York Federal Reserve Bank plus five other regional Federal Reserve Bank presidents.
7. Federal Open Market Committee makes decisions regarding monetary policy.

B. What the Fed Does: Reserve Requirements and the Discount Rate

1. *Definition*: The **federal funds market** allows banks that fall short of the reserve requirement to borrow funds from banks with excess reserves.
2. *Definition*: The **federal funds rate** is the interest rate determined in the federal funds market.
3. *Definition*: The **discount rate** is the rate of interest the Fed charges on loans to banks.

C. Open-Market Operations

1. *Definition*: An **open-market operation** is a purchase or sale of government debt by the Fed.
2. The Federal Reserve's assets include government debt, mainly in the form of U.S. Treasury bills.
3. The Federal Reserve's liabilities include the currency in circulation plus bank reserves, which together comprise the monetary base.

4. Monetary policy is most often conducted using open-market operations.
5. An open-market purchase of Treasury bills increases the monetary base and the money supply, while an open-market sale of Treasury bills decreases the monetary base and the money supply.

D. The European Central Bank
1. The European Central Bank was created in January 1999 when 11 European nations decided to adopt the euro as their common currency.
2. The European Central Bank is the equivalent of the Fed's Board of Governors.

V. An Overview of the Twenty-First Century American Banking System

A. Crisis in American Banking at the turn of the Twentieth Century
1. 1907 panic originated in less regulated institutions known as trusts.
2. In response to the panic, the Fed was created to centralize holding of reserves, inspect banks' books, and make the money supply sufficiently responsive to varying economic conditions.

B. Responding to Banking Crises: the Creation of the Federal Reserve
1. There were widespread bank runs in the early 1930s.
2. Emergency measures were adopted that gave the Reconstruction Finance Corporation (RFC) powers to stabilize and restructure the banking industry.
3. The Glass-Steagall Act of 1933 separated banks into two categories: commercial banks and investment banks.
   a. *Definition:* **A commercial bank** accepts deposits and is covered by deposit insurance.
   b. *Definition:* **An investment bank** trades in financial assets (such as stocks and corporate bonds) and is not covered by deposit insurance.
4. The most important measure for the prevention of bank runs was the adoption of federal deposit insurance

C. The Savings and Loan Crisis of the 1980s
1. *Definition:* **A savings and loan (thrift)** is another type of deposit-taking bank, usually specialized in issuing home loans.
2. The crisis of the 1980s caused sharp losses in the financial and real estate sectors, resulting in a recession in the early 1990s.

D. Back to the Future: the Financial Crisis of 2008
1. Long-term Capital Management (LTCM) was a hedge fund created in 1994.
   a. *Definition:* A financial institution engages in **leverage** when it finances its investments with borrowed funds.
   b. *Definition:* As sales of assets depress asset prices all over the world, other firms see the value of their balance sheets fall. This is called the **balance sheet effect**.
   c. *Definition:* When asset prices falling from the balance sheet effect fall below a critical threshold, creditors call in loans, which leads to more asset sales as borrowers try to get cash to repay the loans. This leads to more defaults, further declines in asset prices, more loans called in, and thus a **vicious cycle of deleveraging.**
2. The Federal Reserve Bank of New York arranged a \$3.625 billion bailout of LTCM in 1998 and revived world credit markets.

3. Subprime lending and the housing bubble
    a. *Definition:* **Subprime lending** involves loans to people who don't meet the usual criteria for borrowing and for being able to afford their payments.
    b. *Definition:* **Securitization** is the process of assembling pools of loans and selling shares in the income from these pools.
    c. The housing boom turned out to be a bubble. When the bubble burst, massive losses by banks and nonbank financial institutions led to widespread collapse in the financial system.
4. Crisis and response
    a. The collapse of trust in the financial system, combined with large losses suffered by financial firms, led to a severe cycle of deleveraging and a credit crunch for the economy.
    b. Because much of the crisis originated in nontraditional bank institutions, the crisis of 2008 indicated that a wider safety net and broader regulation are needed in the financial sector.

Teaching Tips

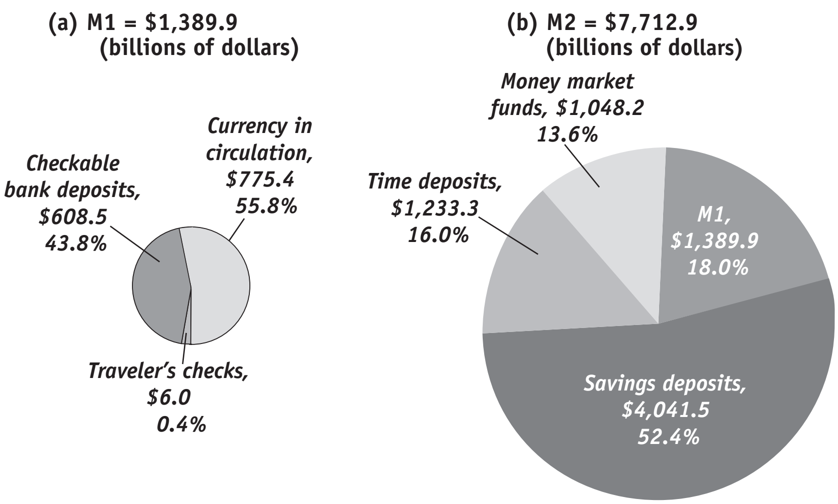
The Meaning of Money

Creating Student Interest

Ask students, "What is money?" It is likely that someone will respond that it is something used to purchase goods and services. Ask students if they can name some forms of money. Indicate that, in addition to U.S. coins and bills, gold, silver, tobacco, and shells have all been used as money at one time in this country.

Presenting the Material

Begin by defining the term money, and discussing the various roles money serves in an economy. Panels (a) and (b) in Figure 14-1 (Figure 30-1) in the text provide very useful information when delineating the various components of M1 and M2.



The Monetary Role of Banks

Creating Student Interest

Ask students to assume that they each have $100 in a checking account at a local bank. Subsequently, ask students whether the bank holds on to all of this money. Explain that banks are required to hold in reserve only a small fraction of deposits. The particular amount banks must hold in reserve is determined by the Fed.

Presenting the Material

Begin by discussing the meaning of the key terms, **bank reserves** and the **reserve ratio,** and along with the significance of each. Also introduce the concept of a T-account and use it to identify the assets and liabilities of a bank. Finally, discuss the various forms of banking regulation—deposit insurance, capital requirements, and reserve requirements—and how they have vastly reduced the probability of bank runs today.

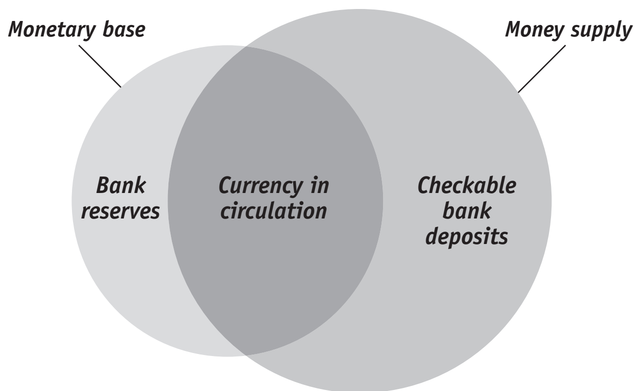
Determining the Money Supply

Creating Student Interest

Ask students if they can identify some of the things that banks do. Record the students' responses on the board. It is likely that no one will respond that banks create money. Explain that banks create money in an economy, for example, in the United States, due to its fractional reserve banking system.

Presenting the Material

Perhaps the most effective way to demonstrate the process by which banks create money is by the presentation of a generalized model of this process followed by a numerical example. In addition, Figure 14-5 (Figure 30-5) in the text is an excellent graph to help students distinguish between the monetary base and the money supply.



The Federal Reserve System

Creating Student Interest

Bring some one dollar bills to class. Inform students that there are twelve Federal Reserve Banks, each serving a distinct region of the country. Every one dollar bill bears a seal with a letter in the center. The letters range from A through L, representing each of the regional Federal Reserve Banks. After revealing which letters you have on your bills, ask students to check their one dollar bills in a similar fashion.

Presenting the Material

Begin by presenting the organization of the Federal Reserve System, as well as the duties of each functional group. Afterward, discuss the various policy tools of the Fed and the manner in which a change in each affects the money supply.

An Overview of the 21st Century American Banking System

Creating Student Interest

Ask students "When was the last time a U.S. bank failed?" Use their answers to introduce the bank crises of 1907, the 1980s and 2008.

Presenting the Material

Present a timeline of American bank crises, their causes and effects, and the regulatory response to those crises.

Panic of 1907 → Creation of the Federal Reserve (1913)

- System of national banks
- Currency issued a function of capital
- Virtually no regulation
- 1 to 2 bank failures per decade
- Boom led to high risk speculation (e.g., in real estate)
- Stock market crash and recession followed
- Similarities to today

S & L Crisis in the 1980s → S&L oversight regulations

Congress eased regulations	Expansion of Fannie Mae/Freddie Mac powers
Oversight *not* expanded	
S&L's get into high risk investments (e.g., real estate)	

Financial Crisis of 2008 → Fed actions to provide liquidity

Unregulated hedge funds	Fed and Treasury rescues of firms
Vicious cycle of deleveraging	Other actions to come?
Subprime lending/securitization	
High risk investment (e.g., real estate)	

Common Student Pitfalls

- **What's not in the money supply?** Any asset you can use to buy groceries is part of M1. Be sure students understand the concept of liquidity and how it is used to distinguish what is money. It is important to point out the different effects two very commonly used methods of payment have on the money supply. Specifically: debit cards immediately deduct the value of a purchase from the card owner's bank account—say, his checking account. So debit cards, which enable the cardholder to access his or her checking account balance—which is a part of M1—do have an impact on the money supply. By contrast, credit card purchases do not affect the money supply, since the balance on a credit card is considered a liability of the cardholder, which is not part of the money supply.
- **Modern day bank panics?** Some students may think that a run on the banks, similar to the one they read about during the Great Depression, could happen today. Indicate to them that, due to extensive regulations and auditing of commercial banks today, along with the existence of deposit insurance on accounts of up

to $250,000 issued by the Federal Deposit Insurance Corporation (FDIC), such a run on banks is not a worry in today's economy.

- **Different types of reserves.** Students can be confused by all of the types of reserves discussed in this chapter. Therefore, it is important to carefully distinguish between bank reserves, excess reserves, and the related measure of the reserve ratio.

Case Studies in the Text

Economics in Action

The History of the Dollar—This EIA gives an overview of the history of the U.S. dollar.

Ask students the following questions:

1. Was money issued in the United States always fiat money as it is today? (Answer: Not all money used in the United States has been fiat money. For example, during colonial times tobacco and shells were used as money. In addition, historically, private banks issued paper currency that was backed by silver or gold.
2. When did the United States stop linking its currency to gold? (Answer: The United States stopped linking its currency to gold briefly in the 1930s; however, it made a more permanent move away from gold backing in 1971.)

It's a Wonderful Banking System—This EIA uses the example from the movie "It's a Wonderful Life" to discuss bank panics.

Ask students the following questions:

1. When have runs on banks in the United States occurred? (Answer: During late 1930, the spring of 1931 and early 1933, there were runs on banks in the United States By 1933, nearly one-third of the nation's banks had failed.)
2. What steps were taken to restore faith in the U.S. banking system in the 1930s? (Answer: On entering office, President Franklin Roosevelt declared a bank holiday and closed the banks for one week to assess their solvency and calm anxious investors. In addition, many regulations were imposed on commercial banks, along with FDIC insurance on accounts in order to regain and maintain the confidence of the banking public.)

Multiplying Money Down—This EIA gives the example of decreasing the money supply by taking money out of the bank and putting it under a mattress, as happened in the 1930s.

Ask students the following questions:

1. Between 1929 and 1933, what happened to bank reserves in the United States? (Answer: Between 1929 and 1933, due to a severe drop in the banking public's confidence in the banking system, the value of checkable bank deposits in the United States fell by 35%, while currency held by the public rose by 31%. In summary, due to the bank failures of this era, individuals chose to move their money out of bank accounts and simply held their assets in cash.)
2. What effect did the change in checkable bank deposits between 1929 and 1933 have on loans during this time period? (Answer: Due to the sharp decline in checkable bank deposits, banks did not have as much money with which to create new loans.)

The Fed's Balance Sheet, Normal and Abnormal—This EIA shows a simplified version of the Fed's balance sheet in normal times and then compares it to the Fed's balance sheet in 2007.

Ask students the following questions:

1. In a "normal" time, what are the Fed's major assets and liabilities? (Answer: Treasury Bills/monetary base.)
2. How did the Fed respond to the 2008 financial crisis? (Answer: It expanded discount window lending.)
3. How did the Fed's response to the 2008 crisis change its balance sheet? (Answer: The Fed accumulated "other" assets.)

The 2008 Crisis and the Fed—This EIA explains how the Fed responded to the 2008 financial crisis.

Ask students the following questions:

1. What did the Fed create in 2008 to try to keep credit markets functioning? (Answer: "Lending facilities" to make funds available to financial institutions.)
2. Why did the Fed feel the need to keep credit markets functioning? (Answer: To prevent an even more severe financial crisis.)
3. Why did the Fed's actions make it uncomfortable? (Answer: Because lending to the private sector is risky.)

For Inquiring Minds

What's With All the Currency?—This FIM explains that the $2,570 in cash for every person in the United States is not all held by individuals. It is also held by businesses and by individuals in other countries.

Who Gets the Interest on the Fed's Assets?—This FIM explains that some of the interest on assets held by the Fed is used to finance the Feds operations and the rest is turned over to the U.S. treasury.

Global Comparison

The Big Moneys—This Global Comparison shows the quantity of four major currencies in circulation at the end of 2006.

Activities

Setting Up a T-Account (10 minutes)

Pair students and ask them to complete the following exercises.

1. Construct a general T-account for a bank.
2. What must be true of the total values on each side of the T-account?

Answers:

1.

ASSETS	LIABILITIES
Loans	Deposits
Reserves	

2. Both sides of the T-account must be equal.

Be a Bank's Accountant (15 minutes)

Pair students and ask them to complete the following exercises.

1. The A&Z Bank has $250,000 in deposits. If the reserve ratio is 10%, how much of these deposits must the bank hold in reserve?
2. How much in loans can the A&B Bank issue in the given situation?
3. Construct the T-account for the A&B Bank.

Answers:

1. In general, Reserves = Reserve Ratio × Deposits.
   Reserves = (0.10) × $250,000 = $25,000
2. In general, Loans = Deposits – Reserves
   Loans = $250,000 – $25,000 = $225,000
3.

ASSETS		LIABILITIES	
Loans	$225,000	Deposits	$250,000
Reserves	$ 25,000		

Reserves of All Kinds (15 minutes)

Pair students and ask them to complete the following exercises.

1. Steve deposits his $15,000 Christmas bonus into his savings account at the New Market Bank. If the required reserve ratio is 15%, how much must the bank hold in required reserves?
2. Sam deposits $5,000 in cash into his checking account at the First Bank of Macroland. If the required reserve ratio is 20%, what are the bank's excess reserves?

Answers:

1. Required reserves = Required reserve ratio × deposits
   Required reserves = (0.15) × $15,000 = $2,250
2. Excess reserves = Deposits – Required reserves
   Where Required Reserves = Required reserve ratio × deposits
   Required reserves = (0.20) × $5,000 = $1,000
   Excess reserves = $5,000 – $1,000 = $4,000

The Monetary Base vs. the Money Supply (10 minutes)

Ask students to explain the difference between the monetary base and the money supply.

Answer:

The monetary base is the sum of currency in circulation and bank reserves. It is not the same as the money supply because bank reserves, which are a component of the monetary base, are not included in the money supply. In addition, checkable bank deposits, which are a component of the money supply, are not a part of the monetary base.

Which of the Fed's Policy Tools...? (15 minutes)

Pair students and ask them to identify an appropriate tool at the Fed's disposal, as well as the appropriate action to be taken by the Fed, to deal with the following economic situations.

1. Significant decreases in real GDP for three straight quarters

2. Increases in the unemployment rate over the past six months
3. Monthly increases in the producer price index for the past four months
4. A severe depression
5. Significant increases in the CPI over the past six months

Possible Answers:

1. Decrease the required reserve ratio
2. Purchases of U.S. Treasury bills by the Fed
3. Sales of U.S. Treasury bills by the Fed
4. Decreasing the discount rate
5. Increasing the federal funds rate by selling U.S Treasury bills

Web Resources

The following website provides information from the Federal Reserve System: http://www.federalreserve.gov/.

The following web page provides information about free teaching materials available from the Fed: http://www.newyorkfed.org/publications/frame1.cfm.