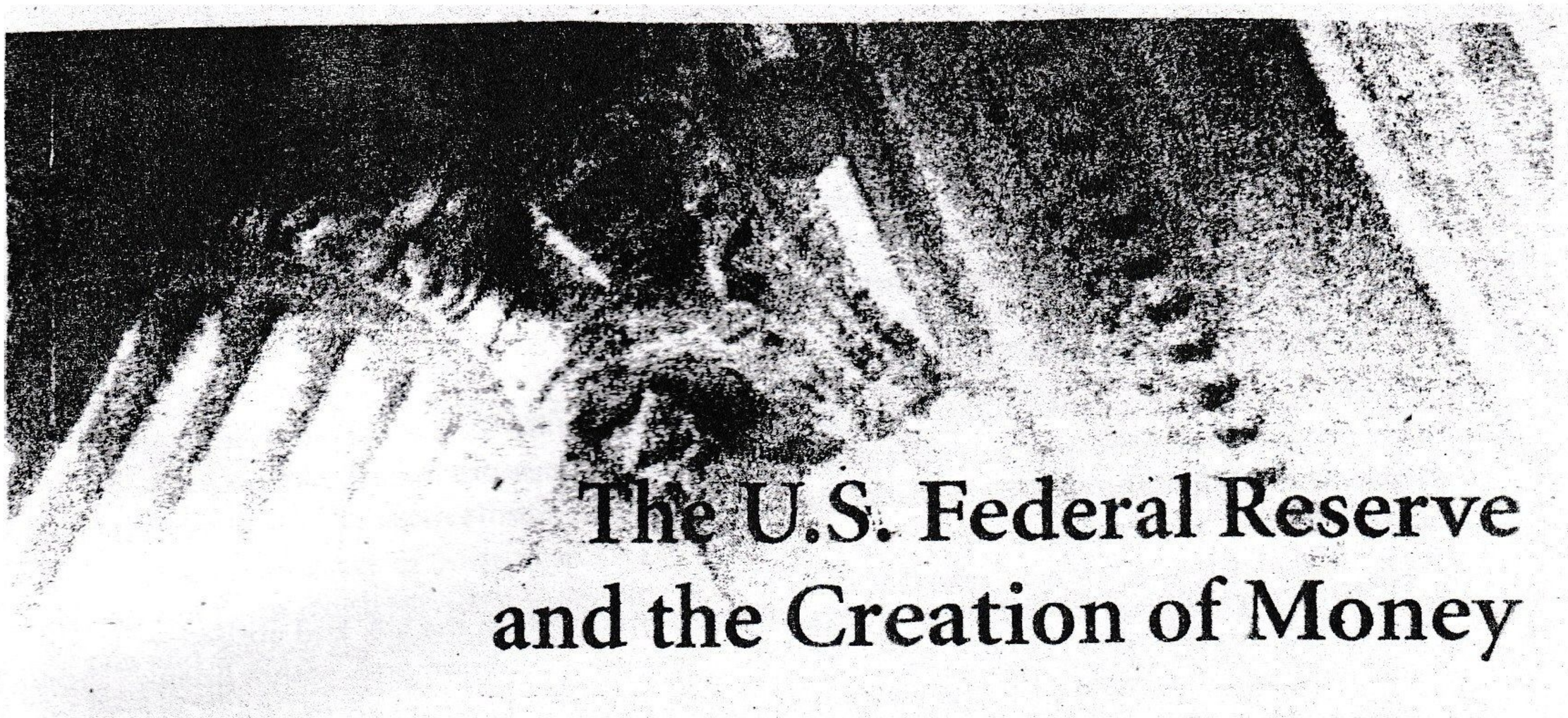


The U.S. Federal Reserve and the Creation of Money

LEARNING OBJECTIVES

After reading this chapter, you will understand

- what a central bank is and the role of central banks
- the structure of the Federal Reserve System and the nature of the Fed's instruments of monetary policy
- the meaning of required reserves for banks, and the fractional reserve banking system of the United States
- the implementation and impact of open market operations and of open market repurchase agreements
- the role of the Fed's discount rate
- the different kinds of money and the definitions of key monetary aggregates
- the money multiplier, and how it generates changes in the monetary aggregates from changes in the banking system's reserves
- how banks and investors participate with the Fed in changing the level of the monetary aggregates
- how global trade and investment influence the Fed's monetary policy

In economies or groups of economies, the process by which the supply of money is created is a complex interaction among several economic agents, which perform different functions at different times. The agents are firms and individuals who both save and borrow, depository institutions that accept savings and make loans to firms, government entities, individuals and other institutions, and the nation's central bank, which also lends and buys and sells securities. This chapter gives a brief and general description of the complex process of creating the money supply. In so doing, the chapter highlights the role played by

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U.S. depository institutions and by the financial markets that the process both uses and affects. We begin with a brief description of the role of central banks in general and then focus on the U.S. central bank.

CENTRAL BANKS AND THEIR PURPOSE

The primary role of a central bank is to maintain the stability of the currency and money supply for a country or a group of countries. To be a little more specific, let's look at the central bank of the United Kingdom, the Bank of England. On its website, it identifies as its role in financial stability as being as follows:

> **Risk Assessment:** monitoring current developments both in the UK and abroad—including links between financial markets and the wider economy and, within financial markets, between different participants—to identify key risks to the financial system. For example, the Bank examines the overall financial position of borrowers and lenders, the links between financial institutions and the resilience and vulnerability of households, firms, financial institutions and international financial systems to changes in circumstances. The Bank also conducts risk assessment and research on the major developed countries and the main emerging-market economies.
> **Risk Reduction:** reducing vulnerabilities and increasing the financial system's ability to absorb unexpected events. This can involve the promotion of codes and standards over a wide field ranging from accounting to improving legal certainty, and management of countries' external balance sheets.
> **Oversight of Payment Systems:** oversight of the main payment and settlement systems in the UK that are used for many types of financial transaction—from paying wages and credit card bills to the settlement of transactions between financial institutions.
> **Crisis management:** developing and coordinating information sharing within the Bank, with the FSA and HM Treasury, and with authorities internationally to ensure future financial crises are handled and managed effectively. In undertaking this work, the Bank advises on and implements policy measures to mitigate risks to the financial system.[1]

Here are excerpts from the central banks of three other countries:

> *Bank of Japan:* The Bank of Japan Law sets forth that the objectives of the central bank of Japan, the Bank of Japan, are "to issue banknotes and to carry out currency and monetary control" and "to ensure smooth settlement of funds among banks and other financial institutions, thereby contributing to the maintenance of an orderly financial system." Furthermore, this law specifies that the Bank of Japan's principle of currency and monetary control is as follows: "currency and monetary control shall be aimed at, through the pursuit of price stability, contributing to the sound development of the national economy."
> *Bank of Canada:* The Bank of Canada Act sets the principal role of the country's central bank, the Bank of Canada, to be "to promote the economic and financial welfare of

[1] http://www.bankofengland.co.uk/financialstability/functions.htm. In the quote, "FSA" is the Financial Services Authority and "HM Treasury" is Her Majesty's Treasury.

Canada." The mission statement is "The Bank of Canada's responsibilities focus on the goals of low and stable inflation, a safe and secure currency, financial stability, and the efficient management of government funds and public debt."

Reserve Bank of India: The preamble of India's central bank, the Reserve Bank of India, sets forth its basic functions of as ". . . to regulate the issue of Bank Notes and keeping of reserves with a view to securing monetary stability in India and generally to operate the currency and credit system of the country to its advantage."

One of the major ways a central bank accomplishes its goals is through monetary policy. For this reason, a central bank is sometimes referred to as a **monetary authority** (e.g., Monetary Authority of Singapore, Hong Kong Monetary Authority, and Bermuda Monetary Authority). In implementing monetary policy, central banks require private banks to maintain and deposit the required reserves with the central bank (we discuss reserve requirements later in this chapter). For this reason, a central bank is also referred to as a **reserve bank** (e.g., Reserve Bank of Australia, Reserve Bank of India, and South African Reserve Bank).

In discharging its responsibilities during a financial crisis or to avert a financial crisis, central banks perform the role of lender of last resort for the banking system. For example, the Bank of England states the following for its role as lender of last resort:

> In exceptional circumstances, as part of its central banking functions, the Bank may act as "lender of last resort" to financial institutions in difficulty, in order to prevent a loss of confidence spreading through the financial system as a whole. This role is set out in the Memorandum of Understanding, which also establishes arrangements for a Standing Committee of the three bodies to ensure effective exchange of information and to co-ordinate the response to a crisis.[2]

The central banks throughout the world are listed in the appendix to this chapter, which can be found online at www.pearsonhighered.com/fabozzi. In addition to the individual countries' central banks, there is the **European Central Bank** (ECB). The ECB, which came into being on January 1, 1999, is responsible for implementing the monetary policy for the member countries of the European Union. The European System of Central Banks consists of the ECB and the central banks of the member countries.

There is widespread agreement that the central bank should be independent of the government so that decisions of the central bank will not be influenced for short-term political purposes such as pursuing a monetary policy to expand the economy but at the expense of inflation.[3] As stated in a speech by Frederic Mishkin, a governor of the U.S. Federal Reserve Board of Governors, on April 3, 2008: "Evidence supports the conjecture that macroeconomic performance is improved when central banks are more independent."[4] He provides examples from the Bank of England and Bank of Canada.[5] Moreover, this view is supported by several studies of central banks of industrialized countries.

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[2] http://www.bankofengland.co.uk/financialstability/functions.htm.

[3] Further analysis and discussion regarding the issue of central bank independence can be found in James Forder, "Central Bank Independence and Credibility: Is There a Shred of Evidence?" *International Finance*, Vol. 3 (April 2000), pp. 167–85 and Alex Cukierman, "Central Bank Independence and Monetary Policy Making Institutions: Past, Present, and Future," *Journal Economía Chilena*, Vol. 9 (April 2006), pp. 5–23.

[4] "Central Bank Commitment and Communication" presentation at the Princeton University Center for Policy Studies," http://www.federalreserve.gov/newsevents/speech/mishkin20080403a.htm#f19.

[5] Further evidence is provided in Frederick S. Mishkin and and Niklas J. Westelius, "Inflation Band Targeting and Optimal Inflation Contracts," NBER Working Paper No. 12384, July 2006.

In 1975, as a result of the oil crisis and economic recessions being faced throughout the world, the United States formed an informal meeting of senior financial officials from five countries in addition to the United States: United Kingdom, France, Germany, Italy, and Japan. The group, which became known as the **Group of 6 (G6)**, decided to meet annually thereafter. The following year, Canada joined the group, which then became known as the **Group of 7 (G7)**. In 1998, Russia joined the group, which is now known as the **Group of 8 (G8)**. Although the G8 can concur on economic and financial policies and establish objectives, compliance is voluntary.[6]

THE CENTRAL BANK OF THE UNITED STATES: THE FEDERAL RESERVE SYSTEM

The most important agent in the money supply process is the Federal Reserve System, which is the central bank of the United States and often called just the Federal Reserve or "the Fed." Created in 1913, the Fed is the government agency responsible for the management of the U.S. monetary and banking systems. Most large commercial banks in the United States are members of the Federal Reserve System. The Fed is managed by a seven-member **Board of Governors**, who are appointed by the president and approved by the Congress. These governors have 14-year appointments (with one appointment ending every two years), and one governor is the board's chairman. The **Chairmanship** of the Fed is a highly visible and influential position in the world economy. The Federal Reserve System consists of 12 districts covering the entire country; each district has a Federal Reserve Bank that has its own president.

An important feature of the Fed is that, by the terms of the law that created it, neither the legislative nor the executive branch of the federal government should exert control over it. From time to time, critics charge that the Fed guards this autonomy by accommodating either the White House or Congress (or both) far too much. The Fed has substantial regulatory power over the nation's depository institutions, especially commercial banks.

It is worth noting here, before we discuss the Fed's tools for monetary management, that financial innovations in the past two decades have made the Fed's task more difficult. The public's increasing acceptance of money market mutual funds has funneled a large amount of money into what are essentially interest-bearing checking accounts. Another relevant innovation is the practice of asset securitization. Securitization permits commercial banks to change what once were illiquid consumer loans of several varieties into securities. Selling these securities in the financial markets gives the banks a source of funding that is outside the Fed's influence. The many hedging instruments have also affected banks' behavior and their relationship with the Fed. In general, that transformation amounts to reduced Fed control of banks and increased difficulty in implementing monetary policy.

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[6] The G8 has in recent years dealt with other issues such as the prevention of HIV/AIDS, Middle East peace, reconstruction of Iraq, global security, and illegal logging.

INSTRUMENTS OF MONETARY POLICY: HOW THE FED INFLUENCES THE SUPPLY OF MONEY

The Fed has several tools by which it influences, indirectly and to a greater or lesser extent, the amount of money in the economy and the general level of interest rates. These tools are reserve requirements (whose use is somewhat constricted by Congressional mandate), open market operations, open market repurchase agreements, and the discount rate. These instruments represent the key ways that the Fed interacts with commercial banks in the process of creating money. Our discussion of these tools explains the impact of their use on a generally specified money supply. Later, we describe the money supply in more detail.

Reserve Requirements

Bank reserves play an important role in the U.S. banking and monetary system and are directly linked to the growth in the money supply. Generally, the higher the growth rate in reserves, the higher the rate of change in the money supply. Later in this chapter, we will discuss this linkage in some detail. At this point, we want to focus on the meaning and function of reserve requirements.

The United States has a **fractional reserve banking system,** which means that a bank must hold or "reserve" some portion of the funds that savers deposit in a form approved by the Fed. As a result, a bank may lend to borrowers only a fraction of what it takes in as deposits. The ratio of mandatory reserves to deposits is the **required reserve ratio.** For many years, the Fed had the authority to set this ratio. In the Depository Institutions Deregulation and Monetary Control Act (DIDMCA) of 1980, Congress assumed much of that responsibility, establishing new rules regarding this ratio to be applied to all depository institutions, including commercial banks, thrifts of various types, and credit unions.

In a key provision of the DIDMCA, Congress adopted a basic ratio of 12% for what are termed checkable or transactional accounts, that is, *demand deposits,* or accounts on which checks may be written often. For nontransactional but short-term deposit accounts—known as *time deposits*—the required reserve ratio is 3%. The 1980 law also authorizes the Fed to change the required reserve ratio on checking accounts to any level between 8% and 14%, and to raise it to 18% under certain conditions. In early 1992, the Fed reduced the ratio to 10% for banks with total checkable accounts at or above $46.8 million. For banks with smaller totals in these accounts, the required reserve ratio is 3%.

A bank must maintain the required reserves as either currency on hand (that is, cash in the bank) or deposits in the Federal Reserve itself. The more important form is the deposit, which serves as an asset for the bank and as a liability of the Fed. A bank has *excess reserves* if its reserves amount to more than the Fed requires. A bank's **total reserves** equal its required reserves plus any excess reserves. A bank whose actual reserves fall short of required levels can borrow excess reserves from other banks, or it can borrow reserves from the Fed itself, which we discuss later in this chapter.

Open Market Operations

The Fed's most powerful instrument is its authority to conduct **open market operations,** which means that the Fed may buy and sell, in open debt markets, government securities for its own account. These securities may be U.S. Treasury bonds, Treasury bills, or obligations of federal

agencies. The Fed prefers to use Treasury bills because, in that large and liquid market, it can make its substantial transactions without seriously disrupting the prices or yields of bills. When it buys or sells, the Fed does só at prices and interest rates that prevail in these debt markets. The parties to the Fed's transactions may be commercial banks or other financial agents who are dealers in government securities.

The unit of the Fed that decides on the general issues of changing the rate of growth in the money supply, by open market sales or purchase of securities, is the **Federal Open Market Committee (FOMC)**. The FOMC consists of the Board of Governors, the president of the Federal Reserve Bank of New York, and presidents of some of the other district Fed banks. This committee meets approximately every six weeks to analyze economic activity and levels of key economic variables. The variables may include short-term interest rates (such as the federal funds rate), the U.S. dollar's rate of exchange with important foreign currencies, commodity prices, and excess reserves, among other things.[7] After this analysis, the committee sets the direction of monetary policy until the next meeting. This direction is summarized in a brief "directive" at the time of the announcement after the meeting. The minutes of these meetings are published at a later time.

The implementation of policy, through open market operations, is the responsibility of the **trading desk of the Federal Reserve Bank of New York**. The desk transacts, in large volume, with large securities firms or commercial banks that are dealers, or market makers, in Treasury securities. While the desk does not buy and sell for profit, it functions as a rational investor, buying at the lowest prices and selling at the highest prices offered at the time of the transactions.

Fed purchases augment the amount of reserves in the banking system. If the seller is a commercial bank, it alters the composition, but not the total, of its assets by exchanging the securities for reserves at the Fed. If the seller is not a bank, much or all of the check with which the Fed pays will probably be deposited in a bank. The bank receiving the deposit would experience an increase in liabilities (the customer's deposit) and in assets (the growth in its reserve account at the Fed). In either case, the proceeds from selling the securities to the Fed raise the banking system's total reserves. Such an increase in reserves typically leads to an increase in the money supply. Individual banks whose reserves rise will generally make new loans, equal to the new deposit less required reserves, because loans earn interest while reserves do not. New loans represent growth in the money supply.

Conversely, the Fed's sale of Treasury securities reduces the money supply (or its rate of growth) because the funds that security dealers pay for the securities come from either deposits at banks or, if the dealers are banks, from the banks' own accounts. A reduction in deposits reduces reserves and leaves the banks less to lend.

Open Market Repurchase Agreements

The Fed often employs variants of simple open market purchases and sales, and these are called the **repurchase agreement (repo)** and the *reverse repo*. The Fed conducts these transactions, which are actually more common than the outright purchases or sales,[8] with

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[7] D.S. Batten, M.P. Blackwell, I-S. Kim, S.E. Nocera, and Y. Ozeki, *The Conduct of Monetary Policy in the Major Industrial Countries*, Occasional Paper No. 70, International Monetary Fund (Washington: July 1990), p. 24.

[8] David M. Jones and Ellen Rachling, "Monetary Policy: How the Fed Sets, Implements, and Measures Policy Chokes," chapter 2 in Frank J. Fabozzi (ed.), *Handbook of Portfolio Management* (New Hope, PA: Frank J. Fabozzi Associates, 1998).

large dealers in government securities and, occasionally, with central banks of other countries. In a repurchase agreement, the Fed buys a particular amount of securities from a seller that agrees to repurchase the same number of securities for a higher price at some future time, usually a few weeks. The difference between the original price and the repurchase price is the return to the Fed for letting the dealer have the cash for the life of the agreement and, also, the cost to the dealer of borrowing from the Fed. In a reverse repo (also known as a *matched sale* or a *matched sale-purchase transaction*), the Fed sells securities and makes a commitment to buy them back at a higher price later. The difference in the two prices is the cost to the Fed of the funds and the return to the buyer for lending money.

An example will illustrate some of the points in a Fed repurchase agreement. Suppose the Fed wants to increase bank reserves for some reason over a short period of time, and it seeks out a financial institution that has $20 million in Treasury securities but no excess reserves. Suppose further that the institution wants to lend $20 million for seven days to a borrower. After some discussions, the Fed agrees to "buy" the securities from the institution at a price that reflects the current repo rate, and to "sell" them back in seven days, when the institution's borrower pays off that loan. The current annualized rate is 4.3%. The transaction would look like this: The Fed would buy the securities for approximately $19,983,292 and sell them back, seven days later, to the institution at the principal value of $20 million. The difference of nearly $16,708 is the interest the institution pays for the seven-day financing and the return to the Fed for lending that money. And for those seven days, the financial institution and the entire banking system can enjoy an increase in reserves, if, of course, the bank keeps the roughly $20 million in its account at the Fed.

The Fed uses repos and reverse repos to bring about a temporary change in the level of reserves in the system or to respond to some event that the Fed thinks will have a significant but not long-lived effect. A particularly good example of such an event is a large payment by the U.S. Treasury (as in tax refunds or Social Security benefits) that sharply but temporarily raises reserves at the banks. Of course, these temporary changes in the system's reserves alter the banks' ability to make loans and, ultimately, to prompt growth in the money supply for a short period.

Discount Rate

The Fed makes loans to banks that are members of the system. A bank borrowing Fed is said to use the *discount window*, and these loans are backed by the bank's The rate of interest on these loans is the *discount rate*, set at a certain level by the Fed's Board of Governors. As the rate rises, banks are understandably less likely to borrow; a falling rate tends to encourage them to borrow. Proceeds from *discount loans* are also reserves and increase the banks' capacity to make loans. Banks generally do not prefer to gain reserves in this way because the loans cost money as well as invite increased monitoring of the borrowing banks' activities. Accordingly, the flow of this borrowing has a very slight impact on the money banks have and can lend and, therefore, on the supply of money.

There is general agreement that the discount rate is the least effective tool at the Fed's disposal and its use in monetary policy has diminished over time. Today, changes in the discount rate function largely as the Fed's public signals about its intention to change the rate at which the money supply is growing.

DIFFERENT KINDS OF MONEY

Until now, we have spoken in general terms about the money supply. But we can be more precise and identify several different meanings of the word *money* and several different types of money.

First of all, money is that item which serves as a **numeraire**, or unit of account—in other words, the unit that is used to measure wealth. In the United States, the numeraire is the dollar; in Japan, it is the yen; and so on. Second, we call money any instrument that serves as a medium of exchange, that is, anything that is generally accepted in payment for goods, services, and capital transactions. In the United States, the medium of exchange encompasses currency, which is issued by the Treasury or the Fed, and demand deposits, which support payment by means of checks and are held at depository institutions such as commercial banks. The medium of exchange also performs the function of being a store of value, which means that the exchange medium can be used to carry resources over from the present to the future. Obviously, this function is impaired in times of high and unpredictable inflation.[9] Other accounts that resemble demand deposits include the NOW account (or Negotiable Order of Withdrawal account) and share drafts of credit unions.

Other assets that do not function in the role of medium of exchange have many properties in common with the numeraire. These properties include safety, divisibility, and high liquidity, which is the capacity of being transformed into the medium of exchange promptly and at negligible cost. Because of these properties, these assets are good substitutes for money, in particular, as stores of value. The assets of this type include *time deposits* at commercial banks or thrifts. These accounts earn interest over their specified lives, and the investor may not draw on the money in the account for a transaction, without incurring a penalty, until the deposit's maturity date. Other assets that are substitutes for money include balances in money market mutual funds.

MONEY AND MONETARY AGGREGATES

Monetary policy and the actions of the Federal Reserve System often concentrate on what are called **monetary aggregates**. The purpose of the aggregates is to measure the amount of money available to the economy at any time.

The most basic monetary aggregate is the **monetary base**. Also termed *high-powered money*, the base is defined as currency in circulation (or coins and Federal Reserve notes held by the public) plus the total reserves in the banking system. It is important to note that reserves make up the bulk of the base, which is under the control of the Fed. Thus, this aggregate is the one that the Fed is most able to influence with its various monetary tools.

The instruments that serve the role of **medium** of exchange—currency and demand deposits—are included in a monetary aggregate that is sometimes referred to as the narrow measure of the money supply and is labeled $\mathbf{M_1}$. Thus, M_1 measures the amount of the medium of exchange in the economy.

$\mathbf{M_2}$ is a more inclusive aggregate because it takes into account all the instruments that substitute for money in the capacity of storing value. Therefore, M_2 is defined as M_1 plus all dollars held in time and savings accounts at banks and thrift institutions, plus all dollars

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[9] The *giro payment*, an alternative to the check, is used in many foreign countries. The giro payment is a direct order to the payer's bank to make a payment to a seller of some good or service. The check, of course, is an order to pay that is drawn on an account at the payer's bank and that the payer gives to the seller.

invested in retail money market mutual funds, plus some additional accounts such as overnight repurchase agreements. Some analysts also watch developments in two other monetary aggregates, which are labeled M_3 and L (for liquid assets). These aggregates equal M_2 plus certain other financial assets, including long-term time deposits, commercial paper, bankers' acceptances, and some Treasury securities.

The ratio of the money supply to the economy's income (as reflected by the gross national product or some similar measure) is known as the velocity of money in circulation. Velocity measures the average amount of transactions carried by a dollar. If the economy's velocity were stable, monetary policy could achieve any desired level of income by simply targeting the aggregate M_1. Unfortunately, velocity is not a stable relationship, and in fact, the linkages between the economy's income and the various aggregates vary considerably over time.

Typically, the monetary aggregates move in somewhat similar patterns, rising and falling at roughly the same rates and at roughly the same times. Table 1 shows the growth

Table 1 Annual Rates of Growth in Monetary Aggregates 1980–2007

Year	M_1	M_2
1980	6.9%	8.5%
1981	6.9	9.7
1982	8.7	8.8
1983	9.8	11.3
1984	5.8	8.6
1985	12.4	8.0
1986	16.9	9.5
1987	3.5	3.6
1988	4.9	5.8
1989	0.8	5.5
1990	4.0	3.8
1991	8.8	3.1
1992	14.3	1.6
1993	10.2	8.5
1994	1.9	0.5
1995	−2.0	4.1
1996	−4.1	4.9
1997	−0.8	5.6
1998	2.1	8.6
1999	2.5	5.9
2000	−3.1	6.1
2001	8.7	10.4
2002	3.2	6.4
2003	7.1	5.1
2004	5.4	5.8
2005	−0.1	4.2
2006	−0.5	5.1
2007	−0.2	5.9

Note: *Annual changes are from December to December.*
Source: *Economic Report of the President 2007. 2005 data from www.Federalreserve.gov (Research and Data Section).*

rates for M_1 and M_2 during the period from 1980 to 2007. However, the differences among the changes in the aggregates are large and frequent enough to suggest that these aggregates are measuring different things. A major question in Fed policymaking (which we discuss below) has revolved around choosing the most appropriate definition of the money supply.

THE MONEY MULTIPLIER: THE EXPANSION OF THE MONEY SUPPLY

Our discussion of how the supply of money is created focuses on the linkage between the banking system's reserves and the aggregate M_1. The process we describe, the **money multiplier**, can be generalized to the other monetary aggregates, but the complexities involved in those processes are not relevant to our task now.

We begin by restating that the creation of the money supply, and changes in it, is a complex interaction of four parties: the Fed, banks, savers, and borrowers. The Fed provides reserves to banks and also requires banks to hold, as reserves, a portion of the deposits that the public holds at the banks. The banks, playing their key role in the money multiplier, lend the remainder of the deposits (or most of it) to borrowers at an interest rate that exceeds that of demand deposits. For any one bank, the remainder equals deposits less required reserves, which can be expressed as deposits times (1 − required reserve ratio). Clearly, the funds one bank lends to a borrower can become the borrower's deposits in another bank. The borrower's decision to hold wealth as deposits rather than cash also affects the money multiplier. Then, that second bank must keep a fraction of those new deposits as reserves and can lend out to other borrowers an amount equal to the deposits less required reserves.

We will illustrate this process with an extended example. Suppose the Fed's required reserve ratio is 12%, and deposits at Bank A are $100 million, while those at Bank B are $50 million. Bank A has reserves of $12 million and outstanding loans of $88 million, and Bank B has reserves of $6 million with loans to borrowers of $44 million. For Bank A, the loan amount to $88 million equals either $100 million of deposits less $12 million of reserves, or $100 million times (1 − 0.12). For Bank B, loans of $44 million equal $50 million minus the 12% required reserves of $6 million. Thus, neither Bank A nor Bank B has any *excess reserves* (which equal total less required reserves). The level of reserves in the banking system has led M_1 to reach the level of (let us say) $900 billion, which equals $250 billion in currency and $650 billion in demand deposits. For this example, we assume that the amount of currency in the system will not change.

The Fed can increase the reserves by either lending to the banks or by purchasing government securities from the banks or other investors. (We ignore here the Fed's authority to change the required reserve ratio.) In this example, we suppose that the Fed buys $5 million of U.S. Treasury securities from a dealer who deposits the check, which is drawn on the Fed, with Bank A. Bank A's reserve account with the Fed has increased by $5 million and so have its (demand) deposits, its total reserves, and the overall level of M_1. But required reserves have risen only by $5 million × 0.12 or $600,000. This leaves an additional $4.4 million that the bank is free and eager to invest in order to improve its income.

We continue by assuming that a machinery manufacturing firm borrows all of the $4.4 million in a one-year loan, then buys equipment from a company that places all of that money in a checking account (or demand deposit) at another bank, which is Bank B. Bank A must transfer reserves for the amount of the loan to Bank B. The situation regarding

Bank A is this: Its level of deposits remains unchanged at $105 million; its loans have increased by $4.4 million to $92.4 million; its reserves have fallen by $4.4 million from $17 million to $12.6 million, so its ratio of reserves to deposits is again the required 12% and it has reached its capacity for making loans. Since Bank A's deposits are unchanged, M_1 is also unchanged from its new level of $900.005 billion.

After the transaction, Bank B's deposits have risen by $4.4 million, an increase that raises the amount of M_1 by an additional $4.4 million (or $9.4 million altogether, so far) to $900.0094 billion. Bank B has total reserves of $10.4 million and excess reserves equal to 88% of the $4.4 million in new deposits. Thus, Bank B can lend $3.87 million, keeping $528,000 as required reserves. If loans of $3.87 million are made to borrowers who place those loans as deposits with other banks, the process of creating money, in the form of M_1, will continue.

Where will the process end and what amount of new money, in the form of new demand deposits, will arise from the new reserves? In other words, what is the money multiplier? In this example, the Fed's open market purchase of $5 million of U.S. Treasury securities, along with the banks' incentive to make as many loans as they are permitted to do, has created demand deposits of $9.4 million at the first two banks involved. Still more deposits can be created at other banks. This process will continue as long as other banks use the ever smaller increases in demand deposits to make loans, which become additional demand deposits and excess reserves at still other banks, and so on. Although the process has no set limit in terms of time, there is a maximum number of dollars in new demand deposits that will spring from the new reserves.

This process is a form of a multiplier series that can be expressed in an algebraic formula. If we let ΔTDD be the total demand deposits created, ΔR be the reserves injected into the system by the Fed's purchase of Treasury securities, and REQ be the required reserve ratio, then the total of new deposits generated by the expansion of the initial injection of reserves would equal:

$$\Delta TDD = \Delta R + (1 - REQ) \times \Delta R + (1 - REQ)^2 \times \Delta R + (1 - REQ)^3 \times \Delta R + (1 - REQ)^4 \times \Delta R + \ldots \quad (1)$$

Because there are many potential elements in this series, which can get cumbersome, it is best to use this simple version of it:

$$\Delta TDD = \Delta R/REQ \quad (2)$$

In the example, REQ equals 12% and ΔR equals $5 million. Hence, new total demand deposits (if banks lend as much as they can and keep no excess reserves) amount to $5 million/0.12, or $41.67 million. The money multiplier is, therefore, 8.33 ($41.67/5). As a result, total M_1 will reach $900.04167 billion when the process is completed, which equals the original $900 billion plus $41.67 million in new deposits. Equation (2) clearly shows that the eventual amount of the new demand deposits is negatively related to the required reserve ratio: As REQ falls, the change in TDD rises; and as REQ increases, the change in TDD declines. Thus, if everything in the example were the same, but REQ were 10% instead of 12%, the new demand deposits would reach $50 million.

Obviously, the process of reducing the money supply works in the opposite way. That is, if the Fed wants to drain reserves from the system and reduce the banks' lending ability, it sells securities. The reduction in reserves, as the public trades deposits for marketable securities, allows banks to make fewer new loans or to renew fewer old ones.

THE IMPACT OF INTEREST RATES ON THE MONEY SUPPLY

Interest rates actually influence the change in the money supply. This point emerges from an evaluation of two key assumptions made above.[10] First, banks are assumed to want to make all the loans they can. If, however, banks were to keep some excess reserves, they would make fewer new loans and generate fewer deposits at other banks, which would affect the amount of M_1 that the Fed's purchase of securities would generate.

One of the important factors in a bank's decisions about excess reserves is the level of market interest rates. High rates make excess reserves costly because they represent loans not made and interest not earned. If rates are low, banks may keep some excess reserves. Hence, the level of interest rates positively influences the amount of M_1 that any increase in reserves will create. Moreover, interest rates can also positively (but probably only slightly) affect the amount of reserves in the system: High market rates may prompt banks to borrow at the discount window in order to make loans, and these borrowed funds are part of reserves.

By the second assumption, borrowers retain none of their loans in cash, but rather deposit all cash flows—proceeds from sold securities, loans, and so on—into checking accounts. In contrast, if borrowers took some of their borrowings in cash, banks would receive fewer deposits and would have fewer reserves from which to make new loans. Accordingly, the public's demand for cash as a portion of its liquid wealth has an impact on the amount of M_1 that arises from the Fed's injection of new reserves.

The level of market rates shapes decisions about cash holdings. Many deposit accounts pay interest, so holding cash imposes an opportunity cost. The higher the rate, the greater the cost, and the more money investors will shuttle into deposits. But the rate on deposits is not the only relevant interest rate. The desired amount of deposits, from which transactions can be easily made, also reflects the rates of return from other assets. As those returns rise, investors would hold more in deposit accounts. For these reasons, the level of interest rates positively affects the size of the money multiplier and, hence, the amount of M_1 that any increase in reserves will produce.

An example will illustrate this point about the impact of rates on the money multiplier and the change in the money supply arising from an infusion of reserves by the Fed. The money multiplier from the previous example was 8.33 or (1/REQ), where REQ was 0.12. Let us now assume that the behavior of banks and depositors responds to interest rates. First, we will assume that the rate of return on bank loans is such that banks do not make all the loans they can but rather want to hold 1% of their deposits (TDD) in excess reserves (ER), with the result that the ratio (ER/TDD) equals 0.01. Second, let us suppose that the interest rate is at the level where the public will hold only 75% in checkable deposits (rather than 100% as before) and 25% in cash or currency. This means that the ratio (C/TDD) is 0.33. With these assumptions, the formula for the multiplier would now be this:

$$\frac{1 + (C/TDD)}{REQ + (ER/TDD) + (C/TDD)}$$

[10] Lucas Papademos and Franco Modigliani, "The Supply of Money and the Control of Nominal Income," chapter 10 in Benjamin M. Friedman and Frank H. Hahn (eds.), *Handbook of Monetary Economics* (Amsterdam: North-Holland, Elsevier, 1990), pp. 428–430.

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Plugging in the actual values, we have a much lower multiplier, which is this:

$$\frac{1.33}{0.12 + (0.1) + 0.33} = 2.89$$

Remember, this multiplier is lower because households and banks do not deposit or lend, respectively, all that they can, and these drains from the money creation process reduce the multiplier effect of any increase in reserves.

THE MONEY SUPPLY PROCESS IN AN OPEN ECONOMY

Our discussion so far describes central bank activity in what economists call a *closed economy*. A closed economy is one in which foreign transactors—of either goods or financial assets—play a negligible role. In the modern era, almost every country has an open economy, where foreign firms and investors account for a large and increasing share of economic activity. This is especially true of the world's largest economy, that of the United States. Understanding of the money supply process, therefore, must include the influence of the foreign sector.

Monetarily, the crucial fact of significant foreign participation in the U.S. economy is that foreign central banks, firms, and individuals hold a substantial number of U.S. dollars. They do so for transactional reasons—buying and selling goods and services in the United States—and for investment purposes—treating the dollar as a financial asset. What makes the foreign holdings of dollars important is that the dollar's exchange rate with currencies of most developed countries floats according to demand and supply in the market. (Most central banks, including the Fed, try to keep exchange rates within politically acceptable ranges.)

Shifts in the dollar's exchange rates, obviously, affect the prices of domestic and imported goods, the revenues of U.S. companies, and the wealth of all investors in the country. As a result, the Fed accepts the responsibility to maintain some stability in the exchange rates. A major way to discharge this duty is to *intervene in the foreign exchange markets.* The Fed intervenes by buying and selling foreign currencies for its own account. (Most central banks of large economies own, or stand ready to own, a large amount of each of the world's major currencies, which are considered international reserves.)

If the Fed thinks the dollar's value is too high and a foreign currency's is too low, it can purchase some of the foreign currency with its own supply of dollars. A purchase involves increasing the outstanding number of dollars and thereby the monetary base. If the Fed thinks the dollar has too low a value relative to some other currency, it might sell some of its holdings of that currency for dollars. Thus, selling foreign currency entails a reduction in the monetary base. Intervention in the currency market is often a response to a particular international event. Moreover, the intervention usually involves a transaction with other central banks, which consists of an immediate exchange of currencies and an agreement for a future offsetting exchange. Thus, this kind of action allows the Fed to know the terms on which the currency deal will terminate and the time when it will terminate.

The dollar's exchange rates with important foreign currencies function as a major goal of monetary policy. That is, in forging and implementing policy; the Fed considers the effect of a change in the money supply on the relative value of the dollar in the foreign exchange market.

Dramatic evidence of the growing importance of international policy coordination on monetary matters occurred in two meetings of central bankers of the large industrial nations in the mid 1980s. In 1985, central bank chairmen and directors of the United States, Great Britain, France, Germany, and Japan (known as the Group of Five) met at the Plaza Hotel in New York. This is known as the Plaza Agreement. They agreed to coordinate policies in order to bring down the value of the U.S. dollar and to stabilize international exchange rates and trade. In 1987, at the Louvre Museum in Paris, central bankers from these five countries and Canada agreed to work together to keep exchange rates at their current levels. These efforts at international cooperation on monetary and exchange issues are generally seen as successful.[11]

Key Points That You Should Understand Before Proceeding

1. The Federal Reserve System is the central bank of the United States and responsible for the conduct of monetary policy.
2. The instruments of monetary policy, including reserve requirements, open market operations and repurchase agreements, and the discount rate.
3. The different kinds of money, such as the numeraire, the store of value, and the medium of exchange.
4. The various monetary aggregates and what they are supposed to convey to policymakers.
5. The nature of the money multiplier and how it links reserves in the banking system to monetary aggregates.
6. That interest rates affect the rate at which the money supply changes in response to actions by the Fed.
7. That the openness of an economy to participation by foreign firms, central banks, and individuals affects monetary management.

SUMMARY

The central bank of a country plays a key role in that country's economic and financial markets by implementing policies to stabilize the currency and controlling the money supply. The central bank may also act as a lender of last resort to the bank system in order to avert a financial crisis. Evidence suggests that a central bank can act more effectively by being independent of the government.

The Federal Reserve System is the U.S. central bank. Its tools of monetary policy include required reserves, open market operations and repurchases, and discount loans to banks. The Fed supplies reserves to the banking system, which participates, along with investors, in generating the money supply. The chief means of supplying reserves is open market operations: The Fed's purchase of government securities provides reserves, and the Fed's sale of securities reduces reserves. The money supply is composed of various types of money as well as demand and time deposits, which can be grouped into monetary aggregates. The fundamental aggregate is the monetary base, composed of currency plus total

[11] Frederic S. Mishkin, "What Should Central Banks Do," *Federal Reserve Bank of St. Louis Review*, November/December 2000, 82, 6, pp. 1–13.

reserves in the banking system. M_1 equals currency plus all checkable deposits. Other aggregates include various time deposits.

The money multiplier is the process by which changes in bank reserves generate larger changes in the money supply. The banks use the added reserves to buy assets or to make loans; the seller or borrower redeposits these proceeds, which then support additional loans, and so on. The value of the multiplier depends on the required reserve ratio, the public's demand for cash, the banks' willingness to make loans, and the level of interest rates.

The growing international integration of economies requires that the Fed, along with other central banks, consider the impact of its monetary operations on foreign currency exchange rates. Thus, monetary policy must be considered from the standpoint of open economies, not the closed ones of years past.

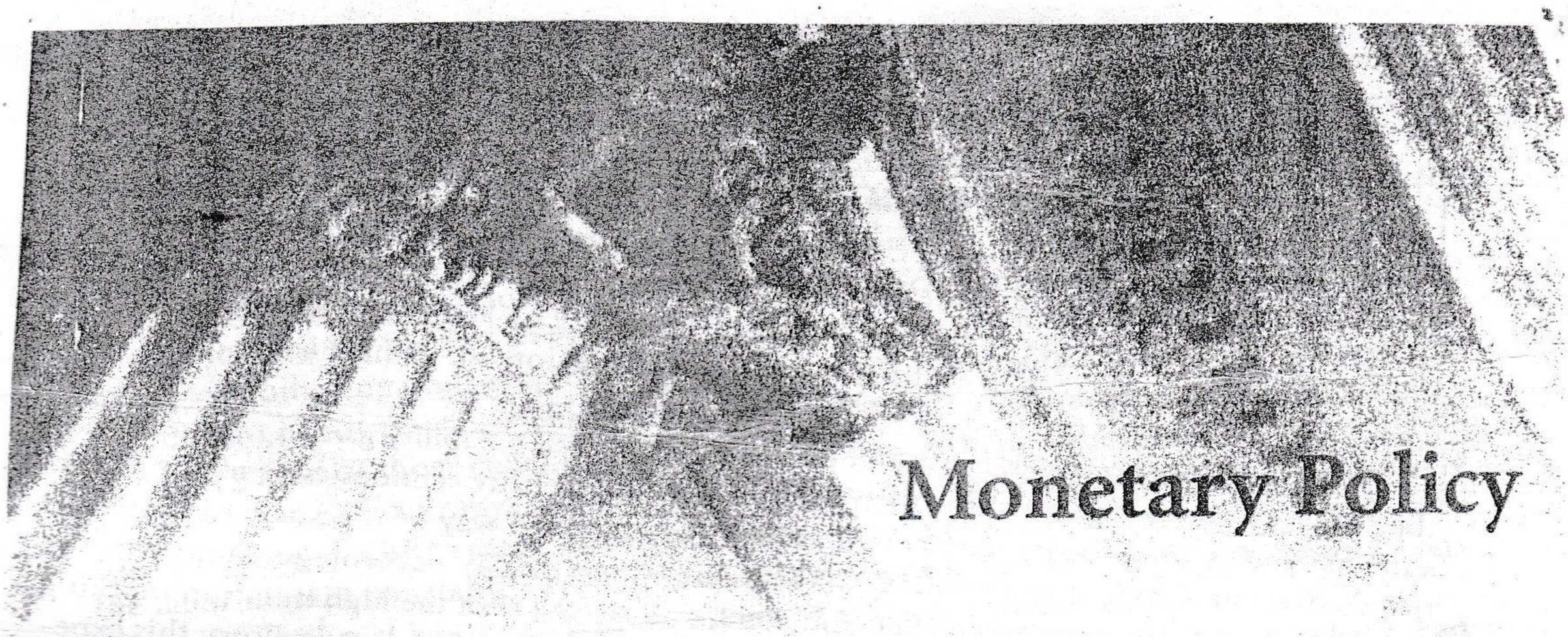
KEY TERMS

- Board of Governors
- Central bank
- Chairmanship of the Fed
- District
- European Central Bank (ECB)
- Federal Open Market Committee (FOMC)
- Fractional reserve banking system
- Group of 6 (G6)
- Group of 7 (G7)
- Group of 8 (G8)
- International reserves
- L
- M_1
- M_2
- M_3
- Medium of exchange
- Monetary aggregate
- Monetary authority
- Monetary base
- Money multiplier
- Money supply
- Numeraire
- Open economy
- Open market operations
- Repurchase agreement (repo)
- Required reserve ratio
- Reserve bank
- Total reserves
- Trading desk of the Federal Reserve Bank of New York
- Velocity of money

QUESTIONS

1. What is the role of a central bank?
2. Why is it argued that a central bank should be independent of the government?
3. Identify each participant and its role in the process by which the money supply changes and monetary policy is implemented.
4. Describe the structure of the board of governors of the Federal Reserve System.
5. a. Explain what is meant by the statement "the United States has a fractional reserve banking system."
   b. How are these items related: total reserves, required reserves, and excess reserves?
6. What is the required reserve ratio, and how has the 1980 Depository Institutions Deregulation and Monetary Control Act constrained the Fed's control over the ratio?
7. In what two forms can a bank hold its required reserves?
8. a. What is an open market purchase by the Fed?
   b. Which unit of the Fed decides on open market policy, and what unit implements that policy?
   c. What is the immediate consequence of an open market purchase?

9. Distinguish between an open market sale and a matched sale (which is the same as a matched sale-purchase transaction or a reverse repurchase agreement).
10. What is the discount rate, and to what type of action by a bank does it apply?
11. Define the monetary base and M_2.
12. Describe the basic features of the money multiplier.
13. Suppose the Fed were to inject $100 million of reserves into the banking system by an open market purchase of Treasury bills. If the required reserve ratio were 10%, what is the maximum increase in M_1 that the new reserves would generate? Assume that banks make all the loans their reserves allow, that firms and individuals keep all their liquid assets in depository accounts, and no money is in the form of currency.
14. Assume the situation from question 13, except now assume that banks hold a ratio of 0.5% of excess reserves to deposits and the public keeps 20% of its liquid assets in the form of cash. Under these conditions, what is the money multiplier? Explain why this value of the multiplier is so much lower than the multiplier from question 13.



Monetary Policy

LEARNING OBJECTIVES

After reading this chapter, you will understand

- the goals of monetary policy, including price level stability, economic growth, stable interest rates, and stable foreign exchange rates
- that the operating targets of Fed policy are those monetary and financial variables that are affected by its tools in a predictable way
- that intermediate targets are economic variables that the Fed can affect indirectly through its work with operating targets
- that the federal funds rate and bank reserves have often been operating targets of monetary policy
- that the broad monetary aggregates have sometimes served as intermediate targets, as have certain interest rates

The Fed, in interaction with banks and other units of the economy, creates money and credit. There are also tools that the Fed can use to manage the rate of growth in the money supply.

This chapter examines the goals of monetary policy; that is, the conditions in the economy that the Fed seeks to bring about. Although the Fed cannot directly cause these conditions to exist, it can follow policies to target variables that it can influence with its tools. We also discuss monetary matters in some other major economies of the world.

From Chapter 5 of *Foundations of Financial Markets and Institutions*, 4/e. Frank J. Fabozzi. Franco Modigliani. Frank J. Jones.
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GOALS OF MONETARY POLICY

The Fed, through such tools as open market operations, which change the reserves in the banking system, can prompt the banking system and depositors to implement desired changes in the money supply and in its rates of growth. The Fed manages the money supply in order to achieve certain economic goals. In this section, we identify some of the more commonly cited goals of Fed policy.[1]

Stability in the price level is a major goal of the Fed. Price stability gained new respect in the past 20 years as first inflation, then deflation, ravaged entire economies or major sectors such as farmland and commercial real estate. The standard way of measuring inflation is the change in a major price index. Table 1 shows the yearly percentage change in the Consumer Price Index between 1980 and 1999, and reveals that the high inflation marking the beginning of the 1980s had largely dissipated by the end of that decade. From this experience, policymakers and economists came to appreciate once more that unstable price levels retard economic growth, provoke volatility in interest rates, stimulate consumption, deter savings, and cause capricious redistribution of income and wealth with attendant social disturbances.

Inflation in advanced economies, however, is seldom (if ever) the result of excessive demand due to monetary or fiscal policy. Rather, a more important source of inflation is an economic shock in the supply of a crucial material, such as the oil shocks of the 1970s, which affected almost all countries. Evidence that the inflation at the end of the 1970s was not related to excessive demand for goods and services is that it occurred with high unemployment and gave the world a period of **stagflation**, which is a condition of both inflation and recession.

It is important to note that, when confronted with a supply shock, a central bank such as the Fed has two choices. First, the banking authorities can refuse to accommodate the higher price levels that follow the shock by matching them with an increase in the money

TABLE 1 Annual Percentage Changes in Consumer Price Index

Year	Rate	Year	Rate	Year	Rate
1980	12.5%	1990	6.1%	2000	3.4%
1981	8.9	1991	3.1	2001	1.6
1982	3.8	1992	2.9	2002	2.4
1983	3.8	1993	2.7	2003	1.9
1984	3.9	1994	2.7	2004	3.3
1985	3.8	1995	2.5	2005	3.4
1986	1.1	1996	3.3	2006	2.5
1987	4.4	1997	1.7	2007	4.1
1988	4.4	1998	1.6		
1989	4.6	1999	2.7		

Note: *Annual Changes are from December to December.*
Source: *Economic Report of the President 2007.*

[1] Ben Bernanke and Frederic Mishkin, "Guideposts and Signals in the Conduct of Monetary Policy: Lessons from

supply. The results of nonaccommodation will initially tend to be higher interest rates and a decline in economic activity. For this reason, central banks and political authorities frequently have opted for the second choice, which is a policy of accommodation and increased growth in the supply of money. Unfortunately, this kind of policy permits the inflation to continue unchecked or possibly to accelerate.

High employment (or low unemployment) of the civilian labor force represents a second major goal for the Fed. While politicians often speak of the U.S. government's commitment to promoting "full employment," most people understand that an unemployment rate of zero is not possible. The reason is that **frictional unemployment**—the temporary unemployment of those changing jobs or seeking new or better ones—is both unavoidable and helpful to an economy. It is unavoidable because people do change jobs, and are likely to do so more readily as employment levels rise, and because some workers leave and enter the labor market constantly. Frictional unemployment is helpful because it allows a constant reallocation of labor and leads to increased efficiency in the workforce.

Given that zero unemployment is not a feasible aim, the appropriate goal of the Fed and other governmental policymakers is actually a high level of employment. A practical problem, however, is that economists and policymakers cannot agree on a suitable definition or specification of high employment. It does not help to specify a high level of employment as one that approaches 100% less the level of frictional unemployment, because there is also little agreement on the true rate of frictional unemployment.

For practical purposes, many observers consider that a civilian unemployment rate between 4% and 6% indicates an economy operating at or near a level of high employment. This figure allows for frictional unemployment and the effects of the rapid expansion in the workforce over the past several decades. That expansion occurred because of the entry into the workforce of many women, younger workers, and immigrants into the United States.

Table 2 provides yearly information on the U.S. level of unemployment from 1980 to 2007 and shows that relatively high employment occurred in the second half of the 1980s, the late 1990s and early 2000s.

Year	Rate	Year	Rate	Year	Rate
1980	7.1%	1990	5.6%	2000	4.0%
1981	7.6	1991	6.8	2001	4.7
1982	9.7	1992	7.5	2002	5.8
1983	9.6	1993	6.9	2003	6.0
1984	7.5	1994	6.1	2004	5.5
1985	7.2	1995	5.6	2005	5.1
1986	7.0	1996	5.4	2006	4.6
1987	6.2	1997	4.9	2007	4.6
1988	5.5	1998	4.5		
1989	5.3	1999	4.2		

Source: *Economic Report of the President 2007.*

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It is important to realize that high employment is one of the Fed's goals because, in certain circumstances, the Fed's policy can indirectly influence the level of employment. When the economy is operating sluggishly or below capacity, increases in the money supply can bring about economic expansion and employment because those increases can reduce interest rates, stimulate investment, encourage consumption, and lead to the creation of new jobs. A policy of expansion of the money supply is frequently described as an "easy money policy" because the Fed is said to ease the way for banks to acquire reserves and to extend loans. When the economy's output is close to capacity (given its stock of productive assets and population), however, easy money policies can be disadvantageous because they may kindle inflation and raise interest rates. Policymakers must often wrestle with the tough question of whether easing monetary policy will create higher employment or simply ignite inflation, or an undesirable combination of higher unemployment and higher inflation.

Economic growth, the third goal of the Fed, is the increase in an economy's output of goods and services. Clearly, this goal is closely related to the goal of high employment. As would be expected, there is very little agreement about the exact rate of growth that policymakers should try to achieve. Variously described as "sustainable" or "steady" or "reasonable," the economy's appropriate rate of growth has to be substantial enough to generate high employment in the context of an expanding workforce but low enough to ward off inflation.

Table 3 reports the annual growth rate in the gross domestic product (or GDP) over the past 28 years (through 2007). Note that the rate in two years (1984 and 1991) was slightly negative. Subsequently, growth exceeded a positive 3% in six years, but it never reached the stunning 7.3% level of 1984, although it was very high during 1998–1999. Interestingly, despite fairly sustained growth in the past 15 years, inflation has remained rather low. (See Table 1.)

Once more, economic growth is a Fed goal because its operations may be able to affect the level of growth. As we note in connection with employment, however, policies expanding the money supply and stimulating growth may be beneficial in some circumstances and detrimental in others, according to the economy's performance relative to its capacity.

The goal of stabilizing interest rates is directly related to the goal of growth and to the Fed's responsibility for the health of the nation's financial and banking system. Table 4 reports on yearly averages for the rates on Treasury bills (a short-term security) and on

Year	Rate	Year	Rate	Year	Rate
1980	6.0%	1990	1.9	2000	3.2%
1981	2.5	1991	−0.2	2001	0.8
1982	−1.9	1992	3.3	2002	1.6
1983	4.2	1993	2.7	2003	2.5
1984	7.3	1994	4.1	2004	3.6
1985	3.9	1995	2.5	2005	3.2
1986	3.5	1996	3.7	2006	3.3
1987	3.5	1997	4.5	2007	2.5
1988	4.2	1998	4.5		
1989	3.5	1999	4.5		

Source: *Economic Report of the President 2007.*

Year	Bills	Notes	Year	Bills	Notes	Year	Bills	Notes
1980	11.51%	11.46%	1990	7.51%	8.55%	2000	5.85%	6.03%
1981	14.03	13.91	1991	5.42	7.86	2001	3.45	5.02
1982	10.69	13.00	1992	3.45	7.01	2002	1.62	4.61
1983	8.63	11.10	1993	3.02	5.87	2003	1.02	4.01
1984	9.58	12.44	1994	4.29	7.09	2004	1.38	4.27
1985	7.48	10.62	1995	5.51	6.57	2005	3.16	4.29
1986	5.98	7.68	1996	5.02	6.44	2006	4.73	4.80
1987	5.82	8.39	1997	5.07	6.35	2007	4.41	4.63
1988	6.69	8.85	1998	4.81	5.26			
1989	8.12	8.49	1999	4.66	5.65			

Note: *Bills: Rates on new issues. Bonds: Yields on actively traded issues adjusted to constant 10-year maturity by the Department of the Treasury.*
Source: *Economic Report of the President 2007.*

Treasury bonds (a long-term asset). The table reveals that interest rate volatility over the early and mid-1980s was especially pronounced. This volatility has been troublesome to financial institutions such as commercial banks and thrift institutions. During the past 15 years, Treasury bills have been less volatile and Treasury bond rates have declined.

Note that the goal is to stabilize rates, not to prevent changes in rates. Obviously, interest rates move up and down with changes in economic conditions. Those movements may provide signals of important economic developments, and it would be making a mistake for the Fed to try to prevent such changes in rates. However, the Fed may help economic conditions by trying to moderate the impact of large moves in rates. Some increases in rates may reflect temporary or reversible developments, and the Fed can appropriately respond to these changes in a way that eliminates or greatly reduces such increases.

Stability in foreign currency exchange rates is the final goal that we will discuss. The foreign exchange market has become much more important in recent years, as the economies of the world have become more integrated, and foreign currency exchange rates have begun to affect ever larger segments of the economy. Because exchange rates are clearly dependent in some ways on the monetary policies of the major countries, the Fed has accepted the goal of stabilizing foreign exchange rates.[2] Of course, some fluctuations in exchange rates arise for economically sound reasons that monetary policy in one country cannot influence or control. A prime example of such a reason is a pronounced difference in the fiscal policies between two countries. In general, an important explanation of unstable rates among most of the world's major currencies has been the failure of the large industrial economies to coordinate their fiscal and monetary policies.

A chief disadvantage of unstable foreign currency exchange rates is that volatility in the prices of currencies inhibits the international trade that offers a host of benefits to all participating countries. Furthermore, both high and low exchange rates for the dollar are considered detrimental to the U.S. economy. High exchange rates (i.e., a "strong" dollar or

[2] Bernanke and Mishkin, "Guideposts and Signals in the Conduct of Monetary Policy: Lessons from Six Industrialized Countries," p. 11.

one with high value in terms of foreign currencies) reduce demand for U.S.-made products abroad and stimulate the import of foreign goods; the result is a trade imbalance. A "weak" dollar contributes to inflation, as U.S. buyers pay more for the many goods they do import. For these reasons, the Fed's goal of stability in the currency market often amounts to keeping the value of the dollar, in terms of the major foreign currencies, within some range that is considered politically acceptable and helpful to international trading, especially exporting.

During the late 1990s and early 2000s, due to the moderately strong U.S. dollar, strong U.S. economic growth, and weak or anemic economic growth in much of the rest of the world, the United States experienced a very large and increasing trade deficit.

TRADE-OFFS AND CONFLICTS AMONG POLICIES

This account of the widely accepted goals of monetary policy reveals a profound problem in the conduct of monetary policy. The goals are numerous, but the Fed's capabilities are limited to the simple menu of (1) trying to raise the rate of growth in the money supply by providing more reserves to banks, and (2) trying to reduce the rate of monetary expansion by reducing the reserves in the banking system. As a result, it is often the case that one of the goals may require a monetary policy that is inconsistent with some other goal. In other words, a monetary policy that furthers progress toward one goal may actually make attaining another either difficult or impossible.

For example, an easy money policy of expanding the money supply (that is, stimulating higher growth rates for one or more monetary aggregates) may appear to promote growth and low interest rates, but it may also raise the prospect of inflation, affect the exchange rate disadvantageously, and increase interest rates. Another example concerns the goal of price stability and the Fed's responsibility for the health of financial institutions. Suppose that, at a time of high inflation, many such institutions have invested according to inflationary expectations and have made many loans to firms dealing in real assets. Suppose, too, that the Fed decides it needs to take steps to curb the current inflation. In such a situation, the tight monetary policy that accomplishes this goal—a policy of reducing the rate of growth in the money supply—actually may imperil the institutions because the policy might well weaken the financial health of the firms that borrowed from the financial institutions.

Economists frequently describe this problem in this way: The Fed's policy necessarily represents trade-offs among its various goals, which have different levels of relative importance at different times, depending on the state of the economy. Another way of saying this is that the Fed, like any monetary policymaker, has numerous goals but focuses, at any time, on the goal that is most in danger of not being achieved.

GOALS AND TYPES OF TARGETS

A second problem in the implementation of monetary policy is that the Fed has no direct control over the goals that are the final objectives of its policies. The Fed cannot, with any of its monetary tools (open market operations, discount rates, etc.), directly influence such complex economic variables as the prices of goods and services, the unemployment rate, the growth in gross domestic product, and foreign exchange rates. We know the Fed can affect the rate of growth in the money supply only by means of its control of reserves in the banking system. As we discussed in the previous chapter, the Fed cannot fully determine changes

in the money supply. The growth in the money supply depends to a substantial extent on the preferences, actions, and expectations of numerous banks, borrowers, and consumers.

The Fed seeks to achieve its goals through a form of chain reaction, which has the following chronology and structure. The Fed first employs one or more of its tools to affect what are called **operating targets**, which are monetary and financial variables whose changes tend to bring about changes in **intermediate targets**. Intermediate targets, which may include interest rates or monetary aggregates, are variables that have a reasonably reliable linkage with the variables, such as output or employment, that constitute the Fed's goals or *ultimate objectives*. Thus, the Fed exerts whatever influence it has on the intermediate targets in an indirect way, by means of its control over the operating targets. Thus, the Fed's power over the variables that make up its goals is quite indirect and dependent upon the linkages among the various targets and goals.

Although economists have argued many years about the identity of appropriate operating and intermediate target variables, there is no dispute about the chief characteristics of a suitable operating or intermediate target.[3] The first characteristic is *linkage*: An operating target must have an expected connection with the intermediate target, which itself must eventually affect the economy in a way that is consistent with the Fed's goals. The second characteristic is *observability*: Both operating targets and intermediate targets must be readily and regularly observable economic variables, so that the Fed can monitor its success in influencing their levels or rates of change. The third and final characteristic is *responsiveness*: To function as an operating target, a variable must respond quickly and in an expected way to the Fed's use of one or more of its tools; and an appropriate intermediate target is one that reacts, in an anticipated way and a meaningfully short time, to changes in the operating target.

Choosing the Operating Target

In some countries, a key foreign currency exchange rate may well function as an operating target. While the Fed has become more conscious of foreign exchange developments in the past 15 years or so, it has not adopted the dollar's exchange rate with any currency or group of currencies as an operating target. Rather, the Fed's monetary policy has directly targeted either short-term interest rates or some measure of bank reserves.

An important point about the operating target is that the Fed must choose either a short-term rate or the level of some reserves and cannot choose to target both kinds of variables.[4] To understand why the Fed must make a choice, we need to review what the Fed's tools allow it to do. Those tools—whether the secondary ones of discount loans and management of reserve requirements, or the primary tool of open market operations—enable the Fed to change only the level of reserves in the banking system. Obviously, a change in reserves also changes short-term rates because they are determined in the interbank market for excess reserves. Under most circumstances, the change in reserves is negatively related to the change in interest rates: As the Fed supplies more reserves and banks

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[3] A formal treatment of the requirements for targets is available in Benjamin M. Friedman, "Targets and Instruments of Monetary Policy," Chapter 22 in Benjamin M. Friedman and Frank H. Hahn, *Handbook of Monetary Economics* (Amsterdam: North-Holland, 1990).

[4] William Poole, "Optimal Choice of Monetary Policy Instrument in a Simple Stochastic Macro Model," *Quarterly Journal of Economics* (1970), pp. 197–216.

gain more ability to make more loans and buy other assets, the short-term rates fall; as the Fed withdraws reserves and reduces the banks' lending capacity, the short-term rates rise.

Because of this inverse relationship, it might seem possible for the Fed to view each of these variables as a target and to set each of them at the same time. But, in fact, that is impossible. The reason is that the Fed cannot know or predict the *public's* demand for money, which is the aggregate demand for holding some of its wealth in the form of liquid balances, such as bank deposits. The public's desire to hold money depends on many factors, especially preferences and anticipations about future income and price inflation, among other things, and unexpected changes in those factors may well shift the public's desired holdings in significant ways. Therefore, the Fed cannot be certain how much impact any change in reserves will have on short-term rates. Without knowledge of what the rate will be for a given change in reserves, the Fed cannot simultaneously determine both the rate and the level of reserves.

In choosing its operating target, then, the Fed makes the decision to let the other variable fluctuate in response to changes in the public's demand for money. When an interest rate is the target, the Fed must let the growth in reserves vary as it strives to keep that interest rate at a certain level or to smooth its transition to a new (higher or lower) level. When some aggregate of reserves is the target, the Fed is forced to allow interest rates to change substantially, so that it can try to bring the level of reserves to that dictated by the Fed's policy. Of course, the Fed can change its target from time to time, in order to rein in the variable that has fluctuated while the Fed focused on the other. But, however often the Fed might change targets, it remains a fact that, at any one time, the Fed cannot target both rates and reserves.

Choosing the Intermediate Target

The best known of the intermediate targets is the money supply, measured by one of the more inclusive monetary aggregates that we described in the previous chapter. In the 1970s, many countries began to target the growth rates of one or more aggregates. The policy, at least as publicly stated, was to supply reserves at a pace that would lead to a selected rate of growth in the aggregates. The idea behind this policy was that the goals of central bank activity—growth, stable prices, and so on—would be realized if the money supply were to grow at a known and steady rate.

Over time, other intermediate targets have been specified, and they include foreign exchange rates, the level of national output (such as the gross national product), and the level of actual or expected inflation.[5] Furthermore, the array of interest rates—including rates available to consumers and investors—may also function as a target variable. We have said that a prime characteristic of a suitable intermediate target is that it is readily observable. Obviously, some of these candidates above do not fit that rule: Information on the GDP, for example, is available only on a quarterly basis, while measures of actual or expected inflation may be subject to considerable dispute.[6]

Interestingly, in recent years, many central banks have adopted inflation, despite certain problems in measurement, as a key intermediate variable. The reason is that the monetary aggregates have not had the kind of reliable and persistent relationship either with target variables or with goals that policymakers require. In most European countries, policymakers

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[5] Bernanke and Mishkin, "Guideposts and Signals in the Conduct of Monetary Policy," p. 41.
[6] Friedman, "Targets and Instruments of Monetary Policy," p. 1203.

follow price indexes for sensitive commodities and make decisions about short-term rates and bank reserves on the basis of actual and expected inflation. In the United States, it is commonly said that former Fed Chairman Alan Greenspan carefully monitored the price of gold, among other commodities. Thus, the purchasing power of the domestic currency and the foreign exchange rate of the currency have become far more typical intermediate targets than monetary aggregates.

A REVIEW OF RECENT FEDERAL RESERVE POLICY

Targeting the Fed Funds Rate, 1970 to 1979

During most of the 1970s, the Fed viewed the federal funds rate either largely or exclusively as its operating target. Recall that *fed funds* refers to the excess reserves that commercial banks and other depository institutions keep in the form of deposits in the Federal Reserve System and lend among themselves for short periods of time, especially overnight. The rate on these interbank loans is the fed funds rate, and it is a good indicator of the banking system's supply of loanable funds. When banks have a lot of funds and lending capacity, the rate is low; the rate is high when the banking system has drawn its collective reserves close to the required level. It should be noted that the fed funds rate meets the first requirement listed above for an operating target: The rate is readily observable and continuously available because the market for fed funds is large and active.

The Fed targets the fed funds rate by its open market operations. As noted above, a requirement of a good operating target is that the Fed can exert substantial control over its level and changes. If the rate were to rise above the level that the Fed thought conducive to economic growth and high employment, the Fed would engage in open market purchases and inject reserves into the banking system. Through the workings of supply and demand, an increase in the reserves of the banking system would normally cause a fall in the fed funds rate, as many banks would have to borrow less to meet their reserve requirements. If the fed funds rate was too low, the Fed would sell securities and bring about a reduction in the growth of the banking system's total supply of reserves. This action would prompt a rise in the fed funds rate. Furthermore, the Fed has also used open market operations in its effort to smooth the transition of the fed funds rate from one level to another, as the rate varies with conditions in the economy.

The rationale for targeting the fed funds rate lies in the belief that changes in the rate can, over some time, affect the level of economic activity. (Recall, that linkage is also a prime requirement of a suitable operating target.) That is, if consumers, investors, and bankers believe that a given change in the fed funds rate is permanent and reflects a shift in Federal Reserve policy, such a change in rates can reverberate through the monetary and banking system, and cause a consequent change in the level of economic activity. Generally speaking, this version of monetary policy is associated with Keynesian economic theory, and it gives the Fed a great deal of discretion in the conduct of monetary policy.

In the Keynesian view, the Fed's decision to reduce the fed funds rate, by increasing the banking system's excess reserves, should have the following consequences. Banks, as the first economic units to be affected, will have more reserves and lower returns from lending in the fed funds market. As a result, the banks will reduce the cost of loans to businesses and consumers and the return (if any) available to investors on short-term deposits. Investors

will now be confronted with lower yields on short-term assets, such as Treasury bills and certificates of deposit. Because of these lower yields, investors will reallocate their holdings from short-term to long-term securities, driving their prices up and raising the wealth of investors in financial securities. Declines in the general cost of funding will encourage firms to expand and increase their output. Consumers, seeing lower costs of borrowing, will increase their demand for more expensive purchases.

Overall, according to this view of the economy, a decline in the fed funds rate should lead to a higher level of output and employment in the economy. Obviously, if the Fed chooses to raise the fed funds rate and uses open market sales to reduce the system's excess reserves, the consequent rise in short-term interest rates will restrain the growth in economic activity. In an important sense, then, the array of short-term rates functions as the intermediate target (or one of the intermediate targets) in this view of monetary policy.

A cautionary note is in order here. Economists in the Keynesian tradition believe that declines in targeted rates can cause the sequence of events just described only if the economy is operating at less than full capacity and employment. If the economy is operating at full employment, these actions by the Fed will generally lead only to an increase in prices (that is, inflation) and interest rates.

A Monetarist Experiment, 1979 to 1982

One historic consequence of the policy of supplying reserves according to movements in the fed funds rate was that the Fed did not concern itself with the behavior of the level of reserves, or of the monetary base and other monetary aggregates, which expanded in an erratic way. On frequent occasions in this period of the 1970s, interest rates were on a rising path, in part because of the oil-price shock and the consequent inflation. The Fed responded to the rising rates by increasing reserves, as it tried to keep the rates from getting to what it considered a too high level. The expansion in the monetary aggregates was particularly rapid from 1975 to 1978, and that expansion (along with the oil shocks) led to serious inflation and a decline in the dollar's value. In 1979, for example, the rate of inflation was in double digits (i.e., above 10%) and the dollar's value, in terms of the Deutsche mark, fell almost 30% between 1975 and 1979.

In October 1979, as a response to inflation, then Chairman of the Fed Paul Volcker announced a new policy. The Fed would henceforth begin to target the banking system's **nonborrowed reserves**, which equal total reserves less those reserves created when banks borrow from the Fed through its discount window. The level of nonborrowed reserves meets the requirements for a good operating target to largely the same extent as the fed funds rate. Moreover, the Fed stated that its purpose in targeting nonborrowed reserves was to control the rate of growth in the money supply, as measured by the monetary aggregates.

This change in policy was widely viewed as a victory for the theory of **monetarism**, which favors a steady, predictable growth in reserves and the monetary base. Monetarists claim that policy that is based on known rules of growth in key monetary aggregates sustains stability in the price level, and that such stability fosters long-run economic growth and employment. Furthermore, monetarists had long criticized the **discretionary** policy whereby the Fed would change the rate of growth in reserves or aggregates in order to achieve short-run adjustments in interest rates or levels of economic activity. Monetarists believe that the "long and variable lags" between the start of a policy and its final impact on the economy make such adjustments unwise and potentially dangerous. This dispute on how best to conduct monetary policy is known as the controversy of "discretion versus rules."

The new Fed policy can be viewed as one where the monetary aggregates became intermediate targets, and the banking system's quantity of nonborrowed reserves was the operating target. Through its open market operations, the Fed has considerable control over this operating target. Movements in that target are, in turn, supposed to generate somewhat predictable changes in the levels of the intermediate targets, or monetary aggregates. The money multiplier, which we introduced in the last chapter, is the link between the reserves and the aggregates. Monetarists believe that the money multiplier is basically steady, so that the link between reserves and the monetary aggregates can be identified. Hence, the appropriate policy is to supply reserves (through open market operations) at that steady pace that will lead to a stable and reasonable rate of growth for the monetary aggregates. The changes in interest rates that may result from changes in money demand (which, in the monetarists' view, does not occur often or to a significant extent) should not be allowed to affect the policy on reserves.

Technically speaking, the Fed had claimed throughout most of the 1970s to be targeting certain aggregates, notably M_1 and M_2, and it had routinely published target ranges and expected growth paths for the aggregates. The Fed's devotion to such a policy was suspect, as the data repeatedly showed the aggregates growing at far faster rates than the Fed said it preferred. When faced with these high growth rates, the Fed often simply adjusted its planned growth path upward. Volcker's 1979 announcement seemed to suggest that the Fed would finally be seriously interested in the growth in aggregates. Indeed, the growth rate in the money supply was far smaller in this time than it had generally been in the 1970s. Also, the new policy stated that the Fed would let interest rates (particularly short-term rates) fluctuate far more freely than they had in the past. In fact, in late 1979 and through the early 1980s, rates of most maturities posted their highest levels in more than a hundred years and displayed a volatility that led to major changes in financial institutions and markets.

Back to the Fed Funds Rate, 1983 to 1991

The Fed did not remain committed to an aggregates policy very long.[7] By 1982, the tight monetary policy had banished the worst of the inflation, which seemed to reach a bottom of about 3% to 4%. Policymakers then faced the prospect of deflation and rising unemployment, which rose to around 10% in 1982. At the end of 1982, the Fed again let the monetary aggregates grow at a rather fast pace. Interest rates fell, employment rose, and economic growth resumed.

In 1983, the Fed adopted a new policy. This time, the Fed identified its operating target as the level of **borrowed reserves**, which are funds that the banks borrow from the Fed through its discount window. It is important to realize that the level of borrowed reserves in the banking system is closely and positively linked to the spread between the fed funds rate and the discount rate (the cost of borrowing at the discount window, which the Fed adjusts infrequently). When the fed funds rate goes up relative to the discount rate, all else being equal, the level of borrowed reserves rises because banks are more likely to borrow reserves from the Fed rather than from other banks. Thus, targeting borrowed reserves is equivalent to targeting the fed funds rate.

The Fed's policy beginning in 1983 was to keep the growth in borrowed reserves within some specified range. As a result, the Fed supplied reserves through open market purchases when borrowed reserves rose. Thus, the Fed was essentially supplying reserves when the fed funds rate rose. With this policy, the Fed was once more effectively targeting the fed funds rate,

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[7] Franco Modigliani, "The Monetarist Controversy Revisited," *Contemporary Policy Issues* (October 1988), pp. 3–18.

while neglecting changes in the monetary aggregates. In 1987, the Fed admitted that fact and ceased to set targets for growth in M_1, substantially widening the acceptable ranges for growth in the larger aggregates, such as M_2 and M_3. From 1983 to the early 1990s, the Fed's chief operating target was the level of the fed funds rate. In fact, at the end of 1991, the Fed dramatically lowered short-term rates in a publicly announced effort to stimulate the economy.

Two Developments in the Mid 1980s

In the mid 1980s, however, two developments of note occurred. The first was the need for the Fed, which it publicly acknowledged, to become concerned with the level and stability of the U.S. dollar's foreign currency exchange rate. The U.S. dollar exhibited dramatic strength through the early 1980s, which made American exports very expensive. In 1985, the Fed implemented an expansionary monetary policy (that is, a policy of expanding aggregates), which drove down the dollar's value. In September 1985, the United States (with the Fed's support) entered into the Plaza Agreement, which was a plan for international coordination of monetary policies by the United States, Great Britain, France, (West) Germany, and Japan. (The Louvre Accord in 1987 was another effort toward coordination.) The result of these actions was a fast decline in the value of the U.S. dollar, which the Fed tried to stabilize in 1987. In a sense, then, the U.S. dollar's exchange rate began to function as a kind of intermediate target for Fed policy.

The second development was the shocking fall in equity prices around the world in October 1987. The Fed's immediate response to the crisis was to provide all necessary liquidity. The fall in prices also brought to the fore the need for stability in the financial markets, and the Fed began to treat that as one of its key objectives.

The Same Policy, but with a Twist, 1991 to 1995

The Fed successfully reduced rates across the maturity spectrum, from 1992 to the outset of 1994. The fed funds rate fell to 3%, and the yield on 10-year government bonds was also low, touching 5.72% in December 1993. During 1992 and 1993, economic expansion occurred at a fairly steady rate, with a falling civilian unemployment rate, a growing real GDP, and a modest rate of consumer price inflation.[8]

However, the Fed's expectations regarding the economic environment underwent a change in February 1994. For the first time in two years, the Fed pressured the fed funds rate upward, moving it from 3% to 3.25%. The explanation was the Fed's growing concern that robust economic growth might, at some point in the relatively near future, spark price inflation. The Fed was not paying much attention to the monetary aggregates, but rather Chairman Alan Greenspan and the Federal Open Market Committee (FOMC) were watching the prices of sensitive commodities and the level of industrial capacity being utilized. Thus, the Fed was still targeting rates in order to manage economic activity and to bring about both price level stability and continued expansion. Eventually, the Fed was to nudge rates up seven more times until February 1995, when the fed funds rate reached 6% and the discount rate grew to 5.25% (from its early 1992 level of 3%). These actions had the desired effects: Interest rates on debt of short and long terms to maturities rose and the rate of growth in the economy fell to low but generally positive levels. In 1995, the Fed did not change its mind, and target levels of short-term rates in late 1995 were at their end-of-1994 heights.

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[8] "Monetary Policy and Open Market Operations during 1994," *Federal Reserve Bulletin* (June 1995), pp. 570–584.

B Fabozzi 4th-7(A)

The Last Half of the 1990s—Exploring the "New Paradigm"

Despite the seven Fed tightenings of 1994 and early 1995, the economy averted a recession and subsequently experienced strong and noninflationary growth. In fact, based on previous experience, economic growth was stronger than had been expected with little inflation. The explanation for this desirable strong growth–low inflation combination was the "new paradigm."

As of 1995, the conventional wisdom was that the maximum sustainable real GDP growth was approximately 2¼%, 1% due to increases in the labor force and 1¼% due to productivity increases. And (noninflationary) full employment was thought to be 5% to 5½%. During 1997/1998, with strong economic growth and unemployment decreasing below 4½%, Alan Greenspan and the Fed were faced with a dilemma: They had to decide whether to tighten monetary policy to slow economic growth, even though there were no inflationary forces, or to let the economy continue to grow at a rate that had been unsustainable by previous standards.

Greenspan and the Fed exhibited a combination of being cautious and experimental in their approach. Although their main policy tool was to change the fed funds rate (and to make public comments by Greenspan and other FOMC members), their approach was eclectic. They did not concentrate solely on the absolute level of the Fed funds rate, monetary aggregates, or commodity prices.

Greenspan decided to be vigilant but passive, and he permitted the economy to grow beyond what the "old paradigm" would have deemed feasible. In fact, the Fed eased the funds rate three times (by a total of 75 basis points) in 1998 due to a concern about a financial crisis. Another factor was a resulting global weakening due to the Russian default and the problem with a major hedge fund (Long-Term Capital Management) financial crisis.

Greenspan emphasized the traditional reasons for low inflation, including globalization (which reduced the pricing power of suppliers); the strong U.S. dollar; the U.S. trade deficit (by importing international goods, price pressures on U.S.–produced products were relieved); and immigration (which took pressure off domestic wage rates).

But the overriding explanation for this strong, noninflationary growth was a "new paradigm," which posited that productivity had increased due to the new technology and that accelerated capital expenditures were induced by the new technology. This *capital deepening* increased labor productivity and, thus, sustainable economic growth.

While the Fed was extremely tolerant of strong economic growth, it did enact six fed funds increases (from 4.75% to 6.50%) from June 1999 through May 2000. Overall, the Fed policy during this period could be described as nondoctrinaire, eclectic, and exploratory. For various reasons, Greenspan is credited with having orchestrated the longest postwar expansion, which began during April 1991 and continued until 2001.

In the U.S. stock market, the Fed witnessed the stock market bubble—or "irrational exuberance" as Greenspan called it—from 1995 to 1999. After growing by over 20% each year from 1995 through 1999 (reaching a peak of 1572 on March 24, 2000), the S&P 500 index declined each year from 2000 to 2002 (reaching a nadir of 777 on October 10, 2000), the "burst" of the bubble. In general, the Fed maintained a passive position during the bubble. Greenspan took the view that the role of the Fed was not to determine the correct level of the stock market.

As described earlier, during the last half of the 1990s, the Fed policy remained nondoctrinaire and eclectic. The Fed funds rate was the main (only) policy tool used. The money supply and reserve requirements were not used as policy tools.

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Overall during Greenspan's tenure there were two recessions, during 1991 and a very mild recession during 2001 after the 9/11 terrorist attack. The Fed also engineered one soft landing during 1994–1995. Greenspan's conduct during the stock market bubble was the subject of some controversy. During December 1996, Greenspan said:

> How do we know when irrational exuberance has unduly escalated asset values. We should not underestimate . . . the interaction of asset markets and the economy. Asset prices, particularly, must be an integral part of the development of monetary policy.

From the time of these comments, the Dow Jones Industrial Average would more than double in the ensuing three years. As a result, "irrational exuberance" became the often-quoted description of the stock market's behavior during these three years.

But while at the time of Greenspan's comments, the Fed funds rate was 5.25%, it was not until almost two years later the Fed began to increase the Fed funds rate, starting from a rate of 4.75% during November 1998. Some critics assert that the Fed should have started to tighten earlier and more strongly.

Subsequently, the Fed was quite active with respect to the Fed fund rate. From June 1999 through May 2000, the Fed enacted six Fed funds rate increases (from 4.75% to 6.50%) in response to the strong stock market and the market-supported economy.

With respect to foreign currencies, the birth of the euro was monumental. The euro is a common currency among 15 members of the European Union (Belgium, Germany, Greece, Spain, France, Ireland, Italy, Luxemburg, The Netherlands, Austria, Portugal, Cyprus, Malta, Slovenia, and Finland). The euro was born on January 1, 1999, when the participating countries established exchange rates between their currencies and the euro (the euro currency and coins were formally put into circulation on January 1, 2002).[9] After the advent of the euro, the Fed no longer needed to focus on the conversion of individual currencies, such as in France and Germany.

After presiding as chairman of the Fed from August 1979 until August 1987, Paul Volcker was succeeded by Alan Greenspan. Greenspan presided from August 1987 until his retirement in January 2006. The last six years of Greenspan's tenure were eventful.

The Beginning of the Twenty-First Century

The 21st century began with the peak of the stock market in March 2000. After the stock market reversed and the bubble began to burst, the Fed decreased the Fed funds rate from 6.5% to 1.0% beginning in May 2000 to successfully avert a recession induced by the stock market. Later that year, that decline in the Fed funds rate helped avert a recession that could have been induced by the 9/11 tragedy.

By mid 2004, the Fed funds rate was 1%, a level the Fed viewed as inappropriately stimulative given economic conditions. During June 2004, the Fed began a series of 17 consecutive 0.25% increases in the Fed funds rate, to increase the Fed funds rate to 5.25% during June 2006. These increases were well communicated to the markets by the Fed before they were enacted. The increases were regarded by the Fed to be "measured"—that is, small in magnitude—and "accommodating"—that is, not significantly constraining to the economy—and, thus, did not upset the markets. Finally, on August 8, 2006, after the last of the 17 consecutive easings, the Fed refrained from another Fed funds increase. Subsequent Fed funds

[9] The initial exchange rate versus the U.S. dollar was $1.17 per Euro.

changes were, thus, no longer to be implemented to achieve a preconceived new level but would be "data dependent." The Fed had considered the previous 1% Fed funds rate as well below the "neutral rate" and that the new 5.25% level, once achieved, was regarded as a long-term neutral level. As of early 2007, the Fed remained "on-hold" due to balanced concerns regarding inflation versus economic growth, and a desired position for the Fed.

During January 2006, Alan Greenspan retired and was replaced by Ben Bernanke, who had previously been the chairman of the President's Council of Economic Advisors from June 2005 to January 2006. Bernanke mainly continued Greenspan's policies but was viewed as being more open with respect to communication about the Fed's policy and open to promoting more open discussion at the FOMC meetings. In addition, Bernanke was expected to advocate a more quantitative approach to policy, as opposed to Greenspan's subjective, eclectic approach.[10]

Bernanke became chairman during the final 25 basis point increases in the Fed funds rate to 5.25% on June 29, 2006, and maintained this rate through the remainder of 2006 and the first half of 2007. This balance of concern between inflation and economic growth, however, shifted toward a concern about economic growth during August 2007 with the early signs of what became the subprime mortgage crisis.

Due to concerns about the economy, the Fed decreased the Fed funds rate by 50 basis points on September 18, 2007, (the first decrease by more than 25 basis points since May 2000) and then by 25 basis points on two different dates (October 31, 2007, and December 11, 2007). The urgency about the economy and the financial system continued to intensify and the Fed took the unusual action of decreasing the Fed funds rate by 75 basis points between regularly scheduled FOMC meetings on January 22, 2008, and then by 50 basis points at its next scheduled FOMC meeting on January 30, 2008.

While these actions and subsequent actions by the Fed were considered by many analysts to be quite aggressive, others considered the Fed's actions as "too little, too late." They asserted that the seeds of the subprime mortgage crisis were sown during 2003–2005 when the Fed maintained very low rates and reacted to the crisis too late and with too little.

The crisis continued during March 16–18, 2008, with the rescue of the investment banking firm Bear Stearns. The Fed again eased the Fed funds rate by 75 basis points to 2.25% (thus, the Fed funds rate was reduced from 5.25% to 2.25% between August 2007 and March 2008) but this was not the headline activity. During March 2008, there were concerns that a bankruptcy of Bear Stearns was imminent and would significantly increase the systemic risk of the financial system and the economy. This potential bankruptcy was based on some fundamental business issues at Bear Stearns, mainly its exposure to subprime mortgages, its high leverage, and, most urgently, that Bear Stearns was being rejected by dealers in the short-term loan markets (the repo market). The Fed and the Department of the Treasury, thus, engineered a rescue by J.P. Morgan. On Sunday, March 16, just before the global market opened, the Fed agreed to lend $30 billion to J.P. Morgan to complete its acquisition of Bear Stearns. The loan was secured by assets such as mortgage-backed securities inherited from Bear

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[10] See Jerry L. Jordan, "Money and Monetary Policy for the Twenty First Century," *Federal Reserve Bank of St. Louis Review* (November/December 2006), pp. 465–510; William Poole, "Understanding the Fed," *Federal Reserve Bank of St. Louis Review* (January/February 2007), pp. 3–13; Michael Ehrmann and Marcel Fratzscher, "Transparency, Disclosure, and the Federal Reserve," *International Journal of Central Banking*, Vol. 3, no. 1 (March 2007); and William Poole, "Data Dependence," *Federal Reserve Bank of St. Louis Review* (March/April 2007), pp. 77–81.

Stearns, which are difficult to value. If the assets deteriorated, the Fed would suffer the loss (and contrariwise the Fed would keep any gains).

This was the first time since the Great Depression that the Fed used its authority to lend to non-banks. This loan relied on a provision (Section 13(3)) of the Federal Reserve Act that gives the Fed the authority to lend, not just to banks, but to any corporation that cannot get credit elsewhere. It was last used in the 1930s when the Fed lent to small companies that were vulnerable during the banking crisis of the Great Depression.

During March 2008, the Fed introduced a new lending facility, called the Primary Dealer Credit Facility, for investment banks and securities dealers that would give them more ways to borrow against their securities holdings. The securities pledged by the investment banks, however, had to have market prices and investment-grade credit ratings. Loans could not be used. Commercial banks, on the other hand, traditionally borrowed from the Fed via a different borrowing facility, called the discount facility, wherein loans can be used. This new facility was used immediately.

As a result of this extreme problem and the Fed's strong response, the structure of the financial system—most importantly the relationships among the Fed, commercial banks, and investment banks—was being examined for a significant reform.

There were two key questions in the changes being considered in the financial regulatory structure. The first was whether the Fed should assess the risk across the financial markets regardless of the corporate form and to intervene (i.e., inject funds when appropriate). The second was whether, if the Fed was becoming the lender of last resort, it should become the regulator of last resort. If such changes occurred, the Fed would become the clear "top dog" among numerous financial regulators.[11]

Key Points That You Should Understand Before Proceeding

1. The Fed has numerous and complex goals related to conditions in the overall economy, which include price stability, high employment, economic growth, and stability in interest rates and the dollar's value in foreign currencies.
2. Policies that might further the attainment of one goal may make another difficult to realize.
3. The Fed is unable to realize its goals directly but must work through operating targets that it can affect and that, in turn, have some predictable influence on intermediate targets and the economy.
4. The Fed's operating targets have included the fed funds rate and various measures of reserves in the banking system; its primary tool has been open market operations.
5. Intermediate targets may include monetary aggregates, interest rates, or foreign currency exchange rates.
6. Keynesians adopt a monetary policy that largely calls for targeting short-term interest rates.
7. Monetarists adopt a monetary policy that largely calls for targeting reserves in order to achieve a steady growth in monetary aggregates.
8. The targets of Fed policy have changed several times in the past 25 years.

[11] See Robert M. Rasche and Marcela M. Williams, "The Effectiveness of Monetary Policy," *Federal Reserve Bank of St. Louis Review* (September/October 2007), pp. 447–480; William Poole, "Thinking Like a Central Banker," *Federal Reserve Bank of St. Louis Review* (January/February 2008), pp. 1–7; and William Poole, "Market Bailouts and the 'Fed Put,'" *Federal Reserve Bank of St. Louis Review* (March/April 2008), pp. 65–73.

SUMMARY

The goals of monetary policy include a stable price level, economic growth, high employment, stable interest rates, and predictable and steady currency exchange rates. Unfortunately, monetary policies involve difficult trade-offs, and policies that help to achieve one goal may make another less attainable.

Furthermore, the Federal Reserve has no direct control or influence on the complex economic variables that constitute the goals. Hence, it must identify intermediate targets that influence these variables and are, in turn, influenced by operating targets that are variables the Fed can control to a substantial extent. The intermediate targets may be interest rates, monetary aggregates, or possibly exchange rates. The level of bank reserves (borrowed or nonborrowed) and the level of the federal funds rate have served as operating targets from time to time since 1970. The Fed can effectively manage either this rate on interbank loans or the level of various measures of reserves by open market operations that control the flow of reserves to the banking system. However, the Fed cannot target both rates and reserves at the same time. Since 1970, the Fed's policy has alternated among targeting rates, targeting reserves, and an eclectic approach.

KEY TERMS

- Borrowed reserves
- Demand for money
- Discretionary
- Frictional unemployment
- Goal of monetary policy
- Intermediate target
- Keynesian
- Monetarism
- Nonborrowed reserves
- Operating target
- Stagflation

QUESTIONS

1. Name three widely accepted goals of monetary policy.
2. What keeps the Fed from being able to achieve its goals in a direct way?
3. Comment on this statement by an official of the Federal Reserve:

> [the Fed] can control nonborrowed reserves through open market operations [but] it cannot control total reserves, because the level of borrowing at the discount window is determined in the short run by the preferences of depository institutions.

Quoted from Alfred Broaddus, "A Primer on the Fed," Chapter 7 in Sumner N. Levine (ed.), *The Financial Analyst's Handbook* (Homewood, IL: Dow Jones-Irwin, 1988), p. 194.

4. Why is it impossible for the Fed to target, at the same time, both the Fed funds interest rate and the level of reserves in the banking system?
5. Explain the change in the Fed's targets that occurred with the 1979 Volcker announcement about inflation and the new Fed policy.
6. It is often said that you cannot hit two targets with one arrow. How does this comment apply to the use of monetary policy to "stabilize the economy"?
7. Describe the differences and similarities of the conduct of Chairmen Greenspan and Bernanke in managing Fed policy.

8. What are tools and responsibilities of the Fed in monitoring and affecting the level of the stock market?
9. Interpret the following, the concluding sentence in "The Effectiveness of Monetary Policy," by Robert M. Rasche and Marcela M. Williams, appearing in the *Federal Reserve Bank of St. Louis Review*, (September/October 2007), p. 477:

> Finally, the case for consistently effective short-run monetary stabilization policies is problematic—there are just too many dimensions to uncertainty in the environment in which central banks operate.



Insurance Companies

LEARNING OBJECTIVES

After reading this chapter, you will understand

- the nature of the business of insurance companies
- the differences between the nature of the liabilities of life insurance companies and those of property and casualty insurance companies
- the different types of life insurance policies
- the different types of property and casualty insurance policies
- the types of assets in which life insurance companies and property casualty insurance companies invest
- the forms of insurance companies: stock and mutual
- the regulation of insurance companies
- recent changes in the insurance business and the factors contributing to those changes

Insurance companies provide (sell and service) insurance policies, which are legally binding contracts for which the policyholder (or owner) pays insurance premiums According to the insurance contract, insurance companies promise to pay specified sums contingent on the occurrence of future events, such as death or an automobile accident. Thus, insurance companies are risk bearers. They accept or underwrite the risk in return for an insurance premium.

The major part of the insurance company underwriting process is deciding which applications for insurance they should accept and which ones they should reject, and if they accept, determining how much they should charge for the insurance. This is called the underwriting process. For example, an insurance company may not provide life insurance to someone with terminal cancer or automobile insurance to someone with numerous traffic violations. And in some cases, they may provide different classes of insurance with different

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premiums. For example, the company may insure but charge a smoker a larger premium for life insurance than a nonsmoker; and insure someone with a mediocre driving record, but charge more for automobile insurance than an individual with a better driving record. The underwriting process is critical to an insurance company.

Because insurance companies collect insurance premiums initially and make payments later *when* (e.g., the insured person's death) or *if* (e.g., an automobile accident) an insured event occurs, insurance companies maintain the initial premiums collected in an investment portfolio, which generates a return. Thus, insurance companies have two sources of income: the initial **underwriting income** (the insurance premium) and the investment **income**, which occurs over time. The investment returns result from the investment of the insurance premiums until the funds are paid out on the policy. The premium is a fairly stable type of revenue. Investment returns, however, may vary considerably with the performance of the financial markets.

The payments on the insurance policies are the major expense of the insurance company. These payments vary among the different types of insurance policies and companies. The payments may be very unstable, depending on the type of insurance. Another major type of expense is the operating expense of the insurance company. This expense tends to be quite stable.

Insurance companies' profits, thus, result from the difference between their insurance premiums and investment returns on the one hand, and their operating expense and insurance payments or benefits on the other. The type of risk insured against, which defines the type of premium collected and benefit paid, defines the insurance company. Table 1 summarizes the major risks that insurance companies will insure, many of which are elaborated on in this chapter.

Key Points That You Should Understand Before Proceeding

1. Insurance companies bear risk in return for a fee called the premium.
2. Deciding which risks to underwrite and how much to charge for bearing those risks is critical to an insurance company.

TYPES OF INSURANCE

Life Insurance

For life insurance, the risk insured against is the death of the "insured." The life insurance company pays the beneficiary of the life insurance policy in the event of the death of the insured. There are several types of life insurance, which will be examined later in this chapter.

Health Insurance

In the case of health insurance, the risk insured is medical treatment of the insured. The health insurance company pays the insured (or the provider of the medical service) all of a portion of the cost of medical treatment by doctors, hospitals, or others. This type of insurance has undergone significant changes in the past two decades. As a result, there has been a significant restructuring of the health industry, whereby the largest health insurance companies specialize

Table 1 Lines of Life Insurance Companies

LIFE INSURANCE
- Term Insurance
- Whole Life
  - Fixed
  - Variable
- Universal Life
- Second to Die (Survivorship)

OTHER INSURANCE
- Liability
- Umbrella
- Disability
- Long-Term Care

STRUCTURED SETTLEMENTS

INVESTMENT-ORIENTED PRODUCTS
- Guaranteed Investment Contracts (GICs)
- Annuities
  - Fixed
  - Variable
- Mutual Funds

HEALTH INSURANCE
- Medical
  - Indemnity
  - HMO/PPO/etc.
- Dental
- Other

PROPERTY AND CASUALTY
- Property
  - Automobile
  - House
  - Other
- Liability
- Other

MONOLINE INSURANCE

in health insurance rather than sell health insurance in addition to other products, such as life insurance.

Until the past decade, the major type of health insurance available was *indemnity insurance*. According to indemnity insurance, the insurance company agrees to indemnify (reimburse) the insured for covered medical and hospital expenses. That is, the insurance company pays the medical provider (doctor, hospital, etc.) for the medical services provided to the insured. The provider is selected by the insured and can provide whatever service the provider deems appropriate.

Very often there is an annual minimum amount below which the issuer does not pay for the service, but the insured pays (a *deductible*). Typically, there is also a copayment (a "co-pay") required by the insured. For example, the insured pays 20% of the charge for the service and the insurer pays the other 80%.

Due to the lack of constraints and incentives for cost savings, the medical service insured by indemnity insurance became very expensive. In response, various forms of managed health care have been developed. In general, these forms of managed health care put constraints on the choice of the provider (doctor or hospital) by the insured and on the types of service provided by the provider. The various types of managed care, including health maintenance organizations (HMOs), preferred provider organizations (PPOs), and point of service organizations (POSs), are too diverse and complex to be considered here. It is accurate to assert, however, that no widely acceptable method has yet evolved. While

indemnity insurance is still provided on both an individual and group basis, the various forms of *managed care* have become common.

There have been and continue to be nonprofit providers of health insurance, such as Blue Cross and Blue Shield, and federal government providers of health insurance, such as Medicare and Medicaid, as well as for-profit health care providers.

The two major classes of medical expense benefits are

Basic coverage: traditional hospital, surgical, and regular expense coverage; and
Major medical: designed to reduce the financial burden of heavy medical expenses resulting from catastrophic or prolonged illness or injury.

Property and Casualty Insurance

The risk insured by **property and casualty (P&C) insurance companies** is damage to various types of property. Specifically, it is insurance against financial loss caused by damage, destruction, or loss to property as the result of an identifiable event that is sudden, unexpected, or unusual. The major types of such insurance are

- a house and its contents against risks such as fire, flood, and theft (homeowners insurance and its variants)
- vehicles against collision, theft, and other damage (automobile insurance and its variants)

Liability Insurance

With liability insurance, the risk insured against is litigation, or the risk of lawsuits against the insured due to actions by the insured or others. Liability insurance offers protection against third-party claims, that is, payment is usually made to someone who experiences a loss and who is not a party to the insurance contract, not to the insured.

Umbrella Insurance

Typically, umbrella insurance is pure liability coverage over and above the coverage provided by all the policies beneath it, such as homeowner, automobile, and boat policies. The name *umbrella* refers to the fact that it covers liability claims of all the policies underneath it. In addition to providing liability coverage over the limits of the underlying policies, it provides coverage for claims that are excluded from other liability policies such as invasion of privacy, libel, and false arrest. Typically, users of umbrella policies have a large amount of assets that would be placed at risk in the event of a catastrophic claim.

Disability Insurance

Disability insurance insures against the inability of employed persons to earn an income in either their own occupation ("own occ" disability insurance) or any occupation ("any occ"). Typically, "own occ" disability insurance is written for professionals in white-collar occupations (often physicians and dentists) and "any occ" for blue-collar workers. Another distinction in disability insurance is the sustainability of the policy. Regarding sustainability, there are two types of policies. The first is *guaranteed renewable* (or guaranteed continuable) whereby the issuer has to sustain the policy for the specified period of time and the issuer cannot make any changes in the policy except that it can change the premium rates for the entire class of policy (but not an individual policyholder). The other type is noncancellable

and guaranteed renewable (or simply *noncancellable*), whereby the issuer has no right to make any change in any policy during the specified period. Disability insurance is also divided between short-term disability and long-term disability, with six months being the typical dividing time.

Long-Term Care Insurance

As individuals have been living longer, they have become concerned about outliving their assets and being unable to care for themselves as they age. In addition, custodial care for the aged has become very expensive and is not covered by Medicare. Thus, there has been an increased demand for insurance to provide custodial care for the aged who are no longer able to care for themselves. This care may be provided in either the insured's own residence or a separate custodial facility. Many types of long-term care insurance are available.

Structured Settlements

Structured settlements are fixed, guaranteed periodic payments over a long period of time, typically resulting from a settlement on a disability policy or other type of insurance policy. For example, suppose an individual is hit by an automobile and, as a result, is unable to work for the rest of his or her life. The individual may sue the P&C company for future lost earnings and medical care. To settle the suit, the P&C companies may agree to make specified payments over time to the individual. The P&C company may then purchase a policy from a life insurance company to make the agreed-upon payments.

Investment-Oriented Products

Insurance companies have increasingly sold products that have a significant investment component in addition to their insurance component. The first major investment-oriented product developed by life insurance companies was the **guaranteed investment contract** (**GIC**). According to a GIC, a life insurance company agrees, in return for a single premium, to pay the principal amount and a predetermined annual **crediting rate** over the life of the investment, all of which are paid at the maturity date of the GIC. For example, a $10 million five-year GIC with a predetermined crediting rate of 10% means that at the end of five years the insurance company pays the guaranteed crediting rate and the principal. The risk to the customer is that the return of the principal depends on the ability of the life insurance company to satisfy the obligation, just as in any corporate debt obligation. The risk that the insurer faces is that the rate earned on the portfolio of supporting assets is less than the guaranteed rate paid to the customer.

The maturity of a GIC can vary from one year to 20 years. The interest rate guaranteed depends on market conditions and the rating of the life insurance company. The interest rate will be higher than the yield on U.S. Treasury securities of the same maturity. These policies are purchased by individuals and by pension plan sponsors as a pension investment.

A GIC is nothing more than the debt obligation of the life insurance company issuing the contract. The word *guarantee* does not mean that there is a guarantor other than the life insurance company. Effectively, a GIC is a zero coupon bond issued by a life insurance company and, as such, exposes the investor to the same credit risk. This credit risk has been

highlighted by the default of several major issuers of GICs. The two most publicized were Mutual Benefit, a New Jersey–based insurer, and Executive Life, a California-based insurer, which were both seized by regulators in 1991.

Annuity

Another insurance company investment product is an annuity. An **annuity** is often described as "a mutual fund in an insurance wrapper." What does this mean? To answer this question, assume that an insurance company investment manager has two identical common stock portfolios, one in a mutual fund and the other in an annuity. On the mutual fund, all income (that is, the dividend) is taxable, and the capital gains (or losses) realized by the fund are also taxable, although at potentially different tax rates. The income and realized gains are taxable whether they are withdrawn by the mutual fund holder or reinvested in the fund. There are no guarantees associated with the mutual fund; its performance depends solely on the portfolio performance.

Because of the insurance wrapper, discussed below, the annuity is treated as an insurance product and as a result receives a preferential tax treatment. Specifically, the income and realized gains are not taxable if not withdrawn from the annuity product. Thus, the "inside buildup" of returns is not taxable on an annuity, as it is also not on other cash value insurance products. At the time of withdrawal, however, all the gains are taxed at ordinary income rates.

The "insurance wrapper" on the mutual fund that makes it an annuity can be of various forms. The most common "wrapper" is the guarantee by the insurance company that the annuity policyholder will get back no less than the amount invested in the annuity (there may also be a minimum period before withdrawal to get this benefit). Thus, if an investor invests $100 in a common stock–based annuity and at the time of withdrawal (or at the time of death of the annuity holder) the annuity has a value of only $95, the insurance company will pay the annuity holder (or its beneficiary) $100. Many other types of protection or insurance features have also been developed.

Of course, insurance companies impose a charge for this insurance benefit—an insurance premium for the insurance component of the annuity. Thus, while mutual funds have an expense fee imposed on the fund's performance, an annuity has a *mortality and expense (M&E) fee* imposed. Annuities are, therefore, more expensive to the investor than mutual funds. In return, annuity policyholders get the insurance wrapper, which provides the tax benefit. Annuities can be either fixed annuities, similar to GICs, or variable annuities whose performance is based on the return of a common stock or bond portfolio.

Mutual funds and annuities distributed by insurance companies may have their investments managed by the insurance company investment department or by external investment managers, as discussed in the next section.

Key Points That You Should Understand Before Proceeding

1. Life, property/casualty, and health are among the important categories of risks that insurance companies specialize in.
2. Insurance companies also sell investment products such as GICs (which are essentially zero coupon bonds) and annuities ("mutual funds in an insurance wrapper").

Monoline Insurance Companies

A very different type of insurance is monoline insurance. Monoline insurers guarantee the timely repayment of the bond principal and interest when a bond insurer defaults on these payments. Monoline insurers are called "monoline" because they provide their insurance services to only one industry, the capital markets. The insured securities have traditionally been municipal bonds, but they now include structured finance bonds, collateralized debt obligations (CDOs), collateralized loan obligations (CLO), asset-backed bonds, and other related products that we describe in later chapters in this book.

Monoline insurance companies make debt service payments on these bonds when the issuers cannot. Multiline insurance companies, on the other hand, often require a lengthy claims and submission and adjustment process.

Monoline insurance has existed since the 1970s. Ambac Financial Group Inc. began in 1971 and MBIA Inc. (previously the Municipal Bond Insurance Association) began in 1973. The Capital Markets Assurance Corporation was founded in 1987 primarily to insure asset-backed securities. In late 2007, Warren Buffett's Berkshire Hathaway Assurance entered the monoline insurance business for municipal bonds only. This entry was intended to capitalize on the subprime loan crisis.

Monoline insurers have been rated AAA and must have this high rating to be effective since they transfer their rating to the bond issue being insured. The insurers collect an insurance fee from issuers for providing insurance on their bonds; this insurance allows the bond issues to be rated AAA. The issuer then saves financing costs by issuing a AAA rated bond instead of a bond with their own lower rating. This savings exceeds the fee they pay for the insurance, providing a gain to the issuer. The monoline insurer insures many different bonds and by this diversification reduces the risk and the total cost of insuring these bonds.

Bond insurance has become an integral part of the capital markets, particularly in the municipal market wherein historically approximately one-half of municipal bonds have been insured.

INSURANCE COMPANIES VERSUS TYPES OF PRODUCTS

Whereas in concept these various types of insurance could be combined in different ways in actual companies, traditionally they have been packaged in companies in similar ways. Traditionally, life insurance and health insurance have occurred together in a *life and health insurance company* (L&H company). And property and casualty insurance have been combined in a P&C insurance company. Companies that provide insurance in both insurance products are called **multiline insurance companies**. Investment products tend to be sold by life insurance companies, not P&C companies. Tables 2 and 3 provide the 10 largest life insurance companies and P&C companies, respectively.

There have been some recent changes in the combinations of products by type of company, however. Health insurance has predominately, but not completely, separated from life insurance and become a separate industry. This change has been due mainly to federal regulation of the health insurance industry. Life insurance companies have also increasingly offered investment-oriented products, both annuities, variable and fixed, and mutual funds. Disability insurance is now sold primarily by pure disability companies but is also offered by some life insurance companies. Long-term care insurance is a fairly new line of

Table 2 Top 10 U.S. Life Insurance Companies

Company	12/31/07 Invested Assets ($000s)
1. Metropolitan Life Insurance Company	209,923,708
2. Teachers Insurance and Annuity Association of America	174,435,318
3. Prudential Insurance Company of America	148,745,800
4. Northwestern Mutual Life Insurance	131,563,104
5. New York Life Insurance Company	104,765,167
6. Massachusetts Mutual Life Insurance	74,280,405
7. American Life Insurance Company	62,806,167
8. Lincoln National Life Insurance	60,611,954
9. Principal Life Insurance Company	58,440,982
10. Allstate Life Insurance Company	56,871,650

Source: *ALIRT Insurance Research, LLC.*

Table 3 Top 10 U.S. Property & Casualty Insurance Companies

Company	12/31/07 Invested Assets ($000s)
1. State Farm Mutual Auto Insurance Company	99,103,876
2. National Indemnity Company	71,769,233
3. Allstate Insurance Company	39,953,260
4. Continental Casualty Company	34,431,958
5. Liberty Mutual Insurance Company	29,368,315
6. National Union Fire Insurance Company of Pittsburgh	27,710,067
7. Federal Insurance Company	26,690,512
8. Zurich American Insurance Company	24,244,071
9. State Farm Fire and Casualty Company	23,782,417
10. Nationwide 3Mutual Insurance Company	23,036,571

Source: *ALIRT Insurance Research, LLC.*

business and is offered by different types of companies, but mainly life insurance companies. In terms of specific product offerings, most companies are unique with respect to the combination of products they offer and how they offer them.

Key Points That You Should Understand Before Proceeding

1. Traditionally, L&H insurers have been distinct from P&C insurers. A few multiline insurers provide both types of insurance.
2. Increasingly, among L&H insurers, life, health, and disability insurance are being provided by separate companies.

FUNDAMENTALS OF THE INSURANCE INDUSTRY

A fundamental aspect of the insurance industry results from the relationship between revenues and costs. A bread manufacturer purchases its ingredients, uses these ingredients to make bread, and then sells the bread, all over a fairly short time frame. Therefore, the bread manufacturer's profit margin is easily calculated.

An insurance company, on the other hand, collects its premium income initially and invests these receipts in its portfolio. The payments on the insurance policy may occur much later and, depending on the type of insurance, may occur in a very unpredictable manner. Consequently, the payments are contingent on potential future events. For example, with respect to life insurance, it is certain that everyone will die. However, it is not known when any individual will die. The timing of the payment on any specific life insurance policy is, thus, uncertain. Although the payments on any single life insurance policy is uncertain, statisticians or actuaries can predict the pattern of deaths on a large portfolio of life insurance policies. Thus, while the payment on a single life insurance policy is uncertain, statistically the payment pattern on a portfolio of life insurance policies is less uncertain. And for a large portfolio of life insurance policies, the individual deaths are uncorrelated. At the other extreme, whereas payments on home insurance against hurricanes are singularly uncertain, the payments on a portfolio of homes are also uncertain. And payments on hurricane insurance are correlated with each other. If one house in South Florida is destroyed by a hurricane, for example, it is likely that many others will also be destroyed.

Thus, there are two very important differences between calculating profitability of bread manufacturers and insurance companies. The first is that the timing and magnitude of the payments are much less certain for an insurance company. The second is that there is a long lag between the receipts and payments for an insurance company, which introduces the importance of the investment portfolio.

These differences in the providers of bread and insurance lead to differences in the way consumers of bread and insurance view their providers. Purchasers of bread are not harmed if the bread manufacturer goes bankrupt the day after they buy the bread. However, while the purchaser of bread receives the bread immediately, the purchaser of insurance receives the payment on his or her insurance policy in the future and, thus, must be concerned about the continued viability of the insurance company. Therefore, the credit rating of an insurance company is important to a purchaser of insurance, especially for the types of insurance that may be paid well into the future, such as life insurance.

Key Points That You Should Understand Before Proceeding

1. The timing and magnitude of payouts to policyholders are highly uncertain for an insurance company.
2. Due to the lag between the premium receipts and policy payouts, the return on the investment portfolio is critical to an insurance company's profitability.

REGULATION OF THE INSURANCE INDUSTRY

According to the McCarran Ferguson Act of 1945, the insurance industry is regulated by the individual states, not the federal government. However, there has been increasing discussion of federal regulation. Insurance companies whose stock is publicly traded are also regulated by the Securities and Exchange Commission (SEC).

Model laws and regulations are developed by the **National Association of Insurance Commissioners** (NAIC), a voluntary association of state insurance commissioners, for application to insurance companies in all states. Although the adoption of a model law or regulation by the NAIC is not binding on any state, states typically use these as a model when writing their own laws and regulations.

Insurance companies may also be rated by the rating agencies (Moody's, Standard & Poor's, A.M. Best, Fitch, and others) for both their "claims paying ability" and their debt outstanding, if any. Public insurance companies (discussed below) are also evaluated by equity analysts who work at investment banks and brokers or dealers, with respect to the attractiveness of their outstanding common stock.

The relationship between the premium revenues and the eventual contingent contractual insurance policy payments affects an important aspect of evaluating insurance companies. Insurance companies are monitored by their accountants and auditors, their rating agencies, and their government regulators. These monitors of the insurance companies are concerned about the financial stability of the insurance companies due, among other issues, to the lack of synchronicity between premiums and insurance policy payments and also the volatility of the payments. To assure financial stability, these monitors require insurance companies to maintain reserves or **surplus**, which are the excess of assets over liabilities. These reserves or surpluses are defined differently by regulators and accountants and have different names. Because for regulatory purposes, the treatment of both assets and liabilities is established by the state statutes covering the insurance company, surplus, by this measure, is called **statutory surplus** (or **reserves**) or STAT surplus. **Generally accepted accounting principles** (GAAP) **surplus** (or reserves) are defined by accountants for their purposes. While statutory and GAAP reserves are measured differently, their purposes are similar, although not identical.

Although specifying the definition of the assets is straightforward, defining liabilities is difficult. The complication in determining the value of liabilities arises because the insurance company has committed to make payments at some time in the future, and those payments are recorded as contingent liabilities on its financial statement. The reserves are simply an accounting entry, not an identifiable portfolio.

Statutory surplus is important because regulators view this as the ultimate amount that can be drawn upon to pay policyholders. The growth of this surplus for an insurance company also determines how much future business it can underwrite.

Key Points That You Should Understand Before Proceeding

1. Insurance companies are regulated by the individual states, typically using the laws developed by the NAIC as a model. They may also be rated by debt rating agencies.
2. Insurance companies whose stock is publicly traded are also regulated by the SEC, and perhaps evaluated by equity analysts.
3. The surplus (i.e., the excess of assets over liabilities) of an insurance company is measured differently for statutory and GAAP purposes, and is an important indicator of its financial standing.

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STRUCTURE OF INSURANCE COMPANIES

Based on the previous discussion, insurance companies are really a composite of three companies. First, there is the "home office" or actual insurance company. This company designs the insurance contract ("manufactures" the contract) and provides the backing for the financial guarantees on the contract, that is, assures the policyholder that the contract will pay off under the conditions of the contract. This company is called the *manufacturer* and *guarantor* of the insurance policy. Second, there is the investment component that invests the premiums collected in the investment portfolio. This is the *investment company*.

The third element of an insurance company is the *distribution component* or the sales force. There are different types of distribution forces. First, there are the *agents* who are associated with the company. Agents sell only or mainly the company's own manufactured products. These agents typically are not employees of the company (although some companies also use employees as salespeople), but entrepreneurs financially associated with the company. There are also *brokers* who are not associated with any company but sell the insurance products of many companies. Brokers have traditionally operated individually but are increasingly operating in groups called *producer groups*. As deregulation progresses, commercial banks have also become a natural means of distribution for insurance and investment products. Banks are averse to "manufacturing" insurance products because of their inexperience; the risk borne by manufacturing insurance products; and the long payback period of some insurance products. On the other hand, insurance companies are attracted by commercial bank customer contacts. As a result, commercial bank distribution of insurance company products has grown considerably. This relationship is called bankassurance. More recently, the Internet has also been used by some insurance companies to distribute insurance products directly to clients. Internet distribution is very new and has considerable potential but is still in its infancy. This mode of distribution has been most successful in the more commodity-like insurance products, such as term life insurance and automobile insurance.

These three components of insurance companies traditionally have been combined in one overall company, but they are increasingly being separated and the three functions are being provided by different companies. First, as previously mentioned, many insurance companies use independent brokers or producer groups to distribute their products rather than their own agents. Many companies no longer have their own agents and sell all their products exclusively through brokers, producer groups, or on the Internet. Second, insurance companies are increasingly outsourcing parts of their investment portfolio or even the entire portfolio to external independent investment managers. Investment managers are also increasingly diversifying, that is, not specializing in managing any one type of assets such as pension fund assets, mutual funds, or insurance company assets, but managing several or all of them, including insurance company assets. Third, while the home office component of an insurance company seems to be the core of the insurance company, some home offices use external actuarial firms to design their contracts. And, more importantly, they may *reinsure* some or all of the liabilities they incur in providing insurance. According to the reinsurance transaction, the initial insurer transfers the risk of the insurance to another company, the **reinsurer**. There is an industry of reinsurers who accept the risk incurred by the primary insurance company. The financial guarantee on the insurance policy is, thus, provided by the reinsurer rather than the insurance company that originally provided or "wrote" the policy.

Given this fragmentation of functions in an insurance company, there has been discussion of a "virtual insurance company," whereby a small group of executives in the home office have external actuarial firms design the contract; reinsure all the insurance policies written; outsource all the investments; and use brokers to distribute their products. Some insurance companies are currently approaching being a virtual insurance company.

Key Points That You Should Understand Before Proceeding

1. The three key components of an insurance company are the design and financial guarantee of the insurance contract; the distribution of the product; and the investment of the premiums collected.
2. Traditionally, these components have been combined in a single company, but increasingly separate companies are performing these functions.

FORMS OF INSURANCE COMPANIES: STOCK AND MUTUAL

There are two major forms of life insurance companies: stock and mutual. A stock insurance company is similar in structure to any corporation or public company. Shares (of ownership) are owned by independent shareholders and are traded publicly. The shareholders care only about the performance of their shares, that is, the stock appreciation and the dividends. Their holding period and, thus, their view may be short term. The insurance policies are simply the products or business of the company.

In contrast, **mutual insurance companies** have no stock and no external owners. Their policyholders are also their owners. The owners, that is, the policyholders, care primarily or even solely about the performance on their insurance policies, notably the company's ability to pay on the policy. Since these payments may occur considerably into the future, the policyholders' view may be long term. Thus, while stock insurance companies have two constituencies, their stockholders and their policyholders, mutual insurance companies only have one, since their policyholders and their owners are the same. Traditionally the largest insurers have been mutual, but recently there have been many *demutualizations*, that is, conversions by mutual companies to stock companies.

The debate on which is the better form of insurance company, stock or mutual, is too involved to be considered in any depth here. However, consider selected comments on this issue. First, consider this issue from the perspective of the policyholder or perhaps the rating agency or regulator, not from the point of view of the insurance company. Mutual holding companies have only one constituency, their policyholder or owner. The liabilities of many types of insurance companies are long term, especially the writers of life insurance. Thus, mutual insurance companies can appropriately have a long time horizon in their strategies and policies. They do not have to make short-term decisions to benefit their shareholders, whose interests are usually short term, via an increase in the stock price or dividend, in a way that might reduce their long-term profitability or the financial strength of the insurance company. In addition, if the insurance company makes profits it can pass them on to its policyholders via reduced premiums. (Policies that benefit from an increased profitability of the insurance company are called *participating policies*, as discussed in the following text.) These increased profits do not have to accrue to stockholders because there are none.

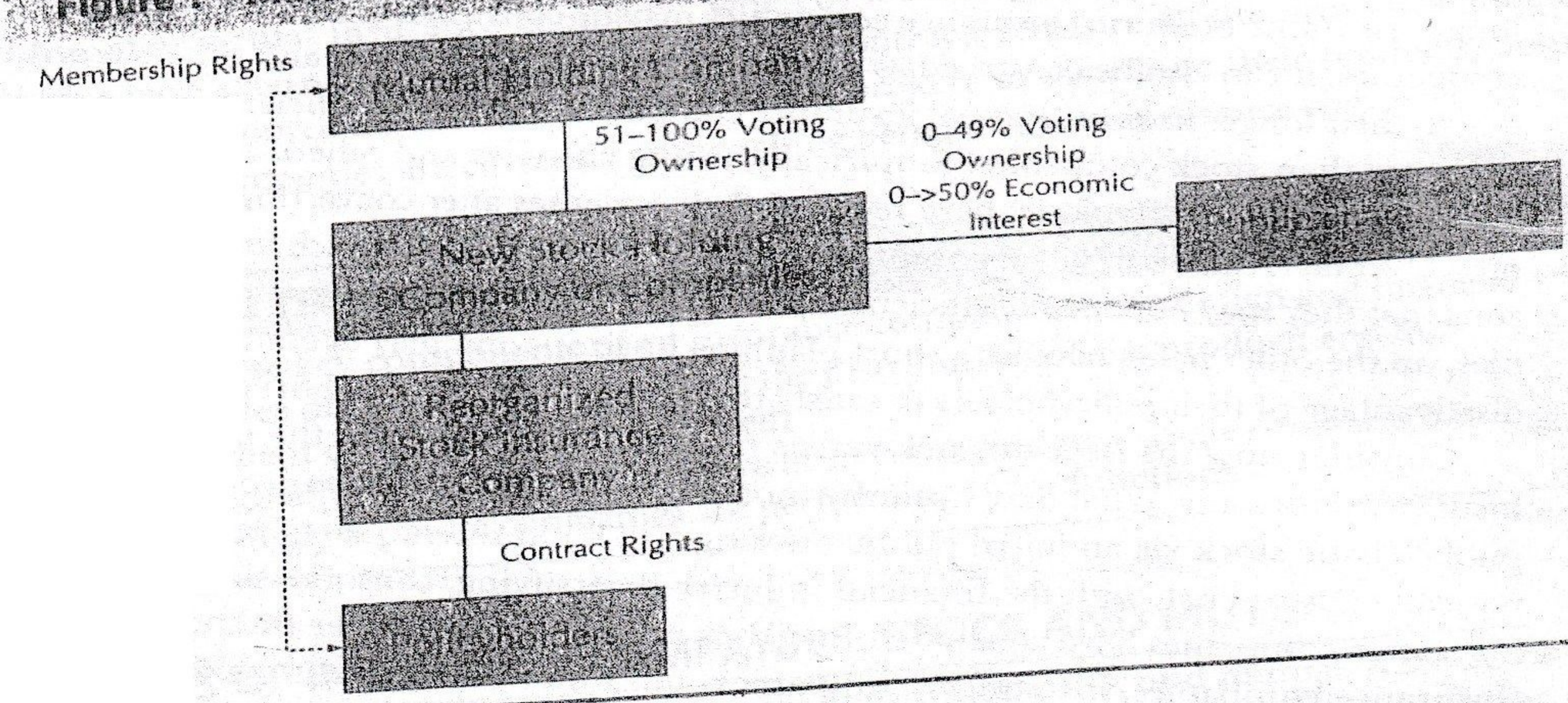
Finally, mutual insurance companies can adopt a longer time frame in their investments, which will most likely make possible a higher long-term return. Mutual insurance companies, for example, hold more common stock in their investment portfolios. However, whereas the long time frame of mutual insurance companies may be construed as an advantage over stock companies, it can also be construed as a disadvantage. Rating agencies and others assert that, due to their longer horizon, mutual insurance companies may be less efficient and have higher expenses than stock companies. Empirically, rating agencies and others assert that mutual insurance companies typically have reduced their expenses after converting to stock companies. Overall, it can be argued that mutual insurance companies have such long planning horizons that they may not operate efficiently, particularly with respect to expenses. Stock companies, on the other hand, have very short planning horizons and may operate to the long-term disadvantage of their policyholders to satisfy their stockholders in the short run.

Consider now the issue of stock versus mutual companies from the perspective of the insurance company. What have been the motivations of mutual insurance companies to go public (issue stock via an initial public offering [IPO]) in recent years? Several reasons are typically given. First, with the financial industry diversifying, consolidating, and growing, insurance companies have concluded that they need to acquire other financial companies (insurance companies, investment companies, and other financial companies) to prosper or even survive. To conduct these acquisitions they have to have capital. Mutual companies cannot, by definition, issue stock and are limited in the amount of public debt they can issue—mutual insurance companies issue public debt via "surplus notes." In addition, internal surplus has been growing slowly for the insurance industry. Thus, many insurance companies have concluded that to expand as quickly as they deem essential, they have to be able to raise equity capital and, thus, go public. Second, some mutual insurance companies and their advisors believe that, at least at some times, stock is a better "acquisition currency" than cash (typically for reasons of taxes and financial accounting), even if the mutual insurance company has enough cash for the acquisition. Finally, company stock and stock options have become a more important form of incentive compensation in many industries, and many insurance companies have concluded that to attract, retain, and motivate the desired executives, they need public stock in their companies.

Whereas many mutual insurance companies go public for these reasons, other mutual insurance companies continue to prosper as mutuals. And while stock insurance companies can raise capital to acquire other companies, they also become vulnerable to being acquired by other companies. Mutual companies cannot be involuntarily acquired.

A new form of insurance company, which is a hybrid between a pure mutual and a pure stock company, has been approved by some states and implemented by some insurance companies in these states since their introduction in 1996. This form is called a mutual holding company (MHC). According to the MHC structure, the upstream holding company is a mutual company (that is, there is no stockholder ownership) and also a holding company (that is, a mutual holding company but not an insurance company). Under the MHC structure, the mutual company forms a stock subsidiary and contributes some or all of its operating businesses to the subsidiary. Policyholders retain membership rights in the mutual holding company and contractual rights in the operating subsidiary. Up to 49.9% of the subsidiary's voting interest can be sold to the public to raise primary capital. The mutual holding company continues to hold a majority ownership in the downstream insurance company. The structure of an MHC is shown in Figure 1.

Figure 1 Mutual Holding Company—Corporate Structure



The participating life insurance is written by the downstream public life insurance company. Since the MHC board of directors has majority ownership of the life insurance company, it can and legally must operate the company in the best interests of the participating policyholders. Among the advantages of the MHC are

access to external funds, including equity
creation of acquisition currency, that is, common stock (which may be superior to cash for acquisitions)
expansion into new nonparticipating lines of business with these funds
retention of majority control of an insurance company
management ownership provides incentives to attract and retain top management

There are also tax advantages to a mutual insurance company becoming an MHC.

MHC laws have been approved by only a few states, and even where approved, the laws vary widely by state. The experience with MHCs is not yet sufficient to assess whether this form will be a viable and growing form of life insurance company structure. In fact, the Principal Financial Group, which converted from a mutual to an MHC during 1998, converted to a stock company.

Key Points That You Should Understand Before Proceeding

1. In terms of ownership, there are two main forms of insurance companies: stock and mutual. A hybrid form, the mutual holding company, has been approved in some states.
2. Traditionally, insurance companies have been mutual, but they are increasingly demutualizing due to the perceived benefits of having a publicly traded stock.

INDIVIDUAL VERSUS GROUP INSURANCE

All the insurance products mentioned in this chapter are sold to individuals. Some insurance products are also sold to groups, typically to the employees of specific companies through their employers, or educational, medical, or other professional associations. Among the major types of products distributed to groups are term life insurance, whole life insurance, medical insurance, disability insurance (short-term and long-term), and investment products such as mutual funds, annuities, and 401(k) products.

Insurance companies often have different distribution systems for individual and group products. They are typically different because individual product distributors deal with individuals and small company owners, and group product distributors deal with human resource departments of corporations and other organizations. In the P&C business, there is also a similar distinction between *personal lines of business* and *commercial lines of business.* Some P&C companies focus mainly or solely on personal lines such as automobile and homeowners insurance; others focus on commercial lines such as business property and liability insurance.

Key Point That You Should Understand Before Proceeding
1. Insurance products may be sold either to individuals (e.g., life, automobile) or to groups (e.g., disability, business property).

TYPES OF LIFE INSURANCE

This section elaborates on the types of life insurance products introduced earlier. There are two fundamentally different types of life insurance: **term life insurance** and **cash value life insurance.**

Term Insurance

Term insurance is *pure life insurance.* If the insured dies while the policy is intact, the beneficiary of the policy receives the death benefit. If the insured does not die within the period, the policy is invalid and has no value. There is no cash value or investment value for a term insurance policy. In addition, the policyholder cannot borrow against the policy.

With respect to the premium paid, there are two different types of term policies. The first is *level term.* For this type, the premium is constant over the life of the policy. For example, for a 10-year term policy, the premium will be the same for each of the 10 years. Obviously, given the increasing probability of dying with age, the insured overpays early in the life of the policy and underpays late in the policy's life. The second type is *annual renewable term,* whereby the policy provides guaranteed protection over the term of the policy (e.g., 10 years), but at an increasing premium. However, a maximum premium schedule is provided.

Cash Value or Permanent Life Insurance

There is a broad classification of life insurance, which is cash value or permanent or investment-type life insurance. A common type of cash value life insurance is called **whole life insurance.** In addition to providing pure life insurance (as does term insurance), whole life

insurance builds up a cash value or investment value inside the policy. This cash value can be withdrawn and can also be borrowed against by the owner of the policy. Or, if the owner wishes to let the policy lapse, he or she can withdraw the cash value. This cash value develops because of the level premium approach to paying for this type of insurance. The actuarial cost of pure insurance increases with age, but the premium charged on this type of insurance is level. The policyholder is therefore overpaying for insurance early in the life of the policy and underpaying thereafter. The cash value builds up in the policy both for this reason and because the premium is greater than the premium for level term insurance. Growth in the cash value of the life insurance policy is referred to as the "inside buildup." A major advantage of this and other types of life insurance that have a cash or investment value is that *the inside buildup is not subject to taxation*, that is, not taxed as either income or capital gains. Neither is the beneficiary of the death benefit of a life insurance policy subject to an income tax. The death benefit of the policy may or may not be subject to estate tax, depending on how the beneficiary status is structured. Consequently, life insurance products have considerable tax advantages.

Life insurance and life insurance products are very complex. Only an overview is provided in this chapter.[1] There are two categories with respect to cash value life insurance policies. The first is whether the cash value is *guaranteed* or *variable*. The second is whether the required premium payment is *fixed* or *flexible*. Thus, there are four combinations (see Table 4), which we discuss below.

Guaranteed Cash Value Life Insurance

Traditional cash value life insurance, usually called whole life insurance, has a guaranteed buildup of cash value based on the general account portfolio of the insurance company. The insurance company guarantees a minimum cash value at the end of each year. This guaranteed cash value is based on a minimum dividend paid on the policy. In addition, the policy can be either *participating* or *nonparticipating*. For nonparticipating policies, the minimum dividend and the minimum cash value on the policy are the guaranteed amounts; that is, there is no upside. For the participating policy, the dividend paid on the policy is based on the realized actuarial experience of the company and its investment portfolio. The cash value may be above but not below the guaranteed level for participating policies. Thus, the actual performance of the policy may be substantially affected by the actual policy dividends over the guaranteed amount.

	Guaranteed Dollar Cash Value Policies	Variable/Non-Guaranteed Policies
Fixed Premium	Whole life insurance	Variable life insurance
Flexible Premium	Universal life insurance	Variable universal life insurance

[1] For an excellent treatment of life insurance, see Ben G. Baldwin, *The New Life Insurance Investment Advisor*, revised edition (Boston, MA: McGraw Hill, 1994). See also *Life Insurance Fact Book*, American Council of Life

Variable Life Insurance

Contrary to the guaranteed or fixed cash value policies based on the general account portfolio of the insurance company, variable life insurance policies allow the policyowners to allocate their premium payments to and among separate investment accounts maintained by the insurance company, within limits, and also to be able to shift the policy cash value among the separate accounts. As a result, the amount of the policy cash value and the death benefits depend on the investment results of the separate accounts the policyowners have selected. Thus, there is no guaranteed cash value or death benefit. Both depend on the performance of the selected investment portfolio.

The types of separate account investment options offered vary by insurance companies. Typically, the insurance company offers a selection of common stock and bond fund investment opportunities, often managed by the company itself and other investment managers. If the investment options perform well, the cash value buildup in the policy will be significant. However, if the policyholder selects investment options that perform poorly, the variable life insurance policy will perform poorly. There could be little or no cash value buildup, or, in the worst case, the policy could be terminated. This type of life insurance is called **variable life insurance**. Variable life insurance, which typically has common stock investment options, grew quickly beginning with the stock market rally of the late 1990s, but declined during the early 2000s.

Flexible Premium Policies—Universal Life

The key element of universal life is the flexibility of the premium for the policyowner. This flexible premium concept separates pure insurance protection (term insurance) from the investment (cash value) element of the policy. The policy cash value is set up as the cash value fund (or accumulation fund) to which the investment income is credited and from which the cost of term insurance for the insured (the mortality charge) is debited. The expenses are also debited.

This separation of the cash value from the pure insurance is called the "unbundling" of the traditional life insurance policy. Premium payments for universal life are at the discretion of the policyholder—that is, are flexible—except that there must be a minimum initial premium to begin the coverage. There must also be at least enough cash value in the policy each month to cover the mortality charge and other expenses. If not, the policy will lapse. Both guaranteed cash value and variable life can be written on a flexible premium or fixed premium basis, as summarized in Table 4.

Variable Universal Life Insurance

Variable universal life insurance combines the features of variable life and universal life policies, that is, the choice of separate account investment products and flexible premiums. Since the 1990s, term and variable universal life insurance have been growing at the expense of whole life insurance.

Survivorship (Second to Die) Insurance

Most whole life insurance policies are designed to pay death benefits when the person specified insured dies. An added dimension of whole life policies is that two people (usually a married couple) are jointly insured and the policy pays the death benefit not when the first person dies, but when the second person (the "surviving spouse") dies. This is called

survivorship insurance or *second-to-die insurance*. This survivorship feature can be added to standard cash value whole life, universal life, variable life, and variable universal life policies. Thus, each of the four policies listed in Table 4 could also be written on a survivorship basis.

In general, the annual premium for a survivorship insurance policy is lower than for a policy on a single person because, by construction, the second of two people to die has a longer life span than the first. Survivorship insurance is typically sold for estate planning purposes.

Key Points That You Should Understand Before Proceeding

1. There are two key types of life insurance: term insurance, which does not have investment value; and cash value life insurance, which has investment value and can be borrowed against.
2. Cash value insurance products may be "guaranteed" or "variable"; with fixed or flexible premiums; and with or without a survivorship feature.

GENERAL ACCOUNT AND SEPARATE ACCOUNT PRODUCTS

The *general account of an insurance company* refers to the investment portfolio of the overall company. Products "written by the company itself" are said to have a "general account guarantee," that is, they are a liability of the insurance company. When the rating agencies (Moody's, Standard & Poor's, A.M. Best, and Fitch) provide a credit rating, it is on products written by or guaranteed by the general account. Such ratings are on the "claims-paying ability" of the company. Typical products written by and guaranteed by the general account are whole life, universal life, and fixed annuities (including GICs). Insurance companies must support the guaranteed performance of their general account products to the extent of their solvency. These are called **general account products**.

Other types of insurance products receive no guarantee from the insurance company's general account, and their performance is not based on the performance of the insurance company's general account but solely on the performance of an account separate from the general account of the insurance company, often an account selected by the policyholder. These products are called **separate account products**. Variable life insurance and variable annuities are separate account products. The policyholder chooses specific portfolios to support these products. The performance of the insurance product depends almost solely on the performance of the portfolio selected, adjusted for the fees or expenses of the insuring company (which do depend on the insurance company).

Key Points That You Should Understand Before Proceeding

1. The overall investment portfolio of an insurance company supports its general account products.
2. Separate account products depend solely on the performance of an account chosen by the policyholder.

PARTICIPATING POLICIES

The performance of separate account products depends on the performance of the separate account portfolio chosen and is not affected by the performance of the overall insurance company's general account portfolio. In addition, the performance of some general account products is not affected by the performance of the general account portfolio. For example, disability income insurance policies may be written on a general account, and while their payoff depends on the solvency of the general account, the policy performance (for example, its premium) may not participate in the investment performance of the insurance companies' general account investment portfolio.

Other general account insurance products *participate* in the performance of the company's general account performance. For example, whereas a life insurance company provides the guarantee of a minimum dividend on its whole life policies, the policies' actual dividend may increase if the investment portfolio performs well. (This is called the "interest component" of the dividend: The other two components are the M&E components discussed previously.) Thus, the performance of the insurance policy participates in the overall company's performance. Such a policy is called a *participating policy*, in this case, a participating whole life insurance policy.

Both stock and mutual insurance companies write both general and separate account products. However, most participating general account products are written in mutual companies.

1. A participating policy pays a higher dividend than the guaranteed minimum if the general account portfolio performs well.
2. General account products may also be nonparticipating, with fixed payoffs.

INSURANCE COMPANY INVESTMENT STRATEGIES[2]

In general, the characteristics of insurance company investment portfolios should reflect their liabilities, that is, the insurance products they underwrite.

There are many differences among the various types of insurance policies. Among them are the following:

- the expected time at which the average payment will be made by the insurance company (technically, the "duration" of the payments)
- the statistical or actuarial accuracy of estimates of *when* the event insured against will occur and the *amount* of the payment (that is, the overall risk of the policy)
- other factors

In addition, there are tax differences among different types of insurance policies and companies.

The key distinction between life insurance and property and casualty insurance companies lies in the difficulty of projecting whether or not a policyholder will be paid off and how much the payment will be. Although this is no easy task for either a life or a P&C

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[2] For a more detailed discussion of investment strategies, see Frank J. Jones, "An Overview of Institutional Fixed Income Strategies," in Volume 1 of *Professional Perspectives on Fixed Income Portfolio Management* (Hoboken, NJ: John Wiley & Sons, 2000), pp. 1–13.

insurance company, it is easier from an actuarial perspective for a life insurance company. The amount and timing of claims on property and casualty insurance companies are more difficult to predict because of the randomness of natural catastrophes and the unpredictability of court awards in liability cases. This uncertainty about the timing and amount of cash outlays to satisfy claims has an impact on the investment strategies of the funds of property and casualty insurance companies compared to life insurance companies.

Without investigating the details for the differences in the portfolios of different types of insurance products, the major differences in the portfolios of life companies and P&C companies are as follows. Life companies on average have less common stock, more private placements, more commercial mortgages, less municipal bonds, and longer maturity bonds. The difference in municipal bond holdings is due to the tax-exempt characteristic of these securities. The larger holdings of private placements and commercial mortgages indicate the yield orientation of life companies. This yield orientation is also consistent with the low holding of common stock for life insurance companies.

There are also differences in investment strategy between public (or stock) and mutual insurance companies of the same type. The major difference is that stock companies tend to have less common stock than mutual companies. The major reason for this difference is that common stock analysts, who make buy-hold-sell recommendations on all public companies for institutional and individual investors, consider mainly regularly recurring operating income in their calculation of income, not volatile returns. Coupon and dividend income tend to be stable, and capital gains tend to be unstable. Thus, these analysts have a bias favoring bonds, which have higher interest income, over stocks, which have higher capital gains and, over the long term, higher total returns. As a result, mutual insurance companies, which are not rated by common stock analysts, can focus on total return rather than just yield and have more common stock than public companies.

CHANGES IN THE INSURANCE INDUSTRY

There have been three major types of changes in the insurance industry in the past two decades:

- the deregulation of the financial system
- internationalization of the insurance industry
- demutualization

We discuss each of these changes in the following text.

The Deregulation of the Financial System

In 1933, Congress passed the Glass-Steagall Act. The act separated commercial banking, investment banking, and insurance. That is, a company could be involved in only one of these three types of business. One of the major intentions of this act was to prevent a single organization from having complete control over the sources of corporate funding, specifically lending to and underwriting the securities of a company. An initial celebrated outcome of this Act, which went into effect in 1935, was the breakup of the "House of Morgan," the business of J.P. Morgan. A Morgan son, two Morgan partners, and 25 employees left J.P. Morgan to set up the investment bank, Morgan Stanley. (J.P. Morgan subsequently became Morgan Guaranty Trust Company when it merged with the much larger Guaranty Trust Company in 1959.) Both the bank and the investment

bank continue, although in significantly changed forms. J.P. Morgan was acquired by Chase Manhattan in July 2000 and has since been called J.P. Morgan Chase.

Over time, due to the evolution of the financial system, the implementation of the Glass-Steagall Act became more ambiguous, more difficult to implement, and, in the view of many, counterproductive. With this background, a recent landmark financial event was the revocation of the Glass-Steagall Act. On November 12, 1999, the Gramm-Leach-Bliley Act (GLB), called the Financial Modernization Act of 1999, was signed into law. This act removed the 50-year-old "anti-affiliation restrictions" among commercial banks, investment banks, and insurance companies.

The GLB has facilitated and accelerated affiliations among these three types of institutions. The first mega-institution of this type is the combination of Salomon Brothers and Smith Barney, both investment banks; Travelers, an insurance company; and Citicorp, a commercial bank. This combined firm was founded in 1998 when Citigroup and Travelers merged, called simply Citigroup, and was involved in insurance, commercial banking, investment banking, and security brokerage. However, the synergies between insurance and banking did not work out well and in August 2002, Citigroup spun off Travelers as a separate subsidiary and three years later sold Travelers to Met Life. No companies have since attempted to combine insurance and banking on a large scale.

GLB is also asserted to be a reason for the accelerated demutualization of insurance companies. As indicated earlier in this chapter, demutualization permits insurance companies to acquire not only insurance companies but other types of financial institutions. And by demutualizing, insurance companies can acquire capital for acquisitions. The act certainly accelerated bankassurance, the sale of insurance products by banks, although at a slower pace than originally thought.

Even before the passage of the GLB bill, commercial banks were becoming involved in some aspects of commercial banking. For several years, in addition to selling mutual funds, banks have become successful at selling annuities, both variable and fixed, mainly manufactured by other investment managers. In addition, insurance companies have been entering one part of banking, namely trust banking. Many life insurance agents put some of their clients' assets and life insurance policies in trusts. As a result, several life insurance companies have obtained trust licenses.

Few insurers have planned to go into retail commercial banking. However, Metropolitan Life, after having become a public stock insurance company in March 2000, announced in August 2000 that it would acquire Grand Bank, N.A., in New Jersey and go into retail commercial banking, something that could not have been accomplished before the GLB bill was passed.

Internationalization of the Insurance Industry

Globalization has occurred in many industries, including the insurance industry. With respect to the United States, globalization operates in two directions. With respect to the first direction, U.S. insurance companies have both acquired and entered into agreements with international insurance companies and begun operations in other countries. With respect to the second, international insurance companies, mainly European, have become even more active in acquiring U.S. insurance and investment companies.

Among the reasons for the increased entry by international insurance companies into the U.S. insurance industry and other U.S. financial sectors are (1) the more rapid growth of

the U.S. financial businesses relative to the international financial business, (2) the attractive demographics and income of potential U.S. clients, and (3) the less regulated environment of the U.S. insurance industry. Among the major international acquirers of U.S. insurance companies have been AXA Group (French), ING Group (Dutch), Allianze (German), Fortis (Dutch-Belgian), and Aegon (Dutch).

Demutualization

Since mid 1995, several insurance companies have changed from mutual companies to stock companies for reasons discussed previously in this chapter. Since insurance companies are regulated by states, such changes have to be preapproved by the state insurance regulatory department. Many industry observers believe that the recent demutualized insurance companies will either acquire other financial companies or will be acquired by other financial companies, or both.

Some states, as indicated above, have approved the mutual holding company status, and so the resident insurance companies had a choice of converting to a mutual holding company or a pure public stock company. Other states, including New York, have not approved the mutual holding company status, and so the only option remaining to a mutual company is to demutualize, that is, become a public stock company.

Key Points That You Should Understand Before Proceeding

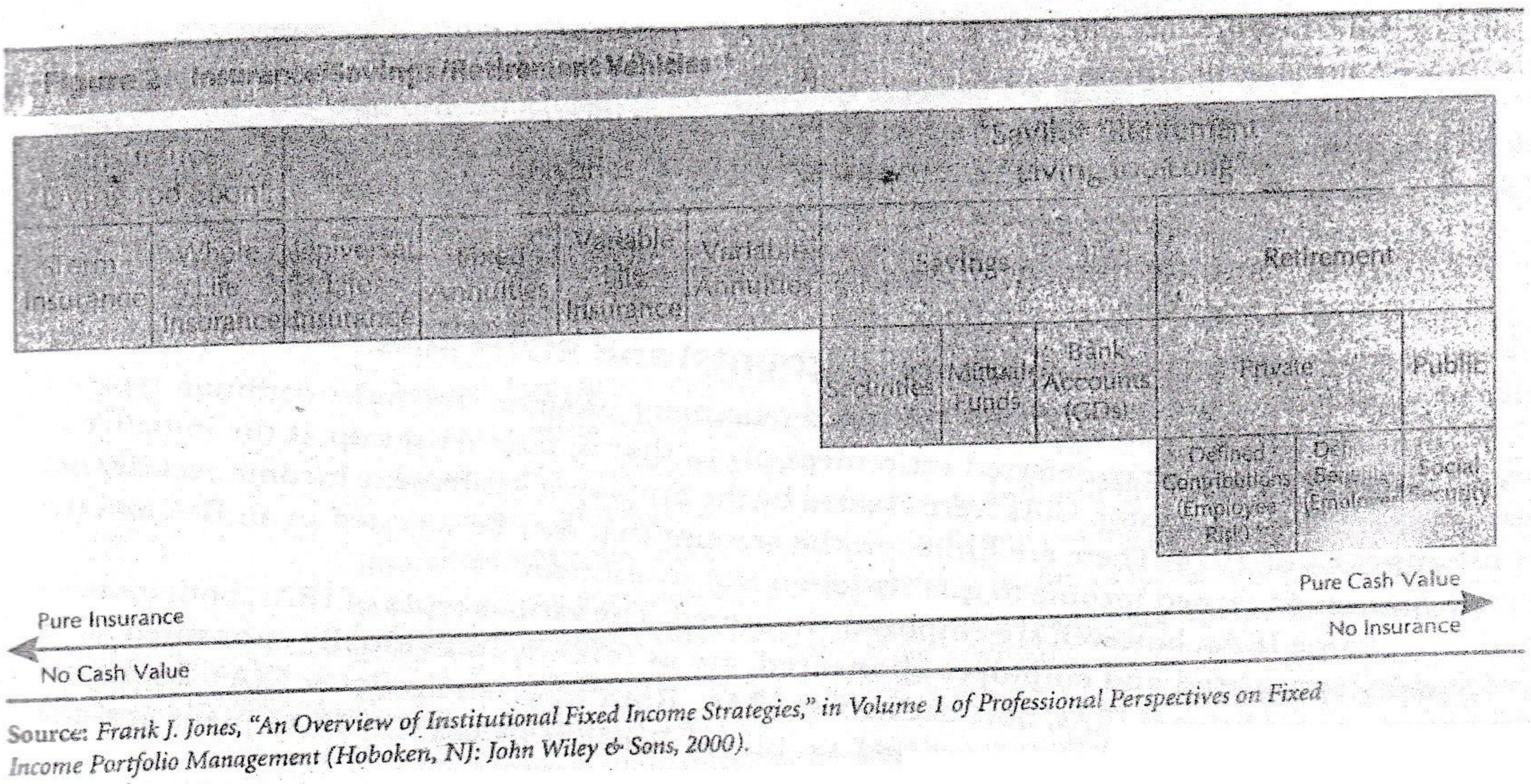
1. The Glass-Steagall Act of 1933 prevented any one company from being simultaneously involved in commercial banking, investment banking, and insurance.
2. In response to a changing financial landscape, the Gramm-Leach-Bliley Act of 1999 removed the above restriction and is expected to accelerate mergers among formerly distinct financial institutions.

EVOLUTION OF INSURANCE, INVESTMENT, AND RETIREMENT PRODUCTS

Even prior to the Financial Modernization Act of 1999, there was an increasing overlap of insurance, investment, and pension products and the distribution of those products. The passage of this act has accelerated this convergence. This chapter as well as the next two discuss insurance companies, investment companies, and pension plans with their increasingly overlapping products.

Three decades ago, there were three distinct types of products for individuals: insurance, savings/investment, and retirement. The specific products in each distinguishable category were as follows. Insurance products included term life and whole life. Savings/ investment products included stocks, bonds, and mutual funds. Retirement products included Social Security (provided by the government), defined benefit and defined contribution plans (provided by employers), and **individual retirement accounts (IRAs)** (provided by investment companies).

During the past two decades, many products have been developed that fit into two or even three of these categories. Into which of these three categories, for example, does an IRA sold to a customer by a life insurance agent fit? Arguably, the correct answer to this question is all three categories. Figure 2 provides a summary of some of the products on the insurance/savings/retirement spectrum, which are really *hybrids*. We have discussed the various insurance products in this chapter. This section discusses products that are hybrid



Source: *Frank J. Jones, "An Overview of Institutional Fixed Income Strategies," in Volume 1 of Professional Perspectives on Fixed Income Portfolio Management (Hoboken, NJ: John Wiley & Sons, 2000).*

retirement and savings products but which are often manufactured and distributed by insurance companies.

Products that are a hybrid of retirement and investment products and are often distributed by insurance companies and agents are 401(k)s, Roth 401(k)s, and variable annuities. These products are also often distributed by many insurance companies, and the insurance companies often include some of their own products within these categories. Because these plans are retirement plans, there are tax advantages to the investor.

Under the 1954 Internal Revenue Service (IRS) rules, *qualified plans* are tax-deferred plans set up by employers for employees. The employees pay taxes only when they withdraw the funds; that is, the contributions are not taxed, they are "before taxes." When employers make contributions to employee plans, the employers also, if they meet several requirements, receive a tax benefit (typically a tax deduction for the payment). Because these plans receive tax benefits and are intended for retirement, typically withdrawals prior to age 59½ are subject to a 10% (of principal) penalty tax, although there are some exceptions. In addition, withdrawals must begin by age 70½ to limit the duration of the tax advantage. 401(k) and Roth 401(k) plans are such qualified plans. The entire amount of all withdrawals is subject to taxation at the owner's income tax rate.

401(k) Plans and Roth 401(k) Plans

401(k) plans, which were authorized by the Revenue Act of 1978, are plans provided by an employer whereby an employee may elect to contribute pretax dollars to a qualified tax-deferred retirement plan. The employer offers a range of investment options from which the employee selects a vehicle to invest these funds. The company's own stock, if the company is public, is often one investment option. Most current employer 401(k) plans provide a diversified portfolio of mutual funds to their employees, typically including funds offered by

one or more investment companies. 401(k) plans are offered to employers by several distribution systems, primarily investment companies and insurance companies. The employer often matches a certain portion of the employee's contribution. Because of the tax deferral privilege, there are limits on the amount the employee can contribute and also that the employer can match.

IRAs (Individual Retirement Accounts) and ROTH IRAs

While a 401(k) is an *employer-sponsored* retirement program, the most common types of IRAs are *personal* tax-deferred retirement plans; that is, they are set up at the initiative of the employee/investor. IRAs were created by the Employee Retirement Income Security Act (ERISA) of 1974. There are limits on the amount that may be invested in an IRA and the amount of earned income to qualify for an IRA investment.

Some IRAs, however, are employer sponsored. The various types of IRAs, both individually sponsored and employer sponsored, are as follows. Individually sponsored IRAs include traditional IRAs, non-deductible IRAs, **Roth IRAs**, and rollover IRAs. Employer-sponsored IRAs include Simplified Employee Pension IRAs (SEP IRA) plans and the Savings Incentive Matching Plan for Employees IRAs (SIMPLE IRA).

Traditional and Roth IRAs are vehicles for individuals to set up their own retirement plans outside their employment. Both types permit assets to accumulate free of taxes. In general, the Roth IRA, provided by the Taxpayer Relief Act of 1997, is similar to the traditional IRA, although the taxability of its contributions and withdrawals is reversed. Whereas contributions to traditional IRAs are tax deductible, contributions to Roth IRAs are made after tax (that is, are not tax deductible). On the other hand, with respect to distributions, traditional IRA distributions are taxed as ordinary income (that is, even capital gains and dividends are taxed as ordinary income), and distributions from Roth IRAs are tax free. Overall, traditional IRAs are taxed on the way out (at time of distribution), while Roth IRAs are taxed on the way in (at the time of investment).

In general, absent certain special circumstances (such as death, disability, or certain unemployment expenses), withdrawals from either IRA type prior to age 59½ are subject to a 10% IRS early withdrawal penalty. Some of the other rules on voluntary and mandatory distributions are very complex. Contributions to both Roth and traditional IRAs are limited to $5,000 per year ($6,000 if age 50 or older) during 2008, and even the ability to contribute this amount is phased out at higher incomes for both types of IRAs.

Rollover IRAs, also called "conduit IRAs," are used for rolling over eligible distributions from employer-sponsored retirement plans, such as 401(k)s. Rollover IRAs may be used when an individual is leaving an employer and wants to continue this retirement plan, that is, does not want to be subject to penalties or distribution/withdrawal taxes. The employees can roll over assets from an employer-sponsored program into a rollover IRA and subsequently roll them back to another employer-sponsored plan. Rollover IRAs are very similar to traditional IRAs.

Investors not eligible for traditional or Roth IRAs can invest in non-deductible IRAs. In these IRAs, contributions are after tax and gains are taxed at withdrawal, but the inside buildup is tax free.

SEPs and SIMPLEs are both qualified employer-sponsored IRAs wherein the contributions by the business are tax deductible to the business. The SEP is a type of IRA that allows an employer to make a tax-deductible contribution of from 0% to 25% of earned income per year, per participant, up to $46,000. SEPs are ideal for the self-employed or small business

owner. According to the SIMPLE IRA, which became available during 1997, the employer must match employee contributions as low as 1% up to 3% of compensation; or must make a nonelective contribution of 2% of compensation to all eligible employees.

As can be seen with respect to both product design and distribution channels, the distinction among insurance, investment, and retirement products has become very blurred.

SUMMARY

In general, insurance companies bear risk from parties who wish to avert risk by transferring it to the insurance companies. The party seeking to transfer the risk pays an insurance premium to the insurance company.

Insurance companies pay the insured when and/or if the insured event occurs. Because insurance companies collect premiums initially and pay the claims later, the initial revenues are invested in a portfolio, and portfolio returns become another important revenue for the insurance company. Consequently, insurance companies are financial intermediaries that function as risk bearers.

The events insured can be death (insured by life insurance companies), health problems (health insurance companies), or housing or automobile damage (P&C insurance companies). In addition, there are different types of insurance for the different types of risks. Insurance companies have also become active in providing retirement and investment products. These different types of insurance liabilities reflect different types of risks and, therefore, the investment portfolios of these types of insurance companies differ significantly.

Insurance companies can be owned by stockholders (stock or public companies) or by their policyholders (mutual companies). Insurance companies are regulated by states, not the federal government. The regulations can vary significantly from one state to another.

The passage of the Gramm-Leach-Bliley Act (called the Financial Modernization Act of 1999) has eliminated the barriers between insurance companies, commercial banks, and investment banks, and various combinations of these types of companies will continue to evolve.

KEY TERMS

- 401(k) plans
- Annuity
- Bankassurance
- Cash value life insurance
- Crediting rate
- Generally accepted accounting principles (GAAP) surplus
- General account products
- Gramm-Leach-Bliley Act (GLB)
- Guaranteed investment contract (GIC)
- Health insurance company
- Investment income
- Individual retirement account (IRA)
- Life insurance company
- Multiline insurance companies
- Mutual holding company (MHC)
- Mutual insurance company
- National Association of Insurance Commissioners (NAIC)
- Policy lapse
- Premiums
- Property and casualty (P&C) insurance company
- Reinsurer

- Reserve
- Risk bearers
- Roth 401(k)
- Roth IRA
- Separate account products
- Statutory surplus
- Stock insurance company
- Surplus
- Term life insurance
- Underwriting income
- Underwriting process
- Universal life
- Variable life insurance
- Whole life insurance

QUESTIONS

1. a. What are the major sources of revenue for an insurance company?
   b. How are its profits determined?
2. Name the major types of insurance and investment-oriented products sold by insurance companies.
3. a. What is a GIC?
   b. Does a GIC carry a "guarantee" like a government obligation?
4. What are some key differences between a mutual fund and an annuity?
5. Why should a purchaser of life insurance be concerned about the credit rating of his or her insurance company?
6. a. Does the SEC regulate all insurance companies?
   b. If not, who regulates them?
7. Does the insurance industry have a self-regulatory group and, if so, what is its role?
8. What is the statutory surplus and why is it an important measure for an insurance company?
9. What is bankassurance?
10. a. What is meant by "demutualization"?
    b. What are the perceived advantages of demutualization?
11. Comment on the following quotation from Frank J. Jones, "An Overview of Institutional Fixed Income Strategies," in Volume 1 of *Professional Perspectives on Fixed Income Portfolio Management* (Hoboken, NJ: John Wiley & Sons, 2000):

    An important impediment to the use of the total rate of return objective by stock life insurance companies is the role of equity analysts on Wall Street. . . . These equity analysts emphasize the stability of earnings and thereby prefer stable income to capital gains. Therefore, they consider only income and not capital gains, either realized or unrealized, n operating income—an important measure in their overall rating. While this practice of not considering capital gains may be appropriate for bonds, it certainly is inappropriate for common stock and provides a significant disincentive to life insurance companies for owning common stock in their portfolios. . . . this equity analyst practice does a disservice to policyholders of stock life insurance companies since their insurance companies end up having inferior asset allocations.
12. What are term insurance, whole life insurance, variable life insurance, universal life insurance, an survivorship insurance?
13. Why are all participating policies written in an insurance company's general account?
14. Whose liabilities are harder to predict, life insurers or property and casualty insurers? Explain why.
15. How does the Financial Modernization Act of 19 affect the insurance industry?