

The Financial Markets and Interest Rates

Learning Objectives

 1 Describe key components of the U.S. financial market system and the financing of business.	Financing of Business: The Movement of Funds Through the Economy
 2 Understand how funds are raised in the capital markets.	Selling Securities to the Public
 3 Be acquainted with recent rates of return.	Rates of Return in the Financial Markets
 4 Explain the fundamentals of interest rate determination and the popular theories of the term structure of interest rates.	Interest Rate Determinants in a Nutshell

Back in 1995, when they first met, Larry Page and Sergey Brin were not particularly fond of one another. Larry was on a weekend visit to Stanford University, and Sergey was in a group of students assigned to show him around. Nonetheless, in short time the two began to collaborate and even built their own computer housings in Larry's dorm room. That computer housing later became Google's first data center. From there things didn't move as smoothly as one might expect, there just wasn't the interest from the search-engine players of the day, so Larry and Sergey decided to go it alone. Stuck in a dorm room with maxed-out credit cards, the problem they faced was money—they didn't have any. So they put together a business plan and went looking for money. Fortunately for all of us who use Google today, they met up with one of the founders of Sun Microsystems, and after a short demo he had to run off somewhere and upon leaving said, "Instead of us discussing all the details, why don't I just write you a check?" It was made out to Google Inc. and was for \$100,000.

With that, Google Inc. (GOOG) was founded, and over the next 10 years it became anything but a conventional company, with an official motto of "don't be evil"; a goal to make the world a better place; on-site meals prepared by a former caterer for the Grateful Dead; lava lamps; and a fleet of Segways to move employees about the Google campus to roller-hockey games in the parking lot and to other on-site diversions. It was not unexpected that when Google needed more money in 2004 it would raise that money in an unusual way—through a "Dutch auction." With a Dutch auction investors submit bids, saying how many shares they'd like and at what price. Next, Google used these bids to calculate an issue price that was just low enough to ensure that all the shares were sold, and everyone who bid at least that price got to buy shares at the issue price.

Eventually, Google settled on an issue price of \$85 per share, and on August 19, 2004, it raised \$1.76 billion dollars. How did those initial investors do? On the first day of trading Google's shares rose by 18 percent, and by mid-March

2005 the price of Google stock had risen to about \$340 per share! In September 2005, Google went back to the financial markets and sold another 14.18 million shares at \$295 per share, and by August 2012 it was selling at around \$641 per share.

As you read this chapter you will learn about how funds are raised in the financial markets. This will help you, as an emerging business executive specializing in accounting, finance, marketing, or strategy, understand the basics of acquiring financial capital in the funds marketplace.



Long-term sources of financing, such as bonds and common stock, are raised in the capital markets. By the term **capital markets**, we mean *all the financial institutions that help a business raise long-term capital*, where “long term” is defined as a security with a maturity date of more than one year. After all, most companies are in the business of selling products and services to their customers and do not have the expertise on their own to raise money to finance the business. Examples of these financial institutions that you may have heard of would include Bank of America (BAC), Goldman Sachs (GS), Citigroup (C), Morgan Stanley (MS), UBS AG (UBS), and Deutsche Bank (DB).

This chapter focuses on the procedures by which businesses raise money in the capital markets. It helps us understand how the capital markets work. We will introduce the logic of how investors determine their required rate of return for making an investment. In addition, we will study the historical rates of returns in the capital markets so that we have a perspective on what to expect. This knowledge of financial market history will permit you as both a financial manager and an investor to realize that earning, say, a 40 percent annual return on a common stock investment does not occur very often.

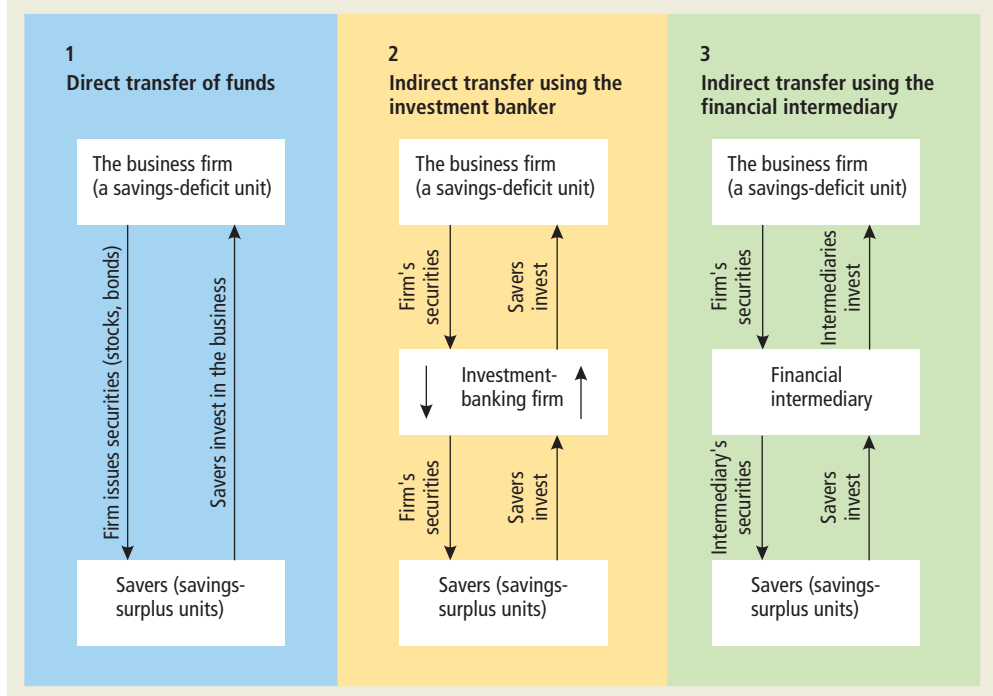
As you work through this chapter, be on the lookout for direct applications of several of our principles from Chapter 1 that form the basics of business financial management. Specifically, your attention will be directed to: Principle 3: Risk Requires a Reward and Principle 4: Market Prices Are Generally Right.

capital markets all institutions and procedures that facilitate transactions in long-term financial instruments.

Financing of Business: The Movement of Funds Through the Economy

Financial markets play a critical role in a capitalist economy. In fact, when money quit flowing through the financial markets in 2008, our economy ground to a halt. When our economy is healthy, funds move from saving-surplus units—that is, those who spend less money than they take in—to savings-deficit units—that is, those who have a need for additional funding. What are some examples of savings-deficit units? Our federal government, which is running a huge deficit, takes much less in from taxes than it is spending. Hulu, the online video service, would like to build new facilities but does not have the \$50 million it needs to fund the expansion. Rebecca Swank, the sole proprietor of the Sip and Stitch, a yarn and coffee shop, would like to open a second store but needs \$100,000 to finance a second shop. Emily and Michael Dimmick would like to buy a house for \$240,000 but have only \$50,000

b¹ Describe key components of the U.S. financial market system and the financing of business.

FIGURE 2-1 Three Ways to Transfer Capital in the Economy

saved up. In each case, our government, a large company, a small business owner, and a family are all in the same boat—they would like to spend more than they take in.

Where will this money come from? It will come from savings-surplus units in the economy—that is, from those who spend less than they take in. Examples of savings surplus units might include individuals, companies, and governments. For example, John and Sandy Randolph have been saving for retirement and earn \$10,000 more each year than they spend. In addition, the firm John works for contributes \$5,000 every year to his retirement plan. Likewise, ExxonMobil (XOM) generates about \$50 billion in cash annually from its operations and invests about half of that on new exploration—the rest is available to invest. Also, there are a number of governments around the world that bring in more money than they spend—countries like China, the United Arab Emirates, and Saudi Arabia.

Now let's take a look at how savings are transferred to those who need the money. Actually, there are three ways that savings can be transferred through the financial markets to those in need of funds. These are displayed in Figure 2-1.

Let's take a closer look at these three methods:

- 1. Direct transfer of funds** Here the firm seeking cash sells its securities directly to savers (investors) who are willing to purchase them in hopes of earning a large return. A startup company is a good example of this process at work. The new business may go directly to a *wealthy private investor* called an **angel investor** or business angel for funds or it may go to a **venture capitalist** for early funding. That's how Koofers.com got up and running. The founders of Koofers were students at Virginia Tech who put together an interactive Web site that provides a place for students to share class notes and course and instructor ratings/grade distributions, along with study guides and past exams. The Web site proved to be wildly popular, and in 2009 received \$2 million of funding from two venture capitalists to expand, who, in return, received part ownership of Koofers.
- 2. Indirect transfer using an investment-banking firm** An investment-banking firm is a financial institution that helps companies raise capital, trades in securities, and provides advice on transactions such as mergers and acquisitions. In helping

angel investor a wealthy private investor who provides capital for a business start-up.

venture capitalist an investment firm (or individual investor) that provides money to business start-ups.

firms raise capital, an investment banker frequently works together with other investment bankers in what is called a syndicate. The syndicate will buy the entire issue of securities from the firm that is in need of financial capital. The syndicate will then sell the securities at a higher price to the investing public (the savers) than it paid for them. Morgan Stanley and Goldman Sachs are examples of banks that perform investment-banking duties. Notice that under this second method of transferring savings, the securities being issued just pass through the investment-banking firm. They are not transformed into a different type of security.

3. **Indirect transfer using the financial intermediary** This is the type of system life insurance companies, mutual funds, and pension funds operate within. The financial intermediary collects the savings of individuals and issues its own (indirect) securities in exchange for these savings. The intermediary then uses the funds collected from the individual savers to acquire the business firm's (direct) securities, such as stocks and bonds.

A good financial system is one that efficiently takes money from savers and gets it to the individuals who can best put that money to use, and that's exactly what our system does. This may seem like common sense, but it is not necessarily common across the world. In spite of the fact that the U.S. financial system recently experienced some problems, it provides more choices for both borrowers and savers than most other financial systems, and as a result, it does a better job of allocating capital to those who can more productively use it. As a result, we all benefit from the three transfer mechanisms displayed in Figure 2-1, and capital formation and economic wealth are greater than they would be in the absence of this financial market system.

There are numerous ways to classify the financial markets. These markets can take the form of anything from an actual building on Wall Street in New York City to an electronic hookup among security dealers all over the world. Let's take a look at five sets of dichotomous terms that are used to describe the financial markets.

Public Offerings Versus Private Placements

When a corporation decides to raise external capital, those funds can be obtained by making a public offering or a private placement. In a **public offering**, both *individual and institutional investors have the opportunity to purchase the securities*. The securities are usually made available to the public at large by an investment-banking firm, which is a firm that specializes in helping other firms raise money. This process of acting as an intermediary between an issuer of a security and the investing public is called underwriting, and the investment firm that does this is referred to as an underwriter. This is a very impersonal market, and the issuing firm never actually meets the ultimate purchasers of the securities.

In a **private placement**, also called a direct placement, the *securities are offered and sold directly to a limited number of investors*. The firm will usually hammer out, on a face-to-face basis with the prospective buyers, the details of the offering. In this setting, the investment-banking firm may act as a finder by bringing together potential lenders and borrowers. The private placement market is a more personal market than its public counterpart.

A venture capital firm is an example of investors who are active in the private placement market. A venture capital firm first *raises money from institutional investors and high net worth individuals, to then pool the funds and invest in start-ups and early-stage companies* that have high-return potential but are also very risky investments. These companies are not appealing to the broader public markets owing to their (1) small absolute size, (2) very limited or no historical track record of operating results, (3) obscure growth prospects, and (4) their inability to sell the stock easily or quickly. Most venture capitalists invest for 5 to 7 years, in the hopes of selling the firms or taking them public through an IPO.

Due to the high risk, the venture capitalist will occupy a seat or seats on the young firm's board of directors and will take an active part in monitoring the company's management activities. *This situation should remind you of* **Principle 3: Risk Requires a Reward**.

public offering a security offering where all investors have the opportunity to acquire a portion of the financial claims being sold.

private placement a security offering limited to a small number of potential investors.



Primary Markets Versus Secondary Markets

A **primary market** is a *market in which new, as opposed to previously issued, securities are traded*. For example, if Google issues a new batch of stock, this issue would be considered a primary

primary market a market in which securities are offered for the first time for sale to potential investors.

initial public offering, IPO the first time a company issues its stock to the public.

seasoned equity offering, SEO the sale of additional stock by a company whose shares are already publicly traded.

secondary market a market in which currently outstanding securities are traded.

money market all institutions and procedures that facilitate transactions for short-term instruments issued by borrowers with very high credit ratings.

market transaction. In this case, Google would issue new shares of stock and receive money from investors. The primary market is akin to the new car market. For example, the only time that Ford ever gets money for selling a car is the first time the car is sold to the public. The same is true with securities in the primary market. That's the only time the issuing firm ever gets any money for the securities, and it is the type of transaction that introduces new financial assets—for example, stocks and bonds—into the economy. The *first time a company issues stock to the public* is referred to as an **initial public offering** or **IPO**. This is what happened with Google on August 19, 2004, when it first sold its common stock to the public at \$85 per share and raised \$1.76 billion dollars. When Google went back to the primary market in September 2005 and sold more Google stock, worth an additional \$4.18 billion, it was considered a **seasoned equity offering**, or **SEO**. A seasoned equity offering is *the sale of additional shares by a company whose shares are already publicly traded* and is also called a secondary share offering.

The **secondary market** is *where currently outstanding securities are traded*. You can think of it as akin to the used car market. If a person who bought some shares of the Google stock subsequently sells them, he or she does so in the secondary market. Those shares can go from investor to investor, and Google never receives any money when they are traded. In effect, all transactions after the initial purchase in the primary market take place in the secondary market. These sales do not affect the total amount of financial assets that exists in the economy.

The job of regulation of the primary and secondary markets falls on the Security and Exchange Commission, or SEC. For example, before a firm can offer its securities for sale in the primary markets, it must register them with the SEC, and it is the job of the SEC to make sure that the information provided to investors is adequate and accurate. The SEC also regulates the secondary markets, making sure that investors are provided with enough accurate information to make intelligent decisions when buying and selling in the secondary markets.

The Money Market Versus the Capital Market

The key distinguishing feature between the money and capital markets is the maturity period of the securities traded in them. The **money market** refers to *transactions in short-term debt instruments*, with short-term meaning maturity periods of 1 year or less. Short-term securities are generally issued by borrowers with very high credit ratings. The major instruments issued and traded in the money market are U.S. Treasury bills, various federal agency securities, bankers' acceptances, negotiable certificates of deposit, and commercial paper. Stocks, either common or preferred, are not traded in the money market. Keep in mind that the money market isn't a physical place. You do not walk into a building on Wall Street that has the words "Money Market" etched in stone over its arches. Rather, the money market is primarily a telephone and computer market.

As we explained, the capital market refers to the market for long-term financial instruments. Long-term here means having maturity periods that extend beyond 1 year. In the broad sense, this encompasses term loans, financial leases, and corporate stocks and bonds.

Spot Markets Versus Futures Markets

Cash markets are where something sells today, right now, on the spot—in fact, *cash markets* are often called **spot markets**. **Futures markets** are where you can *buy or sell something*



REMEMBER YOUR PRINCIPLES

Principle In this chapter, we cover material that introduces the financial manager to the process involved in raising funds in the nation's capital markets and how interest rates in those markets are determined.

Without question the United States has a highly developed, complex, and competitive system of financial markets that allows for the quick transfer of savings from people and organizations with a surplus of savings to those with a savings deficit. Such a system of highly developed financial markets allows great ideas (such as the personal computer) to be financed and increases the overall wealth of the economy. Consider your wealth, for example, compared to that of the average family in Russia. Russia lacks the complex system of financial markets to facilitate securities transactions. As a result, real capital formation there has suffered.

Thus, we return now to **Principle 4: Market Prices Are Generally Right**. Financial managers like the U.S. system of capital markets because they trust it. This trust stems from the fact that the markets are efficient, and so prices quickly and accurately reflect all available information about the value of the underlying securities. This means that the expected risks and expected cash flows matter more to market participants than do simpler things such as accounting changes and the sequence of past price changes in a specific security. With security prices and returns (such as interest rates) competitively determined, more financial managers (rather than fewer) participate in the markets and help ensure the basic concept of efficiency.

spot market cash market.

futures markets markets where you can buy or sell something at a future date.

at some future date—in effect, you sign a contract that states what you’re buying, how much of it you’re buying, at what price you’re buying it, and when you will actually make the purchase. The difference between purchasing something in the spot market and purchasing it in the futures market is when it is delivered and when you pay for it. For example, say it is May right now and you need 250,000 euros in December. You could purchase 125,000 euros today in the spot market and another 125,000 euros in the futures market for delivery in December. You get the euros you purchased in the spot market today, and you get the euros you purchased in the futures market seven months later.

Stock Exchanges: Organized Security Exchanges Versus Over-the-Counter Markets, a Blurring Difference

Many times markets are differentiated as being organized security exchanges or over-the-counter markets. Because of the technological advances over the past 10 years coupled with deregulation and increased competition, the difference between an organized exchange and the over-the-counter market has been blurred. Still, these remain important elements of the capital markets. **Organized security exchanges** are tangible entities; that is, they physically occupy space (such as a building or part of a building), and financial instruments are traded on their premises. The **over-the-counter markets** include all security markets except the organized exchanges. The money market, then, is an over-the-counter market because it doesn’t occupy a physical location. Because both markets are important to financial officers concerned with raising long-term capital, some additional discussion is warranted.

Today, the mechanics of trading have changed dramatically and 80 to 90 percent of all trades are done electronically, blurring the difference between trading on an organized exchange versus trading on the over-the-counter market. Even if your stock is listed on the New York Stock Exchange (NYSE), the odds are that it won’t be executed on the floor of the exchange, but rather will be executed electronically in the maze of computers that make up the global trading network. In effect, today there is little difference between how a security is traded on an organized security exchange versus the over-the-counter market.

organized security exchanges formal organizations that facilitate the trading of securities.

over-the-counter markets all security markets except organized exchanges. The money market is an over-the-counter market. Most corporate bonds also are traded in the over-the-counter market.

Organized Security Exchanges The New York Stock Exchange is considered a national stock exchange, and in addition to it there are several others generally termed regional stock exchanges. If a firm’s stock trades on a particular exchange, it is said to be listed on that exchange. Securities can be listed on more than one exchange. All of these active exchanges are registered with the Securities and Exchange Commission. Firms whose securities are traded on the registered exchanges must comply with reporting requirements of both the specific exchange and the SEC.

The NYSE, also called the “Big Board,” is the oldest of all the organized exchanges. Without question, the NYSE is the big player, with the total value of the shares of stock listed in 2012 at over \$14 trillion. Today, the NYSE is a hybrid market, allowing for face-to-face trading between individuals on the floor of the stock exchange in addition to automated, electronic trading. As a result, during times of extreme flux in the market, at the opening or close of the market, or on large trades, human judgment can be called on to make sure that the trade is executed appropriately.

Over-the-Counter Markets Many publicly held firms either don’t meet the listing requirements of the organized stock exchanges or simply would rather be listed on NASDAQ, which is an electronic stock exchange. In effect, NASDAQ is a computerized system that provides price quotes on over 5,000 over-the-counter stocks and also facilitates trades by matching up buyers and sellers. Recently, Facebook decided to list its stock on NASDAQ rather than the NYSE because of its lower fees and expertise with technology companies.

Stock Exchange Benefits Both corporations and investors enjoy several benefits provided by the existence of organized security exchanges. These include

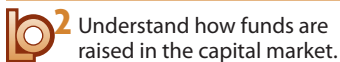
1. **Providing a continuous market** This may be the most important function of an organized security exchange. A continuous market provides a series of continuous

security prices. Price changes from trade to trade tend to be smaller than they would be in the absence of organized markets. The reasons are that there is a relatively large sales volume of each security traded, trading orders are executed quickly, and the range between the price asked for a security and the offered price tends to be narrow. The result is that price volatility is reduced.

2. **Establishing and publicizing fair security prices** An organized exchange permits security prices to be set by competitive forces. They are not set by negotiations off the floor of the exchange, where one party might have a bargaining advantage. The bidding process flows from the supply and demand underlying each security. This means the specific price of a security is determined in the manner of an auction. In addition, the security prices determined at each exchange are widely publicized.
3. **Helping business raise new capital** Because a continuous secondary market exists, it is easier for firms to float, or issue, new security offerings at competitively determined prices. This means that the comparative values of securities offered in these markets are easily observed.

Concept Check

1. Explain the difference between (a) public offerings and private placements, (b) primary markets and secondary markets, (c) the money market and the capital market, and (d) organized security exchanges and over-the-counter markets.
2. Name the benefits derived from the existence of stock exchanges.



investment banker a financial specialist who underwrites and distributes new securities and advises corporate clients about raising new funds.

underwriting the purchase and subsequent resale of a new security issue. The risk of selling the new issue at a satisfactory (profitable) price is assumed (underwritten) by the investment banker.

underwriter's spread the difference between the price the corporation raising money gets and the public offering price of a security.

Selling Securities to the Public

Most corporations do not raise long-term capital frequently. The activities of working-capital management go on daily, but attracting long-term capital is, by comparison, episodic. The sums involved can be huge, so these situations are considered of great importance to financial managers. Because most managers are unfamiliar with the subtleties of raising long-term funds, they enlist the help of an expert, an investment banker. It is with the help of an **investment banker** serving as the underwriter that stocks and bonds are generally sold in the primary markets. The **underwriting** process involves the purchase and subsequent resale of a new security issue with the risk of selling the new issue at a satisfactory price being assumed by the investment banker. The *difference between the price the corporation gets and the public offering price* is called the **underwriter's spread**.

Table 2-1 gives us some idea of who the major players are within the investment-banking industry. It lists the top 10 houses in 2011 based on the dollar volume of security issues that were managed. Today, there are no very large, stand-alone investment-banking firms;

TABLE 2-1 Underwriter Rankings for 2011

Rank	Underwriter	Proceeds (Millions)
1	Morgan Stanley	\$9,656.2
2	Bank of America Merrill Lynch	8,262.1
3	Goldman Sachs	6,054.6
4	J. P. Morgan	3,757.4
5	Citi	3,192.0
6	Barclays Capital	1,191.0
7	Credit Suisse	966.5
8	Deutsche Bank Securities	746.2
9	Raymond James	601.2
10	UBS Investment Bank	597.4

Source: "Underwriter Rankings for 2011." Copyright © 2011 Renaissance Capital, Greenwich, CT. Reprinted by permission. www.renaissancecapital.com.

they are all banks that are also investment bankers. You'll notice that only six bankers had over \$1 trillion in proceeds in 2011.

Actually, we use the term “investment banker” to describe both the firm itself and the individuals who work for it in that capacity. Just what does this intermediary role involve? The easiest way to understand it is to look at the basic investment-banking functions.

Functions

The investment banker performs three basic functions: (1) underwriting, (2) distributing, and (3) advising.

Underwriting The term underwriting is borrowed from the field of insurance. It means *assuming a risk*. The investment banker assumes the risk of selling a security issued at a satisfactory price. A satisfactory price is one that generates a profit for the investment-banking house.

The procedure goes like this. The managing investment banker and its syndicate will buy the security issue from the corporation in need of funds. The **syndicate** is a *group of other investment bankers that is invited to help buy and resell the issue*. The managing house is the investment-banking firm that originated the business because its corporate client decided to raise external funds. On a specific day, the client that is raising capital is presented with a check from the managing house in exchange for the securities being issued. At this point the investment-banking syndicate owns the securities. The client has its cash, so it is immune from the possibility that the security markets might turn sour. That is, if the price of the newly issued security falls below that paid to the firm by the syndicate, the syndicate will suffer a loss. The syndicate, of course, hopes that the opposite situation will result. Its objective is to sell the new issue to the investing public at a price per security greater than its cost.

syndicate a group of investment bankers who contractually assist in the buying and selling of a new security issue.

Distributing Once the syndicate owns the new securities, it must get them into the hands of the ultimate investors. This is the distribution or selling function of investment banking. The investment banker may have branch offices across the United States, or it may have an informal arrangement with several security dealers who regularly buy a portion of each new offering for final sale. It is not unusual to have 300 to 400 dealers involved in the selling effort. The syndicate can properly be viewed as the security wholesaler, and the dealer organization can be viewed as the security retailer.

Advising The investment banker is an expert in the issuance and marketing of securities. A sound investment-banking house will be aware of prevailing market conditions and can relate those conditions to the particular type of security and the price at which it should be sold at a given time. For example, business conditions may be pointing to a future increase in interest rates, so the investment banker might advise the firm to issue its bonds in a timely fashion to avoid the higher interest rates that are forthcoming. The banker can analyze the firm's capital structure and make recommendations about what general source of capital should be issued. In many instances the firm will invite its investment banker to sit on the board of directors. This permits the banker to observe corporate activity and make recommendations on a regular basis.

The Demise of the Stand-Alone Investment-Banking Industry

From the time of George Washington until the Great Depression that occurred in the 1930s, the U.S. economy experienced a recurring financial panic and banking crisis about every 15 years. During the Great Depression and the banking failures of 1933, some 4,004 banks closed their doors and Congress enacted a series of reforms that were designed to put an end to these recurring financial crises. The lynchpin of this reform was the Glass-Steagall Act, or the Banking Act of 1933. An important component of the Glass-Steagall Act was the creation of the Federal Deposit Insurance Corporation (FDIC), which provides deposit insurance for bank deposits in member banks of up to \$250,000¹ per depositor per bank. The creation of the FDIC,

¹On December 31, 2013, the standard coverage limit will return to \$100,000 for all deposit categories except IRAs and certain retirement accounts, which will continue to be insured up to \$250,000 per owner, unless Congress takes action to extend the limits beyond the end of 2013.

was an effort to provide assurance to depositors that their deposits were secure, thereby preventing runs on banks. Another key element of Glass-Steagall was the separation of the commercial-banking and investment-banking industries. The purpose of this was to keep banks safe by prohibiting them from entering the securities industry, where it is possible to incur large losses, and as a result, a strong “stand-alone” investment-banking industry emerged with names like Lehman Brothers, Bear Stearns, and J.P. Morgan.

With the repeal of Glass-Steagall in 1999, many commercial banks merged with large investment-banking firms; for example, Chase Manhattan Bank merged with J.P. Morgan, forming JPMorgan-Chase & Co. (JPM). The advantage of this to the investment banks was the access to stable funding through bank deposits along with the ability to borrow from the Fed in the case of an emergency, while the commercial bank gained access to the more lucrative, albeit more risky, securities industry. Then in 2008 as a result of the financial crisis and banking meltdown, the remaining stand-alone investment-banking firms that did not fail in the crisis, including Morgan Stanley and Goldman Sachs, quickly found commercial bank partners. At the end of the day, there were no stand-alone investment-banking firms left. Today, the investment-banking function is provided by “universal banks,” that is, commercial banks that also provide investment-banking services.

Distribution Methods

Several methods are available to the corporation for placing new security offerings in the hands of investment bankers followed by final investors. The investment banker's role is different in each of these. (Sometimes, in fact, it is possible to bypass the investment banker.) These methods are described in this section. Private placements, because of their importance, are treated later in the chapter.

A Negotiated Purchase In a negotiated underwriting, the firm that needs funds makes contact with an investment banker, and deliberations concerning the new issue begin. If all goes well, a *method* is negotiated for determining the price the investment banker and the syndicate will pay for the securities. For example, the agreement might state that the syndicate will pay \$2 less than the closing price of the firm's common stock on the day before the offering date of a new stock issue. The negotiated purchase is the most prevalent method of securities distribution in the private sector. It is generally thought to be the most profitable technique as far as investment bankers are concerned.

A Competitive Bid Purchase The method by which the underwriting group is determined distinguishes the competitive bid purchase from the negotiated purchase. In a competitive underwriting, several underwriting groups bid for the right to purchase the new issue from the corporation that is raising funds. The firm does not directly select the investment banker. Instead, the investment banker that underwrites and distributes the issue is chosen by an auction process. The one willing to pay the greatest dollar amount per new security will win the competitive bid.

Most competitive bid purchases are confined to three situations, compelled by legal regulations: (1) railroad issues, (2) public utility issues, and (3) state and municipal bond issues. The argument in favor of competitive bids is that any undue influence of an investment banker over the firm is mitigated and the price received by the firm for each security should be higher. Thus, we would intuitively suspect that the cost of capital in a competitive bidding situation would be less than in a negotiated purchase situation. Evidence on this question, however, is mixed. One problem with the competitive bidding purchase as far as the fund-raising firm is concerned is that the benefits gained from the advisory function of the investment banker are lost. It may be necessary to use an investment banker for advisory purposes and then by law exclude the banker from the competitive bid process.

A Commission or Best-Efforts Basis Here, the investment banker acts as an agent rather than as a principal in the distribution process. The securities are *not* underwritten. The investment banker attempts to sell the issue in return for a fixed commission on each

security actually sold. Unsold securities are then returned to the corporation. This arrangement is typically used for more speculative issues. The issuing firm may be smaller or less established than the banker would like. Because the underwriting risk is not passed on to the investment banker, this distribution method is less costly to the issuer than a negotiated or competitive bid purchase. On the other hand, the investment banker only has to give it his or her “best effort.” A successful sale is not guaranteed.

A Privileged Subscription Occasionally, the firm may feel that a distinct market already exists for its new securities. When a *new issue is marketed to a definite and select group of investors*, it is called a **privileged subscription**. Three target markets are typically involved: (1) current stockholders, (2) employees, or (3) customers of the firm. Of these, distributions directed at current stockholders are the most prevalent. Such offerings are called *rights offerings*. In a privileged subscription the investment banker may act only as a selling agent. It is also possible that the issuing firm and the investment banker might sign a *standby agreement*, which obligates the investment banker to underwrite the securities that are not purchased by the privileged investors.

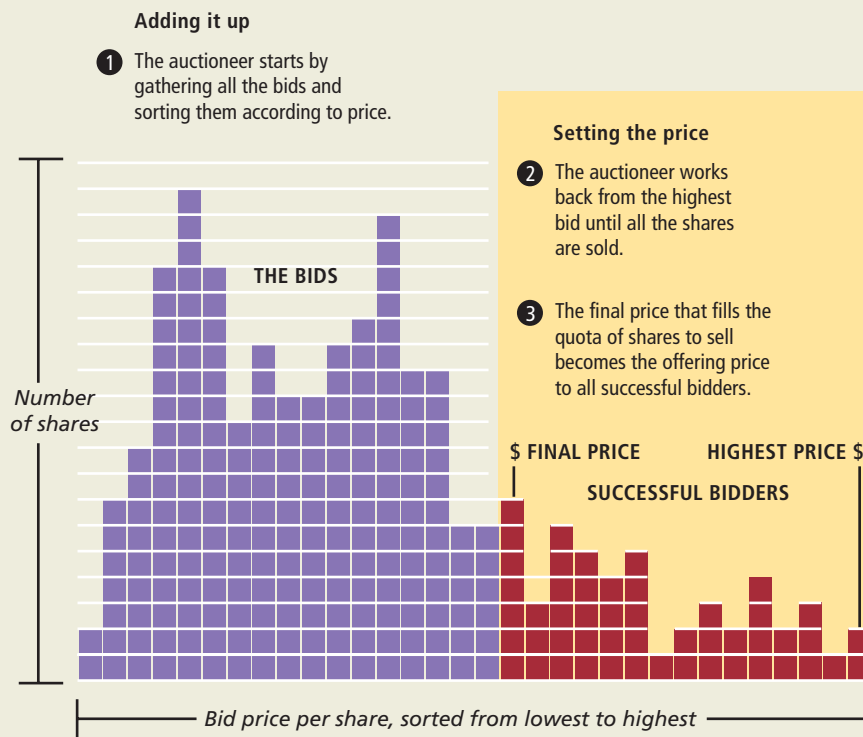
privileged subscription the process of marketing a new security issue to a select group of investors.

Dutch Auction As we explained at the beginning of the chapter, with a **Dutch auction**, investors first bid on the number of shares they would like to buy and the price they are willing to pay for them. Once all the bids are in, the prices that were bid along with the number of shares are ranked from the highest price to the lowest price. The selling price for the stock is then calculated as the highest price that allows for all the stock to be sold. Although Google really brought this method to the public’s eye, it has been used by a number of other companies, including Overstock.com (OSTK) and Salon (SLNM). Figure 2-2 explains in more detail how a Dutch auction works.

Dutch auction a method of issuing securities (common stock) by which investors place bids indicating how many shares they are willing to buy and at what price. The price the stock is then sold for becomes the lowest price at which the issuing company can sell all the available shares.

FIGURE 2-2 A Dutch Auction Primer

A company is planning to use a Dutch auction to set the price of the shares in its initial public offering. Here is how the auction process will find the highest price at which all shares can be sold.



direct sale the sale of securities by a corporation to the investing public without the services of an investment-banking firm.

A Direct Sale In a **direct sale** *the issuing firm sells the securities directly to the investing public without involving an investment banker*. Even among established corporate giants, this procedure is relatively rare. A variation of the direct sale involves the private placement of a new issue by the fund-raising corporation *without* the use of an investment banker as an intermediary. Texaco (now Chevron (CVX)), Mobil Oil (now ExxonMobil (XOM)), and International Harvester (now Navistar (NAV)) are examples of large firms that have followed this procedure.

Private Debt Placements

Earlier in this chapter we discussed the private placement market. Here we take a closer look at the debt side of the private placement market and how it is used by seasoned corporations as distinct from start-ups. Thus, when we talk of private placements in this section, we are focusing on debt contracts rather than stock offerings. This debt side of the private placement market makes up a significant portion of the total private market.

Private placements are an alternative to the sale of securities to the public or to a restricted group of investors through a privileged subscription. Any type of security can be privately placed (directly placed). The major investors in private placements are large financial institutions. Based on the volume of securities purchased, the three most important investor groups are (1) life insurance companies, (2) state and local retirement funds, and (3) private pension funds.

In arranging a private placement, the firm may (1) avoid the use of an investment banker and work directly with the investing institutions or (2) engage the services of an investment banker. If the firm does not use an investment banker, of course, it does not have to pay a fee. However, investment bankers can provide valuable advice in the private placement process. They are usually in contact with several major institutional investors; thus, they will know who the major buyers able to invest in the proposed offering are, and they can help the firm evaluate the terms of the new issue.

Private placements have advantages and disadvantages compared with public offerings. The financial manager must carefully evaluate both sides of the question. The advantages associated with private placements are:

1. **Speed** The firm usually obtains funds more quickly through a private placement than a public offering. The major reason is that registration of the issue with the SEC is not required.
2. **Reduced costs** These savings result because the lengthy registration statement for the SEC does not have to be prepared, and the investment-banking underwriting and distribution costs do not have to be absorbed.
3. **Financing flexibility** In a private placement the firm deals on a face-to-face basis with a small number of investors. This means that the terms of the issue can be tailored to meet the specific needs of the company. For example, if the investors agree to loan \$50 million to a firm, the management does not have to take the full \$50 million at one time. They may instead borrow as they need it and thereby pay interest only on the amount actually borrowed. However, the company may have to pay a commitment fee of, say, 1 percent on the unused portion of the loan. That is, if the company borrows only \$35 million, it will have to pay interest on that amount and pay a commitment fee of 1 percent or so on the remaining \$15 million. This provides some insurance against capital market uncertainties, and the firm does not have to borrow the funds if the need does not arise. There is also the possibility of renegotiation. The terms of the debt issue can be altered. The term to maturity, the interest rate, or any restrictive covenants can be discussed among the affected parties.

The following disadvantages of private placements must be evaluated.

1. **Interest costs** It is generally conceded that interest costs on private placements exceed those of public issues. Whether this disadvantage is enough to offset the reduced costs associated with a private placement is a determination the financial manager must make. There is some evidence that on smaller issues, say \$500,000 as opposed to \$30 million, the private placement alternative would be preferable.

2. **Restrictive covenants** A firm's dividend policy, working-capital levels, and the raising of additional debt capital may all be affected by provisions in the private placement debt contract. This is not to say that such restrictions are always absent in public debt contracts. Rather, the firm's financial officer must be alert to the tendency for these covenants to be especially burdensome in private contracts.
3. **The possibility of future SEC registration** If the lender (investor) should decide to sell the issue to a public buyer before maturity, the issue must be registered with the SEC. Some lenders, then, require that the issuing firm agree to a future registration at their option.

Flotation Costs

The firm raising long-term capital incurs two types of **flotation costs**: (1) the underwriter's spread and (2) issuing costs. Of these two costs, the underwriter's spread is the larger. The *underwriter's spread* is simply the difference between the gross and net proceeds from a given security issue expressed as a percent of the gross proceeds. The *issue costs* include (1) the printing and engraving of the security certificates, (2) legal fees, (3) accounting fees, (4) trustee fees, and (5) several other miscellaneous components. The two most significant issue costs are printing and engraving and legal fees.

Data published by the SEC have consistently revealed two relationships about flotation costs. First, the costs associated with issuing common stock are notably greater than the costs associated with preferred stock offerings. In turn, preferred stock costs exceed those of bonds. Second, flotation costs (expressed as a percentage of gross proceeds) decrease as the size of the security issue increases.

In the first instance, the stated relationship reflects the fact that issue costs are sensitive to the risks involved in successfully distributing a security issue. Common stock is riskier to own than corporate bonds. Underwriting risk is, therefore, greater with common stock than with bonds. Thus, flotation costs just mirror these risk relationships as identified in **Principle 3: Risk Requires a Reward**. In the second case, a portion of the issue costs is

flotation costs the transaction cost incurred when a firm raises funds by issuing a particular type of security.



CAUTIONARY TALE

FORGETTING PRINCIPLE 5: CONFLICTS OF INTEREST CAUSE AGENCY PROBLEMS

In 2004, America found itself in the midst of a housing boom. Fueled by low interest rates and government legislation aimed at allowing more people to qualify for housing loans, including those who wouldn't ordinarily qualify, new home construction rates were at a 20-year high. Homeownership was on the rise. And before long, even more first-time homebuyers would realize the American dream.

That was good news for investment bankers like Michael Francis, whose business entailed working with lenders on the West Coast who supplied him with mortgages he could package up as securities and sell to investors who, in turn, collected the interest monthly. For Francis, it didn't matter if the mortgages defaulted; after all, he collected his fees as soon as the mortgages were packaged up and sold as securities. If the mortgages went bad, it wasn't the bank that experienced a loss, it was the last one holding them.

But Francis could only sell the mortgages to big investors once they had been approved by a credit rating agency. The agency's appraisal signaled to investors that the securities were "safe" investments. However, the rating agencies were paid by the people selling the securities, and the more securities that were issued, the more they got paid, and that created a huge temptation to go easy.

Michael Francis admits he had doubts about the risk level of these securities, but the economy was booming and housing

prices continued to climb. At the time, the mortgages seemed like safe enough investments to earn the "safe" rating from credit rating agencies. Besides, the investment bank Francis worked for (which he declined to name) was making oodles of money.

If this is starting to sound like one too many conflicts of interest, it should. The acts (or failures to act) of these investment banks and rating agencies are prime examples of how conflicts of interest can lead to agency problems and unethical behavior. Looking back, Francis says the judgment of many in the financial institutions was cloudy. He summed up the way lenders failed to adequately qualify borrowers as, "we removed the litmus test. No income, no asset. Not verifying income . . . breathe on a mirror and if there's fog you sort of get a loan."

Many players had a hand in the eventual housing bust that followed, but the credit rating agencies that gave risky securities a "safe" rating, investment banks that failed to question those ratings, and lenders who offered bad loans to homebuyers in the first place are all key players. The appeal of short-term profits and a massive failure to self-regulate caused these institutions to lose sight of the long-term interests of their clients. Many think these conflicts of interest and failure of self-governance all led to the financial crisis of 2009 and the economic downturn that followed.

Source: "House of Cards," directed by David Faber, CNBC Original Production (2009).

fixed. Legal fees and accounting costs are good examples. So, as the size of the security issue rises, the fixed component is spread over a larger gross proceeds base. As a consequence, average flotation costs vary inversely with the size of the issue.

Regulation Aimed at Making the Goal of the Firm Work: The Sarbanes-Oxley Act

Because of growing concerns about both agency and ethical issues, in 2002 Congress passed the Sarbanes-Oxley Act, or SOX as it is commonly called. One of the primary inspirations for this new law was Enron, which failed financially in December 2001. Prior to bankruptcy, Enron's board of directors actually voted on two occasions to temporarily suspend its own "code of ethics" to permit its CFO to engage in risky financial ventures that benefited the CFO personally while exposing the corporation to substantial risk.

SOX holds corporate advisors who have access to or influence on company decisions (such as a firm's accountants, lawyers, company officers, and boards of directors) legally accountable for any instances of misconduct. The act very simply and directly identifies its purpose as being "to protect investors by improving the accuracy and reliability of corporate disclosures made pursuant to the securities laws, and for other purposes" and mandates that senior executives take individual responsibility for the accuracy and completeness of the firm's financial reports.²

SOX safeguards the interests of the shareholders by providing greater protection against accounting fraud and financial misconduct. Unfortunately, all this has not come without a price. While SOX has received praise from the likes of the former Federal Reserve Chairman Alan Greenspan and has increased investor confidence in financial reporting, it has also been criticized. The demanding reporting requirements are quite costly and, as a result, may inhibit firms listing on U.S. stock markets.

Concept Check

1. What is the main difference between an investment banker and a commercial banker?
2. What are the three major functions that an investment banker performs?
3. What are the five key methods by which securities are distributed to final investors?
4. Within the financial markets, explain what we mean by "private placements" and what the advantages and disadvantages are.

b³ Be acquainted with recent rates of return.

opportunity cost of funds the next-best rate of return available to the investor for a given level of risk.

Rates of Return in the Financial Markets

In this chapter we've discussed the process of raising funds to finance new projects. As you might expect, to raise those funds a firm must offer a rate of return *competitive* with the next-best investment alternative available to that saver (investor).

This *rate of return on the next-best investment alternative to the saver* is known as the investor's **opportunity cost of funds**. The opportunity cost concept is crucial in financial management and is referred to often.

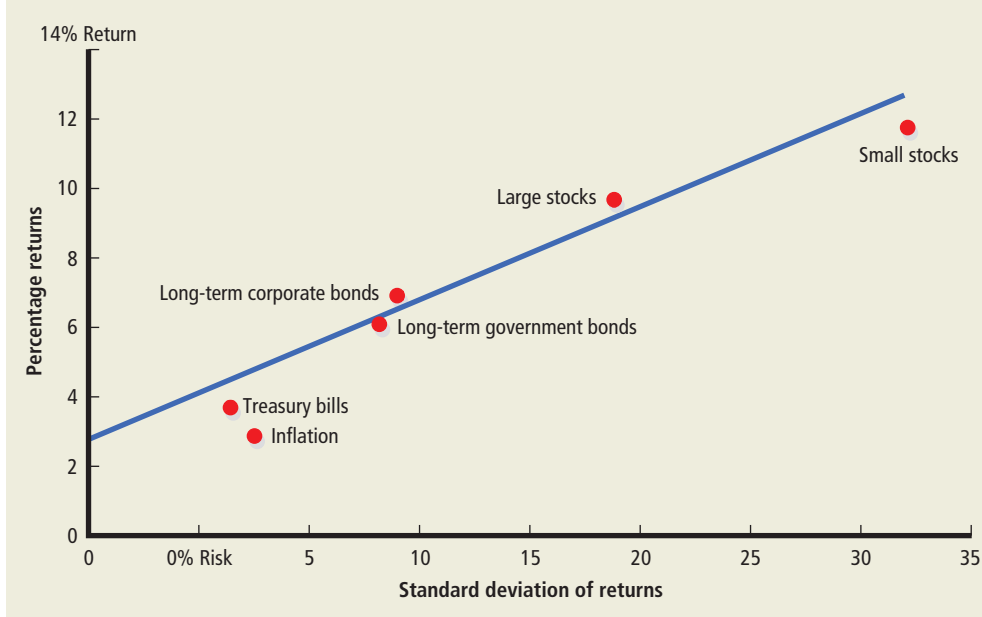
Next we review the levels and variability in rates of return. This review focuses on returns from a wide array of financial instruments. In Chapter 6, we will explain the relationship of rates of return and risk more completely. Then in Chapter 9 we discuss at length the concept of an *overall* cost of capital. Part of that overall cost of capital is attributed to interest rate levels at given points in time. So we follow this initial broad look at interest rate levels with a discussion of the more recent period of 1981 through 2011.

Rates of Return over Long Periods

History can tell us a great deal about the returns that investors earn in the financial markets. First, what should we expect in terms of return and risk? From **Principle 3: Risk Requires a Reward** we know that with higher returns we should expect to see higher risk, and that's



²Sarbanes-Oxley Act, Pub.L.107-204, 116 Stat. 745, enacted July 29, 2002.

FIGURE 2-3 Rates of Return and Standard Deviations, 1926 to 2011

exactly the case. Common stocks of small firms have more risk and produce higher average annual returns than large stock, with the annual return on small-company stocks averaging 11.9 percent and the annual return on large-company stocks averaging 9.8 percent.

The data are summarized visually in Figure 2-3, which presents the relationship between the average annual observed rates of return for different types of securities along with the average annual rate of inflation. Over this period, the average inflation rate was 3.0 percent. We refer to this rate as the “inflation-risk premium.” The investor who earns only the rate of inflation has earned no “real return.” That is, the *real* return is the return earned above the rate of increase in the general price level for goods and services in the economy, which is the inflation rate. In addition to the danger of not earning above the inflation rate, investors are concerned about the risk of the borrower defaulting, or failing to repay the loan when due. Thus, we would expect investors to earn a default-risk premium for investing in long-term corporate bonds versus long-term government bonds because corporate bonds are considered more risky. The premium for 1926 to 2011, as shown in Figure 2-3, was 0.4 percent, or what is called 40 basis points (6.1 percent on long-term corporate bonds minus 5.7 percent on long-term government bonds). We would also expect an even greater risk premium for common stocks vis-à-vis long-term corporate bonds, because the variability in average returns is greater for common stocks. The results show such a risk premium: Common stocks earned 3.7 percent more than long-term corporate bonds (9.8 percent for common stocks minus 6.1 percent for long-term corporate bonds).

Remember that these returns are “averages” across many securities and over an extended period of time. However, these averages reflect the conventional wisdom regarding risk premiums: The greater the risk, the greater will be the expected returns. Such a relationship is shown in Figure 2-3, where the average returns are plotted against their standard deviations; note that higher average returns have historically been associated with higher dispersion in these returns.

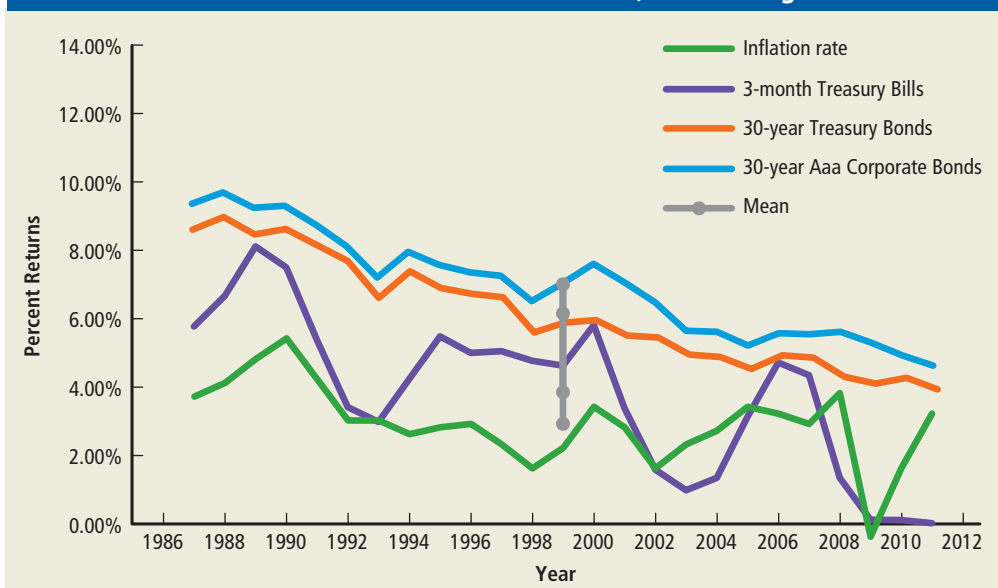
Interest Rate Levels in Recent Periods

The *nominal* interest rates on some key fixed-income securities are displayed within both Table 2-2 (on page 34) and Figure 2-4 (on page 34) for the 1987–2011 time frame. The rate of inflation at the consumer level is also presented in those two exhibits. This allows us to observe quite easily several concepts that were mentioned in the previous section. Specifically, we can observe (1) the inflation-risk premium, (2) the default-risk premium across the

TABLE 2-2 Interest Rate Levels and Inflation Rates, 1987 through 2011

Year	3-month Treasury Bills %	30-yr Treasury Bonds %	30-yr Corporate Bonds %	Inflation Rate %
1987	5.78	8.59	9.38	3.7
1988	6.67	8.96	9.71	4.1
1989	8.11	8.45	9.26	4.8
1990	7.5	8.61	9.32	5.4
1991	5.38	8.14	8.77	4.2
1992	3.43	7.67	8.14	3
1993	3	6.59	7.22	3
1994	4.25	7.37	7.97	2.6
1995	5.49	6.88	7.59	2.8
1996	5.01	6.71	7.37	2.9
1997	5.06	6.61	7.27	2.3
1998	4.78	5.58	6.53	1.6
1999	4.64	5.87	7.05	2.2
2000	5.82	5.94	7.62	3.4
2001	3.4	5.49	7.08	2.8
2002	1.61	5.43	6.49	1.6
2003	1.01	4.93	5.66	2.3
2004	1.37	4.86	5.63	2.7
2005	3.15	4.51	5.23	3.4
2006	4.73	4.91	5.59	3.2
2007	4.36	4.84	5.56	2.9
2008	1.37	4.28	5.63	3.8
2009	0.15	4.08	5.31	-0.4
2010	0.14	4.25	4.94	1.6
2011	0.05	3.91	4.64	3.2
Mean	3.85	6.14	7.00	2.92

Source: Federal Reserve System, Release H-15, Selected Interest Rates.

FIGURE 2-4 Interest Rate Levels and Inflation Rates, 1987 through 2011

Source: Federal Reserve System, Release H-15, Selected Interest Rates.

several instruments, and (3) the approximate real return for each instrument. Looking at the mean (average) values for each security and the inflation rate at the bottom of Table 2-2 will facilitate the discussion.

While inflation appears to have dropped a bit between 1987 and 2011, it was much higher just before this period. In fact, from 1979 through 1981 it averaged over 10 percent each year, peaking at 13.5 percent in 1980. As a result of this drop in the rate of inflation, interest rates have come down. This only makes sense according to the logic of the financial markets. Investors *require* a **nominal (or quoted) rate of interest** that exceeds the inflation rate or else their realized *real* return will be negative.

Table 2-2 indicates that between 1987 and 2011, on average, investor rationality prevailed. For example, the average return premium demanded on U.S. Treasury bills with a 3-month maturity was 0.93 percent (or 93 basis points, where a basis point is one one-hundredth of 1 percent) in excess of the inferred **inflation premium** of 2.92 percent. That is, an average 3.85 percent yield on Treasury bills over the period *minus* the average inflation rate of 2.92 percent over the same period produces a premium of 0.93 percent. This 0.93 percent can be thought of as the real risk-free short-term interest rate that prevailed over the 1987–2011 period. You'll notice that this rate becomes negative between 2009 and 2011. That's because the Federal Reserve took action to keep short-term interest rates artificially low in an attempt to stimulate the economy.

The **default-risk premium** is also evident in Table 2-2 and Figure 2-4:

SECURITY	AVERAGE YIELD
30-year Treasury bonds	6.14%
30-year Aaa corporate bonds	7.00%

Again, the basic rationale of the financial markets prevailed. The default-risk premium on 30-year high-rated (Aaa) corporate bonds relative to long-term Treasury bonds of 30-year maturity was 0.86 percent (7.00 percent minus 6.14 percent), or 86 basis points.

The preceding array of numbers can also be used to identify another factor that affects interest rate levels. It is referred to as the **maturity-risk premium**. The maturity-risk premium can be defined as *the additional return required by investors in longer-term securities (bonds in this case) to compensate them for the greater risk of price fluctuations on those securities caused by interest rate changes*. This maturity-risk premium arises even if securities possess equal (or approximately equal) odds of default. Notice that Treasury bonds with a 30-year maturity commanded a 2.29 percent yield differential over the shorter, 3-month-to-maturity Treasury bonds. (Both types of bonds are considered risk-free because they are issued and backed by the U.S. government.) This provides an estimate of the maturity premium demanded by all investors over this specific 1987–2011 period.

When you study the basic mathematics of financial decisions and the characteristics of fixed-income securities in later chapters, you will learn how to quantify this maturity premium that is imbedded in nominal interest rates.

One other type of risk premium that helps determine interest rate levels needs to be identified and defined. It is known as the “liquidity-risk premium.” The **liquidity-risk premium** is defined as *the additional return required by investors in securities that cannot be quickly converted into cash at a reasonably predictable price*. The secondary markets for small-bank stocks, especially community banks, provide a good example of the liquidity premium. A bank holding company that trades on the New York Stock Exchange, such as Wells Fargo, will be more liquid to investors than, say, the common stock of Century National Bank of Orlando, Florida. Such a liquidity premium is reflected across the spectrum of financial assets, from bonds to stocks.

nominal (or quoted) rate of interest the interest rate paid on debt securities without an adjustment for any loss in purchasing power.

inflation premium a premium to compensate for anticipated inflation that is equal to the price change expected to occur over the life of the bond or investment instrument.

default-risk premium the additional return required by investors to compensate them for the risk of default. It is calculated as the difference in rates between a U.S. Treasury bond and a corporate bond of the same maturity and marketability.

maturity-risk premium the additional return required by investors in longer-term securities to compensate them for the greater risk of price fluctuations on those securities caused by interest rate changes.

liquidity-risk premium the additional return required by investors for securities that cannot be quickly converted into cash at a reasonably predictable price.



REMEMBER YOUR PRINCIPLES

Principle Our third principle, **Principle 3: Risk Requires a Reward**, established the fundamental risk–return relationship that governs the financial markets. We are now trying to provide you with an understanding of the kinds of risks that are rewarded in the risk–return relationship presented in **Principle 3**.

Concept Check

1. What is the “opportunity cost of funds”?
2. Over long periods of time is the “real rate of return” higher on 30-year Treasury bonds or 30-year Aaa corporate bonds?
3. Distinguish between the concepts of the “inflation premium” and the “default-risk premium.”
4. Distinguish between the concepts of the “maturity-risk premium” and the “liquidity-risk premium.”

b4 Explain the fundamentals of interest rate determination and the popular theories of the term structure of interest rates.



real risk-free interest rate the required rate of return on a fixed-income security that has no risk in an economic environment of zero inflation.

Interest Rate Determinants in a Nutshell

Using the logic from **Principle 3: Risk Requires a Reward**, we can deconstruct the interest rate paid on a security into a simple equation with the nominal interest rate equal to the sum of the real risk-free interest rate plus compensation for taking on several different types of risk and several risk premiums, where the **real risk-free interest rate** is *a required rate of return on a fixed-income security that has no risk in an economic environment of zero inflation*. The real risk-free interest rate can be thought of as the return demanded by investors in U.S. Treasury securities during periods of no inflation. The equation for the nominal interest rate is

$$\begin{aligned} \text{Nominal interest rate} = & \text{real risk-free interest rate} \\ & + \text{inflation premium} \\ & + \text{default-risk premium} \\ & + \text{maturity-risk premium} \\ & + \text{liquidity-risk premium} \end{aligned} \quad (2-1)$$

where

Nominal interest rate = the quoted interest rate and is the interest rate paid on debt securities without an adjustment for any loss in purchasing power.

Real risk-free interest rate = the interest rate on a fixed-income security that has no risk in an economic environment of zero inflation. It could also be stated as the nominal interest rate less the inflation, default-risk, maturity-risk, and liquidity-risk premium.

Inflation premium = a premium to compensate for anticipated inflation that is equal to the price change expected to occur over the life of the bond or investment instrument.

Default-risk premium = the additional return required by investors to compensate for the risk of default. It is calculated as the difference in rates between a U.S. Treasury bond and a corporate bond of the same maturity and marketability.

Maturity-risk premium = the additional return required by investors in longer-term securities to compensate them for the greater risk of price fluctuation on those securities caused by interest rate changes.

Liquidity-risk premium = the additional return required by investors for securities that cannot quickly be converted into cash at a reasonably predictable price.

Estimating Specific Interest Rates Using Risk Premiums

By using knowledge of various risk premiums as contained in equation (2-1), the financial manager can generate useful information for the firm’s financial planning process. For instance, if the firm is about to offer a new issue of corporate bonds to the investing

marketplace, it is possible for the financial manager or analyst to estimate and better understand what interest rate (yield) would satisfy the market to help ensure that the bonds are actually bought by investors. To make sense out of the different interest rate terminology—nominal, risk-free, and real—let’s take a closer look at the difference between them.

Real Risk-Free Interest Rate and the Risk-Free Interest Rate

What’s the difference between the real risk-free interest rate and the risk-free interest rate? The answer is that the risk-free interest rate includes compensation for inflation while the real risk-free interest rate is the risk-free rate after inflation. As a result,

$$\begin{aligned}\text{risk-free interest rate} &= \text{real risk-free interest rate} + \text{inflation premium} \\ \text{or} \\ \text{real risk-free interest rate} &= \text{risk-free interest rate} - \text{inflation premium}\end{aligned}$$

In effect, when you see the term “real” in front of an interest rate, that interest rate is referring to an “after inflation adjusted” return, that is, the impact of inflation has been subtracted from the interest rate. Furthermore, the term “risk-free” indicates there is no compensation for default risk, maturity risk, or liquidity risk. As a result, the term “real risk-free” indicates that the interest rate does not include compensation for the inflation, default-risk, maturity-risk, and liquidity-risk premiums. That is, it is the return if there was no risk and no inflation.

Real and Nominal Rates of Interest

When a rate of interest is quoted, it is generally the nominal, or observed, rate. The nominal rate of interest tells you how much more money you will have. As we just learned, **real rate of interest**, in contrast, represents *the rate of increase in your actual purchasing power, after adjusting for inflation*. In effect, the real rate of interest tells you how much more purchasing power you will have. Keep in mind that the real rate of interest is not a risk-free rate, that is, the real rate of interest includes both the real risk-free rate of interest along with compensation for the default-risk, maturity-risk, and liquidity-risk premiums. The nominal interest rate can be calculated to be

real rate of interest the nominal (quoted) rate of interest less any loss in purchasing power of the dollar during the time of the investment.

$$\text{Nominal interest rate} \cong (\text{approximately equals}) \text{ real rate of interest} + \text{inflation premium} \quad (2-2)$$

CAN YOU DO IT?

You have been asked to provide a reasonable estimate of the nominal interest rate for a new issue of 30-year Aaa-rated bonds (that is, very high quality corporate bonds) to be offered by Big Truck Producers Inc. The final format that the CFO of Big Truck has requested is that of equation (2-1) in the text.

After some thought, you decided to estimate the different premiums in equation (2-1) as follows:

1. The real risk-free rate of interest is the difference between the calculated average yield on 3-month Treasury bills and the inflation rate.
2. The inflation premium is the rate of inflation expected to occur over the life of the bond under consideration.
3. The default-risk premium is estimated by the difference between the average yield on 30-year Aaa-rated corporate bonds and 30-year Treasury bonds.
4. The maturity-risk premium is estimated by the difference between the calculated average yield on 30-year Treasury bonds and 3-month Treasury bills.

You next conducted research and found the following: The current 3-month Treasury bill rate is 4.89 percent, the 30-year Treasury bond rate is 5.38 percent, the 30-year Aaa-rated corporate bond rate is 6.24 percent, and the inflation rate is 3.60 percent. Finally, you have estimated that Big Truck’s bonds will have a slight liquidity-risk premium of 0.03 percent because of the infrequency with which they are traded.

Now place your output into the format of equation (2-1) so that the nominal interest rate can be estimated and the size of each variable can also be inspected for reasonableness and discussion with the chief financial officer. (Solution can be found on page 38.)

DID YOU GET IT?

Let's now look at the building blocks that will comprise our forecast of the nominal interest rate on Big Truck's new issue of bonds. The nominal rate that is forecast to satisfy the market turns out to be 6.27 percent. The following tables illustrate how we obtained this estimate.

(1) 3-month Treasury Bills %	(2) 30-year Treasury Bonds %	(3) 30-year Aaa-Rated Corporate Bonds %	(4) Inflation Rate %
4.89	5.38	6.24	3.60

Table Columns Shown Above	Equation (2-1)	
(1) – (4)	real risk-free interest rate	1.29
	+	+
(4)	inflation premium	3.60
	+	+
(3) – (2)	default-risk premium	0.86
	+	+
(2) – (1)	maturity-risk premium	0.49
	+	+
Given	liquidity-risk premium	0.03
	=	=
	nominal interest rate	6.27

Thus, we see that:

1. The real risk-free rate of interest is 1.29 percent, which is the difference between the average yield on a 3-month Treasury bill and the inflation rate (column 1 less column 4).
2. The inflation premium of 3.60 percent is the inflation rate (column 4).
3. The default-risk premium of 0.86 is the difference in the average rate available to investors in the least risky (30-year Aaa-rated) corporate bonds that mature in 30 years and the average return for a Treasury bond that matures in 30 years (column 3 minus column 2).
4. The maturity-risk premium of 0.49 percent is the rate earned by investors on 30-year Treasury bonds less the rate on 3-month Treasury bills (column 2 minus column 1).
5. The liquidity-risk premium is 0.03 percent, based on your earlier assumption.

When we put this all together as an estimate of the nominal interest rate needed to satisfy the financial markets on Big Truck's new bond issue, we have

$$\text{Nominal rate on Big Truck's bonds} = 1.29 + 3.60 + 0.86 + 0.49 + 0.03 = 6.27\%$$

Understanding this analysis will help you deal with the Mini Case at the end of this chapter. We move now to an examination of the relationship between real and nominal interest rates.

Equation 2-2 just says that the nominal rate of interest is approximately equal to the real interest rate plus the inflation premium and provides a quick and *approximate* way of estimating the real rate of interest by solving directly for this rate. You'll notice it is very similar to equation (2-1), except it lumps all the different risk premiums in with the real risk-free rate of interest to come up with the real rate of interest. This basic relationship in equation (2-2) contains important information for the financial decision maker. It has also been for years the subject of fascinating and lengthy discussions among financial economists.

As we saw in equation (2-2), a quick approximation for the nominal rate of interest is the real interest rate plus the inflation premium. Let's take a closer look at this relationship. Let's begin by assuming that you have \$100 today and lend it to someone for 1 year at a nominal rate

of interest of 11.3 percent. This means you will get back \$111.30 in 1 year. But if during the year, the prices of goods and services rise by 5 percent, it will take \$105 at year-end to purchase the same goods and services that \$100 purchased at the beginning of the year. What was your increase in purchasing power over the year? The quick and dirty answer is found by subtracting the inflation rate from the nominal rate, $11.3\% - 5\% = 6.3\%$, but this is not exactly correct. We can also express the relationship among the nominal interest rate, the rate of inflation (that is, the inflation premium), and the real rate of interest as follows:

$$1 + \text{nominal interest rate} = (1 + \text{real rate of interest})(1 + \text{rate of inflation}) \quad (2-3)$$

Solving for the nominal rate of interest,

Nominal interest rate

$$= \text{real rate of interest} + \text{rate of inflation} + (\text{real rate of interest})(\text{rate of inflation})$$

Consequently, the nominal rate of interest is equal to the sum of the real rate of interest, the inflation rate, and the product of the real rate and the inflation rate. This relationship among nominal rates, real rates, and the rate of inflation has come to be called the *Fisher effect*.³ What does the product of the real rate of interest and the inflation rate represent? It represents the fact that the money you earn on your investment is worth less because of inflation. All this demonstrates that the observed nominal rate of interest includes both the real rate and an *inflation premium*.

Substituting into equation (2-3) using a nominal rate of 11.3 percent and an inflation rate of 5 percent, we can calculate the real rate of interest as follows:

$$\begin{aligned} \text{Nominal or quoted rate of interest} &= \text{real rate of interest} + \text{inflation rate} + \text{product of the real rate of interest and the inflation rate} \\ 0.113 &= \text{real rate of interest} + 0.05 + 0.05 \times \text{real rate of interest} \\ 0.063 &= 1.05 \times \text{real rate of interest} \\ 0.063/1.05 &= \text{real rate of interest} \end{aligned}$$

Solving for the real rate of interest:

$$\text{Real rate of interest} = 0.06 = 6\%$$

Thus, at the new higher prices, your purchasing power will have increased by only 6 percent, although you have \$11.30 more than you had at the start of the year. To see why, let's assume that at the outset of the year, one unit of the market basket of goods and services costs \$1, so you could purchase 100 units with your \$100. At the end of the year, you have \$11.30 more, but each unit now costs \$1.05 (remember the 5 percent rate of inflation). How many units can you buy at the end of the year? The answer is $\$111.30 \div \$1.05 = 106$, which represents a 6 percent increase in real purchasing power.⁴

Inflation and Real Rates of Return: The Financial Analyst's Approach

Although the algebraic methodology presented in the previous section is strictly correct, few practicing analysts or executives use it. Rather, they employ some version of the

CAN YOU DO IT?

SOLVING FOR THE REAL RATE OF INTEREST

Your banker just called and offered you the chance to invest your savings for 1 year at a quoted rate of 10 percent. You also saw on the news that the inflation rate is 6 percent. What is the real rate of interest you would be earning if you made the investment? (The solution can be found on page 40.)

³This relationship was analyzed many years ago by Irving Fisher. For those who want to explore Fisher's theory of interest in more detail, a fine overview is contained in Peter N. Ireland, "Long-Term Interest Rate and Inflation: A Fisherian Approach," Federal Reserve Bank of Richmond, *Economic Quarterly*, 82 (Winter 1996), pp. 22–26.

⁴In Chapter 5, we will study more about the time value of money.

DID YOU GET IT?

SOLVING FOR THE REAL RATE OF INTEREST

$$\begin{aligned}
 \text{Nominal or quoted rate of interest} &= \text{real rate of interest} + \text{inflation rate} + \text{product of the real rate of interest and the inflation rate} \\
 0.10 &= \text{real rate of interest} + 0.06 + 0.06 \times \text{real rate of interest} \\
 0.04 &= 1.06 \times \text{real rate of interest}
 \end{aligned}$$

Solving for the real rate of interest:

$$\text{real rate of interest} = 0.0377 = 3.77\%$$

following relationship (which comes from equation (2-2)), an approximation method, to estimate the real rate of interest over a selected past time frame.

$$\text{Nominal interest rate} - \text{inflation rate} \cong \text{real interest rate}$$

The concept is straightforward, but its implementation requires that several judgments be made. For example, suppose we want to use this relationship to determine the real risk-free interest rate, which interest rate series and maturity period should be used? Suppose we settle for using some U.S. Treasury security as a surrogate for a nominal risk-free interest rate. Then, should we use the yield on 3-month U.S. Treasury bills or, perhaps, the yield on 30-year Treasury bonds? There is no absolute answer to the question.

So, we can have a real risk-free short-term interest rate, as well as a real risk-free long-term interest rate, and several variations in between. In essence, it just depends on what the analyst wants to accomplish. Of course we could also calculate the real rate of interest on some rating class of 30-year corporate bonds (such as Aaa-rated bonds) and have a risky real rate of interest as opposed to a real risk-free interest rate.

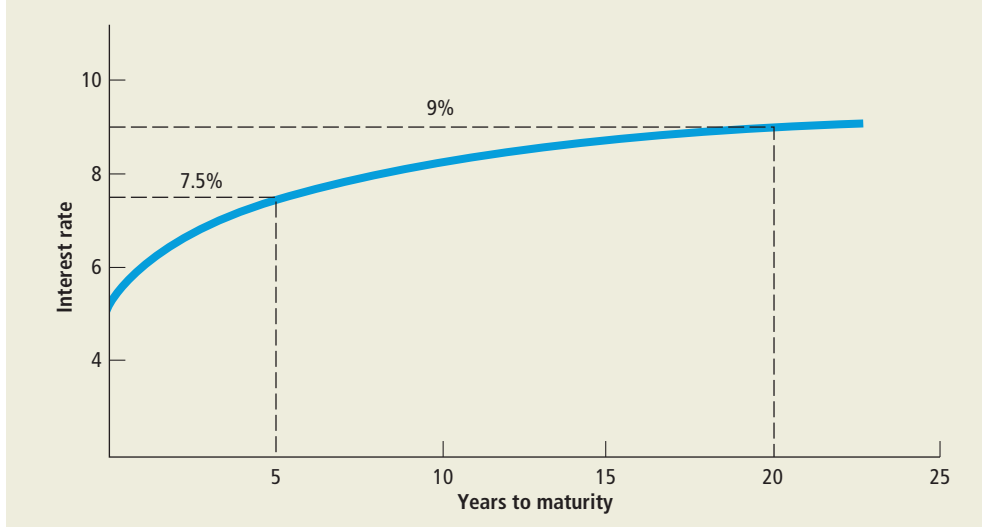
Furthermore, the choice of a proper inflation index is equally challenging. Again, we have several choices. We could use the consumer price index, the producer price index for finished goods, or some price index out of the national income accounts, such as the gross domestic product chain price index. Again, there is no precise scientific answer as to which specific price index to use. Logic and consistency do narrow the boundaries of the ultimate choice.

Let's tackle a very basic (simple) example. Suppose that an analyst wants to estimate the approximate real interest rate on (1) 3-month Treasury bills, (2) 30-year Treasury bonds, and (3) 30-year Aaa-rated corporate bonds over the 1987–2011 time frame. Furthermore, the annual rate of change in the consumer price index (measured from December to December) is considered a logical measure of past inflation experience. Most of our work is already done for us in Table 2-2. Some of the data from Table 2-2 are displayed here.

SECURITY	MEAN NOMINAL YIELD (%)	MEAN INFLATION RATE (%)	INFERRED REAL RATE (%)
3-month Treasury bills	3.85	2.92	0.93
30-year Treasury bonds	6.14	2.92	3.22
30-year Aaa-rated corporate bonds	7.00	2.92	4.08

Notice that the mean yield over the 25 years from 1987 to 2011 on all three classes of securities has been used. Likewise, the mean inflation rate over the same time period has been used as an estimate of the inflation premium. The last column provides the approximation for the real interest rate on each class of securities.

Thus, over the 25-year examination period the real rate of interest on 3-month Treasury bills was 0.93 percent versus 3.22 percent on 30-year Treasury bonds, versus 4.08 percent on 30-year Aaa-rated corporate bonds. These three estimates (approximations) of the real interest rate provide a rough guide to the increase in real purchasing power associated with an in-

FIGURE 2-5 The Term Structure of Interest Rates

vestment position in each security. Remember that the real rate on the corporate bonds is expected to be greater than that on long-term government bonds because of the default-risk premium placed on the corporate securities. We move in the next section to a more detailed discussion of the maturity-risk premium—specifically looking at the relationship between interest rates and the number of years to maturity.

The Term Structure of Interest Rates

*The relationship between a debt security's rate of return and the length of time until the debt matures is known as the **term structure of interest rates** or the **yield to maturity**. For the relationship to be meaningful to us, all the factors other than maturity, meaning factors such as the chance of the bond defaulting, must be held constant. Thus, *the term structure reflects observed rates or yields on similar securities, except for the length of time until maturity, at a particular moment in time.**

Figure 2-5 shows an example of the term structure of interest rates. The curve is upward sloping, indicating that longer terms to maturity command higher returns, or yields. In this hypothetical term structure, the rate of interest on a 5-year note or bond is 7.5 percent, whereas the comparable rate on a 20-year bond is 9 percent.

term structure of interest rates the relationship between interest rates and the term to maturity, where the risk of default is held constant.

yield to maturity the rate of return a bondholder will receive if the bond is held to maturity.

Observing the Historical Term Structures of Interest Rates

As we might expect, the term structure of interest rates changes over time, depending on the environment. The particular term structure observed today may be quite different from the term structure 1 month ago and different still from the term structure 1 month from now. A perfect example of the changing term structure, or yield curve, was witnessed during the early days of the first Persian Gulf Crisis, which occurred in August 1990. Figure 2-6 (on page 42) shows the yield curves 1 day before the Iraqi invasion of Kuwait and then again just 3 weeks later. The change is noticeable, particularly for long-term interest rates. Investors quickly developed new fears about the prospect of increased inflation to be caused

CAN YOU DO IT?

SOLVING FOR THE NOMINAL RATE OF INTEREST

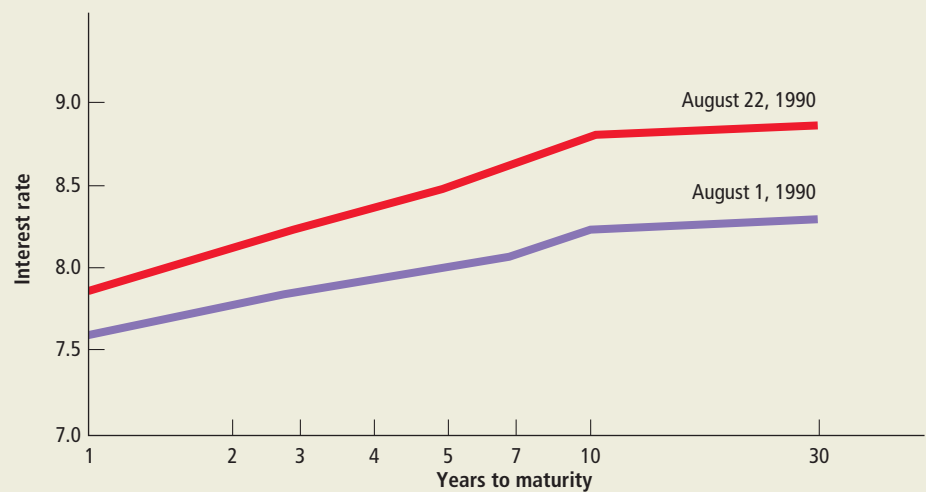
If you would like to earn a real rate of interest of 6 percent while the inflation rate is 4 percent, what nominal rate of interest would you have? (The solution can be found on page 42.)

DID YOU GET IT?

SOLVING FOR THE NOMINAL RATE OF INTEREST

Nominal or quoted rate of interest	=	real rate of interest	+	inflation rate	+	product of the real rate of interest and the inflation rate
	=	0.06	+	0.04	+	(0.06×0.04)
	=	0.1024	=	10.24%		

FIGURE 2-6 Changes in the Term Structure of Interest Rates for Government Securities at the Outbreak of the First Persian Gulf Crisis

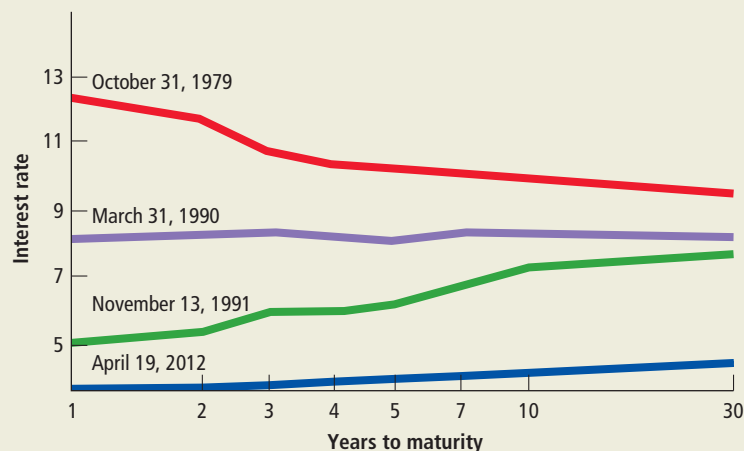


Source: Federal Reserve System, Release H-15.

by the crisis and, consequently, increased their required rates of return. Although the upward-sloping term-structure curves in Figures 2-5 and 2-6 are the ones most commonly observed, yield curves can assume several shapes. Sometimes the term structure is downward sloping; at other times it rises and then falls (is humpbacked); and at still other times it may be relatively flat. Figure 2-7 shows some yield curves at different points in time.

As you can see in Figure 2-7, the yield curve in April 2012 was very low, with short-term rates close to zero and historically low long-term rates at 3.13 percent. In response to the

FIGURE 2-7 Historical Term Structures of Interest Rates for Government Securities



Source: Federal Reserve System, Release H-15.

banking crisis and economic collapse, the government moved to reduce interest rates. In addition, interest rates came down as the economy slowed, while investors further pushed interest rates on Treasury securities as they moved money into Treasuries to escape the risk of the stock market. The reason the government worked to keep interest rates down was to help restart the economy by making borrowing inexpensive—hoping to help individuals buy new homes or refinance their mortgages and allow businesses to borrow money at low rates to invest.

What Explains the Shape of the Term Structure?

A number of theories may explain the shape of the term structure of interest rates at any point in time. Three possible explanations are prominent: (1) the unbiased expectations theory, (2) the liquidity preference theory, and (3) the market segmentation theory.⁵ Let's look at each in turn.

The Unbiased Expectations Theory The **unbiased expectations theory** says that *the term structure is determined by an investor's expectations about future interest rates*.⁶ To see how this works, consider the following investment problem faced by Mary Maxell. Mary has \$10,000 that she wants to invest for 2 years, at which time she plans to use her savings to make a down payment on a new home. Wanting not to take any risk of losing her savings, she decides to invest in U.S. government securities. She has two choices. First, she can purchase a government security that matures in 2 years, which offers her an interest rate of 9 percent per year. If she does this, she will have \$11,881 in 2 years, calculated as follows:⁷

unbiased expectations theory the theory that the shape of the term structure of interest rates is determined by an investor's expectations about future interest rates.

Principal amount	\$10,000
Plus year 1 interest ($0.09 \times \$10,000$)	<u>900</u>
Principal plus interest at the end of year 1	\$10,900
Plus year 2 interest ($0.09 \times \$10,900$)	<u>981</u>
Principal plus interest at the end of year 2	<u><u>\$ 11,881</u></u>

Alternatively, Mary could buy a government security maturing in 1 year that pays an 8 percent rate of interest. She would then need to purchase another 1-year security at the end of the first year. Which alternative Mary chooses obviously depends in part on the rate of interest she expects to receive on the government security she will purchase a year from now. We cannot tell Mary what the interest rate will be in a year; however, we can at least calculate the rate that will give her the same 2-year total savings she would get from her first choice, or \$11,881. The interest rate can be calculated as follows:

Savings needed in 2 years	\$ 11,881
Savings at the end of year 1 [$\$10,000(1 + 0.08)$]	<u>\$10,800</u>
Interest needed in year 2	<u><u>\$ 1,081</u></u>

For Mary to receive \$1,081 in the second year, she would have to earn about 10 percent on her second-year investment, computed as follows:

$$\frac{\text{Interest received in year 2}}{\text{Investment made at beginning of year 2}} = \frac{\$1,081}{\$10,800} = 10\%$$

⁵See Richard Roll, *The Behavior of Interest Rates: An Application of the Efficient Market Model to U.S. Treasury Bills* (New York: Basic Books, 1970).

⁶Irving Fisher thought of this idea in 1896. The theory was later refined by J. R. Hicks in *Value and Capital* (London: Oxford University Press, 1946) and F. A. Lutz and V. C. Lutz in *The Theory of Investment in the Firm* (Princeton, NJ: Princeton University Press, 1951).

⁷We could also calculate the principal plus interest for Mary's investment using the following compound interest equation: $\$10,000(1 + 0.09)^2 = \$11,881$. We study the mathematics of compound interest in Chapter 5.

So the term structure of interest rates for our example consists of the 1-year interest rate of 8 percent and the 2-year rate of 9 percent. This exercise also gives us information about the *expected* 1-year rate for investments made 1 year hence. In a sense, the term structure contains implications about investors' expectations of future interest rates; thus, this explains the unbiased expectations theory of the term structure of interest rates.

Although we can see a relationship between current interest rates with different maturities and investors' expectations about future interest rates, is this the whole story? Are there other influences? Probably, so let's continue to think about Mary's dilemma.

The Liquidity Preference Theory In presenting Mary's choices, we have suggested that she would be indifferent to a choice between the 2-year government security offering a 9 percent return and two consecutive 1-year investments offering 8 and 10 percent, respectively. However, that would be so only if she is unconcerned about the risk associated with not knowing the rate of interest on the second 1-year security as of today. If Mary is risk averse (that is, she dislikes risk), she might not be satisfied with expectations of a 10 percent return on the second 1-year government security. She might require some additional expected return to be truly indifferent. Mary might in fact decide that she will expose herself to the uncertainty of future interest rates only if she can reasonably *expect* to earn an additional 0.5 percent in interest, or 10.5 percent, on the second 1-year investment. This *risk premium* (additional required interest rate) to compensate for the risk of changing future interest rates is nothing more than the maturity premium introduced earlier, and this concept underlies the liquidity preference theory of the term structure.⁸ According to the **liquidity preference theory**, *investors require maturity-risk premiums to compensate them for buying securities that expose them to the risks of fluctuating interest rates.*

liquidity preference theory the theory that the shape of the term structure of interest rates is determined by an investor's additional required interest rate in compensation for additional risks.

market segmentation theory the theory that the shape of the term structure of interest rates implies that the rate of interest for a particular maturity is determined solely by demand and supply for a given maturity. This rate is independent of the demand and supply for securities having different maturities.

The Market Segmentation Theory The **market segmentation theory** of the term structure of interest rates is built on the notion that legal restrictions and personal preferences limit choices for investors to certain ranges of maturities. For example, commercial banks prefer short- to medium-term maturities as a result of the short-term nature of their deposit liabilities. They prefer not to invest in long-term securities. Life insurance companies, on the other hand, have long-term liabilities, so they prefer longer maturities in investments. At the extreme, the market segmentation theory implies that *the rate of interest for a particular maturity is determined solely by demand and supply for a given maturity and that it is independent of the demand and supply for securities having different maturities.* A more moderate version of the theory allows investors to have strong maturity preferences, but it also allows them to modify their feelings and preferences if significant yield changes occur.

Concept Check

1. What is the "nominal rate of interest"? Explain how it differs from the "real rate of interest."
2. Write an equation that includes the building blocks of the nominal rate of interest.
3. Identify three prominent theories that attempt to explain the term structure of interest rates.
4. Which shape of the yield curve is considered to be the most typical?

Chapter Summaries



Describe key components of the U.S. financial market system and the financing of business. (pgs. 21–26)

SUMMARY: This chapter centers on the market environment in which corporations raise long-term funds, including the structure of the U.S. financial markets, the institution of investment

⁸This theory was first presented by John R. Hicks in *Value and Capital* (London: Oxford University Press, 1946), pp. 141–145, with the risk premium referred to as the liquidity premium. For our purposes we use the term *maturity-risk premium* to describe this risk premium, thereby keeping our terminology consistent within this chapter.

banking, and the various methods for distributing securities. It also discusses the role interest rates play in allocating savings to ultimate investment.

Corporations can raise funds through public offerings or private placements. The public market is impersonal in that the security issuer does not meet the ultimate investors in the financial instruments. In a private placement, the securities are sold directly to a limited number of institutional investors.

The primary market is the market for new issues. The secondary market represents transactions in currently outstanding securities. Both the money and capital markets have primary and secondary sides. The money market refers to transactions in short-term debt instruments. The capital market, on the other hand, refers to transactions in long-term financial instruments. Trading in the capital markets can occur in either the organized security exchanges or the over-the-counter market. The money market is exclusively an over-the-counter market.

KEY TERMS

Capital markets, page 21 All institutions and procedures that facilitate transactions in long-term financial instruments.

Angel investor, page 22 A wealthy private investor who provides capital for a business start-up.

Venture capitalist, page 22 An investment firm (or individual investor) that provides money to business start-ups.

Public offering, page 23 A security offering where all investors have the opportunity to acquire a portion of the financial claims being sold.

Private placement, page 23 A security offering limited to a small number of potential investors.

Primary market, page 23 A market in which securities are offered for the first time for sale to potential investors.

Initial public offering, IPO, page 24 The first time a company sells its stock to the public.

Seasoned equity offering, SEO, page 24 The sale of additional stock by a company whose shares are already publically traded.

Secondary market, page 24 A market in which currently outstanding securities are traded.

Money market, page 24 All institutions and procedures that facilitate transactions in short-term instruments issued by borrowers with very high credit ratings.

Spot market, page 24 Cash market.

Futures market, page 24 Markets where you can buy or sell something at a future date.

Organized security exchanges, page 25 Formal organizations that facilitate the trading of securities.

Over-the-counter markets, page 25 All security markets except the organized exchanges. The money market is an over-the-counter market. Most corporate bonds also are traded in the over-the-counter market.

Understand how funds are raised in the capital markets. (pgs. 26–32)



SUMMARY: The investment banker is a financial specialist involved as an intermediary in the merchandising of securities. He or she performs the functions of (1) underwriting, (2) distributing, and (3) advising. Major methods for the public distribution of securities include (1) the negotiated purchase, (2) the competitive bid purchase, (3) the commission or best-efforts basis, (4) privileged subscriptions, and (5) direct sales. The direct sale bypasses the use of an investment banker. The negotiated purchase is the most profitable distribution method to the investment banker. It also provides the greatest amount of investment-banking services to the corporate client. Today, there are no major stand-alone investment bankers.

Privately placed debt provides an important market outlet for corporate bonds. Major investors in this market are (1) life insurance firms, (2) state and local retirement funds, and (3) private pension funds. Several advantages and disadvantages are associated with private placements. The financial officer must weigh these attributes and decide if a private placement is preferable to a public offering.

Flotation costs consist of the underwriter's spread and issuing costs. The flotation costs of common stock exceed those of preferred stock, which, in turn, exceed those of debt. Moreover, flotation costs as a percent of gross proceeds are inversely related to the size of the security issue.

KEY TERMS

Investment banker, page 26 A financial specialist who underwrites and distributes new securities and advises corporate clients about raising new funds.

Underwriting, page 26 The purchase and subsequent resale of a new security issue. The risk of selling the new issue at a satisfactory (profitable) price is assumed (underwritten) by the investment banker.

Underwriter's spread, page 26 The difference between the price the corporation raising the money gets and the public offering price of a security.

Syndicate, page 27 A group of investment bankers who contractually assist in the buying and selling of a new security issue.

Privileged subscription, page 29 The process of marketing a new security to a select group of investors.

Dutch auction, page 29 A method of issuing securities (common stock) by which investors

place bids indicating how many shares they are willing to buy and at what price. The price the stock is then sold for becomes the lowest price at which the issuing company can sell all the available shares.

Direct sale, page 30 The sale of securities by a corporation to the investing public without the services of an investment-banking firm.

Flotation costs, page 31 The transaction cost incurred when a firm raises funds by issuing a particular type of security.



Be acquainted with recent rates of return. (pgs. 32–36)

SUMMARY: From Principle 3: Risk Requires a Reward, we know that with higher returns we should expect to see higher risk, and that's exactly the case. Common stocks of small firms have more risk and produce higher average annual returns than large-company stock. In recent years interest rates have fallen dramatically, with the rate on 3-month Treasury bills approaching zero and the rate on 30-year Treasury bonds dropping under 4 percent for 2011—down from close to 9 percent 25 years prior.

KEY TERMS

Opportunity cost of funds, page 32 The next-best rate of return available to the investor for a given level of risk.

Nominal (or quoted) rate of interest, page 35 The interest rate paid on debt securities without an adjustment for any loss in purchasing power.

Inflation premium, page 35 A premium to compensate for anticipated inflation that is equal to the price change expected to occur over the life of the bond or investment instrument.

Default-risk premium, page 35 The additional return required by investors to

compensate them for the risk of default. It is calculated as the difference between a U.S. Treasury bond and a corporate bond of the same maturity and marketability.

Maturity-risk premium, page 35 The additional return required by investors in longer-term securities to compensate them for greater risk of price fluctuations on those securities caused by interest rate changes.

Liquidity-risk premium, page 35 The additional return required by investors for securities that cannot be quickly converted into cash at a reasonably predictable price.



Explain the fundamentals of interest rate determination and the popular theories of the term structure of interest rates. (pgs. 36–44)

SUMMARY: When lenders loan money they must take into account the anticipated loss in purchasing power that results during a period of price inflation. Consequently, nominal or observed rates of interest incorporate an inflation premium that reflects the anticipated rate of inflation over the period of the loan.

The term structure of interest rates (also called the yield curve) defines the relationship between rates of return for similar securities that differ only with respect to their time to maturity. For instance, if long-term government bonds offer a higher rate of return than do U.S. Treasury bills, then the yield curve is upward sloping. But if the Treasury bill is paying a higher rate of interest than its long-term counterparts, then the yield curve is downward sloping.

KEY TERMS

Real risk-free interest rate, page 36 The required rate of return on a fixed-income security that has no risk in an economic environment of zero inflation.

Real rate of interest, page 37 The nominal (quoted) rate of interest less any loss in

purchasing power of the dollar during the time of the investment.

Term structure of interest rates, page 41 The relationship between interest rates and the term to maturity, where the risk of default is held constant.

Yield to maturity, page 41 The rate of return a bondholder will receive if the bond is held to maturity.

Unbiased expectations theory, page 43 The theory that the shape of the term structure of interest rates is determined by an investor's expectations about future interest rates.

Liquidity preference theory, page 44 The theory that the shape of the term structure of

interest rates is determined by an investor's additional required interest rate in compensation for additional risks.

Market segmentation theory, page 44 The theory that the shape of the term structure of interest rates implies that the rate of interest for a particular maturity is determined solely by demand and supply for a given maturity. This rate is independent of the demand and supply for securities having different maturities.

KEY EQUATIONS

Nominal interest rate = real risk-free interest rate
 + inflation premium
 + default-risk premium
 + maturity-risk premium
 + liquidity-risk premium

Nominal interest rate $\cong$ (approximately equals) real rate of interest + inflation-risk premium

$1 + \text{nominal interest rate} = (1 + \text{real rate of interest})(1 + \text{rate of inflation})$

OR

Nominal or quoted rate of interest = real rate of interest + inflation rate + product of the real rate of interest and the inflation rate

Review Questions

All Review Questions are available in [MyFinanceLab](#).

- 2-1. Distinguish between the money and capital markets.
- 2-2. What major benefits do corporations and investors enjoy because of the existence of organized security exchanges?
- 2-3. What general criteria does an organized exchange examine to determine whether a firm's securities can be listed on the exchange? (Specific numbers are not needed here but rather areas of investigation.)
- 2-4. Why do you think most secondary-market trading in bonds takes place over the counter?
- 2-5. What is an investment banker, and what major functions does he or she perform?
- 2-6. What is the major difference between a negotiated purchase and a competitive bid purchase?
- 2-7. Why is an investment-banking syndicate formed?
- 2-8. Why might a large corporation want to raise long-term capital through a private placement rather than a public offering?
- 2-9. As a recent business school graduate, you work directly for the corporate treasurer. Your corporation is going to issue a new security and is concerned with the probable flotation costs. What tendencies about flotation costs can you relate to the treasurer?
- 2-10. Identify three distinct ways that savings are ultimately transferred to business firms in need of cash.
- 2-11. Explain the term *opportunity cost* with respect to the cost of funds to the firm.
- 2-12. Compare and explain the historical rates of return for different types of securities.
- 2-13. Explain the impact of inflation on rates of return.
- 2-14. Define the *term structure of interest rates*.
- 2-15. Explain the popular theories for the rationale of the term structure of interest rates.

Study Problems

All Study Problems are available in [MyFinanceLab](#).

- 2-1. (Calculating the default-risk premium) At present, 10-year Treasury bonds are yielding 4% while a 10-year corporate bond is yielding 6.8%. If the liquidity-risk premium on the corporate bond is 0.4%, what is the corporate bond's default-risk premium?
- 2-2. (Calculating the maturity-risk premium) At present, the real risk-free rate of interest is 2%, while inflation is expected to be 2% for the next 2 years. If a 2-year Treasury note yields 4.5%, what is the maturity-risk premium for this 2-year Treasury note?





2-3. (Inflation and interest rates) You're considering an investment that you expect will produce an 8 percent return next year, and you expect that your real rate of return on this investment will be 6 percent. What do you expect inflation to be next year?

2-4. (Inflation and interest rates) What would you expect the nominal rate of interest to be if the real rate is 4 percent and the expected inflation rate is 7 percent?

2-5. (Inflation and interest rates) Assume the expected inflation rate to be 4 percent. If the current real rate of interest is 6 percent, what ought the nominal rate of interest to be?

2-6. (Real interest rates: approximation method) The CFO of your firm has asked you for an approximate answer to this question: What was the increase in real purchasing power associated with both 3-month Treasury bills and 30-year Treasury bonds? Assume that the current 3-month Treasury bill rate is 4.34 percent, the 30-year Treasury bond rate is 7.33 percent, and the inflation rate is 2.78 percent. Also, the chief financial officer wants a short explanation should the 3-month real rate turn out to be less than the 30-year real rate.

2-7. (Real interest rates: approximation method) You are considering investing money in Treasury bills and wondering what the real risk-free rate of interest is. Currently, Treasury bills are yielding 4.5% and the future inflation rate is expected to be 2.1% per year. Ignoring the cross product between the real rate of interest and the inflation rate, what is the real risk-free rate of interest?

2-8. (Real interest rates: approximation method) If the real risk-free rate of interest is 4.8% and the rate of inflation is expected to be constant at a level of 3.1%, what would you expect 1-year Treasury bills to return if you ignore the cross product between the real rate of interest and the inflation rate?

2-9. (Default risk premium) At present, 20-year Treasury bonds are yielding 5.1% while some 20-year corporate bonds that you are interested in are yielding 9.1%. Assuming that the maturity-risk premium on both bonds is the same and that the liquidity-risk premium on the corporate bonds is 0.25% while it is 0.0% on the Treasury bonds, what is the default-risk premium on the corporate bonds?

2-10. (Interest rate determination) If the 10-year Treasury bond rate is 4.9%, the inflation premium is 2.1%, and the maturity-risk premium on 10-year Treasury bonds is 0.3%, assuming that there is no liquidity-risk premium on these bonds, what is the real risk-free interest rate?

2-11. (Interest rate determination) You've just taken a job at a investment banking firm and been given the job of calculating the appropriate nominal interest rate for a number of different Treasury bonds with different maturity dates. The real risk-free interest rate that you have been told to use is 2.5%, and this rate is expected to continue on into the future without any change. Inflation is expected to be constant over the future at a rate of 2.0%. Since these are bonds that are issued by the U.S. Treasury, they do not have any default risk or any liquidity risk (that is, there is no liquidity-risk premium). The maturity-risk premium is dependent upon how many years the bond has to maturity. The maturity-risk premiums are as follows:

BOND MATURES IN:	MATURITY-RISK PREMIUM:
0–1 year	0.05%
1–2 years	0.30%
2–3 years	0.60%
3–4 years	0.90%

Given this information, what should the nominal rate of interest on Treasury bonds maturing in 0–1 year, 1–2 years, 2–3 years, and 3–4 years be?

2-12. (Interest rate determination) You're looking at some corporate bonds issued by Ford, and you are trying to determine what the nominal interest rate should be on them. You have determined that the real risk-free interest rate is 3.0%, and this rate is expected to continue on into the future without any change. In addition, inflation is expected to be constant over the future at a rate of 3.0%. The default-risk premium is also expected to remain constant at a rate of 1.5%, and the liquidity-risk premium is very small for Ford bonds, only about 0.02%. The maturity-risk premium is dependent upon how many years the bond has to maturity. The maturity-risk premiums are as follows:

BOND MATURES IN:	MATURITY-RISK PREMIUM:
0–1 year	0.07%
1–2 years	0.35%
2–3 years	0.70%
3–4 years	1.00%

Given this information, what should the nominal rate of interest on Ford bonds maturing in 0–1 year, 1–2 years, 2–3 years, and 3–4 years be?

2-13. (Term structure of interest rates) You want to invest your savings of \$20,000 in government securities for the next 2 years. Currently, you can invest either in a security that pays interest of 8 percent per year for the next 2 years or in a security that matures in 1 year but pays only 6 percent interest. If you make the latter choice, you would then reinvest your savings at the end of the first year for another year.

a. Why might you choose to make the investment in the 1-year security that pays an interest rate of only 6 percent, as opposed to investing in the 2-year security paying 8 percent? Provide numerical support for your answer. Which theory of term structure have you supported in your answer?

b. Assume your required rate of return on the second-year investment is 11 percent; otherwise, you will choose to go with the 2-year security. What rationale could you offer for your preference?

2-14. (Yield curve) If yields on Treasury securities were currently as follows:

TERM	YIELD
6 months	1.0%
1 year	1.7%
2 years	2.1%
3 years	2.4%
4 years	2.7%
5 years	2.9%
10 years	3.5%
15 years	3.9%
20 years	4.0%
30 years	4.1%

a. Plot the yield curve.

b. Explain this yield curve using the unbiased expectations theory and the liquidity preference theory.

Mini Case

This Mini Case is available in [MyFinanceLab](#).

On the first day of your summer internship, you've been assigned to work with the chief financial officer (CFO) of SanBlas Jewels Inc. Not knowing how well trained you are, the CFO has decided to test your understanding of interest rates. Specifically, she asked you to provide a reasonable estimate of the nominal interest rate for a new issue of Aaa-rated bonds to be offered by SanBlas Jewels Inc. The final format that the chief financial officer of SanBlas Jewels has requested is that of equation (2-1) in the text. Your assignment also requires that you consult the data in Table 2-2.

Some agreed-upon procedures related to generating estimates for key variables in equation (2-1) follow.

- The current 3-month Treasury bill rate is 2.96 percent, the 30-year Treasury bond rate is 5.43 percent, the 30-year Aaa-rated corporate bond rate is 6.71 percent, and the inflation rate is 2.33 percent.
- The real risk-free rate of interest is the difference between the calculated average yield on 3-month Treasury bills and the inflation rate.
- The default-risk premium is estimated by the difference between the average yield on Aaa-rated bonds and 30-year Treasury bonds.
- The maturity-risk premium is estimated by the difference between the average yield on 30-year Treasury bonds and 3-month Treasury bills.
- SanBlas Jewels' bonds will be traded on the New York Bond Exchange, so the liquidity-risk premium will be slight. It will be greater than zero, however, because the secondary market for the firm's bonds is more uncertain than that of some other jewel sellers. It is estimated at 4 basis points. A basis point is one one-hundredth of 1 percent.

Now place your output into the format of equation (2-1) so that the nominal interest rate can be estimated and the size of each variable can also be inspected for reasonableness and discussion with the CFO.