FIFTH EDITION

Fundamentals of Investing



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Lawrence J. Gitman
Michael D. Joehnk

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FIFTH EDITION

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To our wives, Robin and Charlene

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1 The Role and Scope of Investments

After studying this chapter, you should be able to:

1. Grasp the meaning of the term *investments* and understand the factors commonly used to differentiate between various types of investments.
2. Describe the structure of and participants in the investment process, the types of investors, and the rewards from investing.
3. Gain an understanding of the steps involved in the process of investing.
4. Discuss the principal types of investment vehicles, including short-term vehicles, common stocks, and fixed-income securities.
5. Describe other kinds of popular investments, such as options, commodities and financial futures, tangibles, mutual funds, real estate, tax shelters, and limited partnerships.
6. Summarize the content and organizational model around which this text is structured.

What is your idea of financial success? Making a million dollars? Owning an expensive house and car? Establishing a scholarship at your alma mater? Traveling around the world? Providing for your family now and in the future? The odds are probably against your achieving *all* the items on that list. After all, few people are millionaires. However, studying this book can help you make the most of your available financial resources. Our text provides the understanding needed to establish and fulfill investment goals by creating a *portfolio* containing a variety of investment vehicles that will produce an acceptable return for an acceptable level of risk. Familiarity with various investment alternatives, plus a set of well-developed investment plans, should greatly increase your chance of achieving a reasonable degree of financial success. This chapter sets the stage for an in-depth look at the essential concepts, tools, and techniques of investing that are presented throughout the text.

THE ROLE OF INVESTMENTS

The word investments can be used in a variety of ways. It can mean stocks or bonds purchased to fulfill certain financial goals; it can also mean tangible assets such as machines acquired to produce and sell a product. In the broadest sense, investments provide the mechanism needed to finance the growth and development of our economy. To give you a general idea of the role of investments, we begin by defining investment and then looking at the structure of the investment process, the participants, and types of investors.

Investment Defined

investment
a vehicle for funds, expected to maintain or increase its value and/or generate positive returns.

Simply stated, an **investment** is any vehicle into which funds can be placed with the expectation that they will be preserved or increase in value and/or generate positive returns. Cash in a simple checking account is not an investment, since its value is likely to be eroded by inflation and since it fails to provide any type of return. The same cash placed in a bank savings account would be considered an investment, since the account provides a positive return. The various types of investment can be differentiated on the basis of a number of factors, described below.

Securities and Property

securities
investments that represent debt, business ownership, or the legal right to buy or sell a business ownership interest.

property
investments in real property or in tangible personal property.

Investments that represent evidence of debt, ownership of a business, or the legal right to acquire or sell an ownership interest in a business are called **securities.** The most common types of securities are bonds, stocks, and options. **Property,** on the other hand, is investments in real property or tangible personal property. *Real property* is land, buildings, and that which is permanently affixed to the land. *Tangible personal property* includes items such as gold, antiques, art, and other collectibles. Although security investments are quite popular, many people prefer property investments because they feel more comfortable owning something they can see and touch. But because of the existence of organized mechanisms for buying and selling securities and their widespread popularity, in this book we will focus primarily on securities rather than on property investments.

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Direct and Indirect

direct investment investment in which an investor directly acquires a claim on a security or property.

indirect investment investment made in a portfolio or group of securities or properties.

A **direct investment** is one in which an investor directly acquires a claim on a security or property. For example, if you buy a stock, a bond, a rare coin, or a parcel of real estate in order to preserve value or earn income, you have made a direct investment. An **indirect investment** is an investment made in a portfolio or group of securities or properties. For example, you may purchase a share of a *mutual fund,* which is a diversified portfolio of securities issued by a variety of firms. By doing so, you will own a claim on a fraction of the entire portfolio rather than on the security of a single firm. It is also possible to invest indirectly in property—for example, by buying an interest in a limited partnership that deals in real estate, oil wells, and the like. Although direct investments are preferred by many investors, indirect investments have certain attributes that make them attractive as well.

Debt, Equity, or Derivative Securities

debt funds loaned in exchange for the receipt of interest income and the promised repayment of the loan at a given future date.

equity an ongoing ownership interest in a specific business or property.

derivative securities securities structured to exhibit characteristics similar to those of an underlying security and as a result, derive their value from the securities that underlie them.

Usually, an investment will represent a debt or an equity interest. **Debt**—an intangible investment—represents funds loaned in exchange for the receipt of interest income and the promised repayment of the loan at a given future date. When you buy a debt instrument like a *bond,* you in effect lend money to the issuer, who agrees to pay you a stated rate of interest over a specified period of time, at the end of which the original sum will be returned. **Equity** represents an ongoing ownership interest in a specific business or property. An equity investment may be held as a security or by title to a specific property. An investor typically obtains an equity interest in a business by purchasing securities known collectively as *common stock.* **Derivative securities** are neither debt nor equity. They are structured to exhibit characteristics similar to those of an underlying security and as a result, derive their value from the securities that underlie them. *Options* are an example. They are neither debt nor equity; rather they provide the investor with an opportunity to sell or buy another security or asset at a specified price over a given period of time. You may, for example, pay $500 for an option to purchase a 2 percent interest in the Alex Company for $30,000 until December 31, 1996. If a 2 percent interest is currently valued at only $24,000, you would not now exercise this option. Option and other derivative security investments, although not as common as debt and equity investments, have grown rapidly in popularity during recent years.

Low and High Risk

Investments are sometimes differentiated on the basis of risk. As used in finance, *risk* refers to the chance that the value or return on an investment will differ unfavorably from its expected value. In other words, risk is the chance of something undesirable occurring. The broader the range of possible values or returns associated with an investment, the greater its risk, and vice versa. Investors are confronted with a continuum ranging from low-risk government securities to high-risk commodities. Although each type of investment vehicle has a basic risk characteristic, the actual level of risk depends on the specific vehicle. For example, stocks are

generally believed to be more risky than bonds. However, it is not difficult to find high-risk bonds that are in fact more risky than the stock of a financially sound firm such as IBM or McDonald's. Of course, as noted in the Investor Insights box nearby, investors also unfortunately face the risk of becoming victims of an investment scam. **Low-risk investments** are those considered safe with regard to the receipt of a positive return. **High-risk investments** are considered speculative.

low-risk investments
investments considered safe with regard to the receipt of a positive return.

high-risk investments
investments considered speculative with regard to the receipt of a positive return.

The terms *investment* and *speculation* are used to refer to different approaches to the investment process. As already stated, *investment* is viewed as the process of purchasing securities or property for which stability of value and level of expected return are not only positive but somewhat predictable. **Speculation** is the process of buying similar vehicles in which the future value and level of expected earnings are highly uncertain. Simply stated, speculation is on the high-risk end of the investment process. Of course, due to the greater risk, the returns associated with speculation are expected to be greater. In this book we will use the term "investment" for both processes. We will consider the issue of investment return and risk more closely in Chapter 4.

speculation
the process of buying investment vehicles in which the future value and level of expected earnings are highly uncertain.

Short and Long Term

The life of an investment can be described as either short or long term. **Short-term investments** typically mature within one year. **Long-term investments** are those with longer maturities or perhaps, like common stock, with no maturity at all. For example, a six-month certificate of deposit (CD) would be a short-term investment, whereas a 20-year bond would be a long-term investment. Of course, by purchasing a long-term investment and selling it after a short period of time, say six months, an investor can use a long-term vehicle to meet a short-term goal. As will become clear later, it is not unusual to find investors matching the maturity of an investment to the period of time over which they wish to invest their funds. For instance, an investor with money that will not be needed for six months could purchase a six-month certificate of deposit, whereas a 40-year-old investor wishing to build a retirement fund may well purchase a 20-year corporate bond. The breakdown of short term and long term may also be useful for tax purposes. Currently the tax laws define short-term and long-term gains (and losses) in a similar fashion—short-term is one year or less and *long-term* is longer than one year. Tax considerations will be discussed in Chapter 3 and various types of tax-sheltered investments will be described in Chapter 15.

short-term investments
investments that typically mature within one year.

long-term investments
investments with maturities of longer than a year or with no maturity at all.

The Structure of the Investment Process

The overall investment process is the mechanism for bringing together suppliers (those having extra funds) with demanders (those who need funds). Suppliers and demanders are most often brought together through a financial institution or a financial market. Occasionally—especially in property transactions such as real estate—buyers and sellers deal directly with one another. **Financial institutions** are organizations, such as banks and insurance companies, that channel the savings of government, businesses, and individuals into loans or investments. **Financial markets** are

financial institutions
organizations that channel the savings of individuals, businesses, and the governments into loans or investments.

financial markets
important forums in which suppliers and demanders of funds are brought together to make transactions.

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INVESTOR INSIGHTS

Investment Scams Don't Always Offer Exorbitant Returns

It's not just people trying to make a killing who get caught in investment scams.

Indeed, investors hungry for safety may be even more vulnerable these days.

"In the 1980s, we saw frauds advertising 40% returns," says Lori A. Richards, assistant regional administrator of the Securities and Exchange Commission in Los Angeles. "Today, investment scams aren't offering exorbitant returns—they are appealing to people's concerns about safety." . . .

That's certainly what Max Strauss wanted. Mr. Strauss, 77 years old, a retired building director for the city of Beverly Hills, Calif., describes himself "as probably the most suspicious and conservative person you've ever talked to."

Yet he is one of hundreds of investors the SEC says lost millions of dollars buying phony municipal bonds sold by FSG Financial Services Inc., in Beverly Hills. . . .

Some FSG Financial investors lost their life savings, the SEC says. Mr. Strauss, a veteran municipal bond investor, . . . says he is out $25,000. "I still have egg on my face," Mr. Strauss laments. . . .

How did these cautious, conservative investors get taken?

Mr. Strauss says he is usually suspicious of telephone pitches. But he says he relaxed his guard when an FSG Financial salesman called to offer some California Health Facilities municipal bonds. Mr. Strauss said he previously had purchased a similar bond. The salesman told him the bonds were offering an 8.125% tax-free yield, were rated Triple-A and were secured by U.S. Government bonds both for principal and interest, he says.

You can't beat that for safety.

Still, Mr. Strauss says he didn't want to buy the bonds over the telephone and went to the Beverly Hills office of FSG Financial. He says he asked for a prospectus, and was told it would take several days to get it but that the bonds were available for only a short time.

Mr. Strauss decided not to wait. He says he bought $75,000 of bonds. But after his purchase, Mr. Strauss says he began to get worried. . . .

Looking back, Mr. Strauss says his big mistake was not investigating before he invested. "The higher interest rate should have made me suspicious. Hopefully at the age of 77, I can learn not to do this again."

Source: Earl C. Gottschalk, Jr., "How Safety Can Mean Investment Disaster," *The Wall Street Journal,* September 9, 1991, p. C-1.

important forums in which suppliers and demanders of funds are brought together to make transactions, often through intermediaries such as organized securities exchanges.

There are a number of financial markets, such as stock markets, bond markets, and options markets. Similar markets exist in most major economies throughout the world. Their common feature is that the price of the investment vehicle at any point

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in time results from an equilibrium between the forces of supply and demand. As new information about returns, risk, inflation, world events, and so on, becomes available, the changes in the forces of supply and demand may result in a new equilibrium or *market price*. Financial markets streamline the process of bringing together suppliers and demanders of funds, and they allow transactions to be made quickly and at a fair price. These markets price securities so as to allocate funds to the most productive uses. They also publicize security prices.

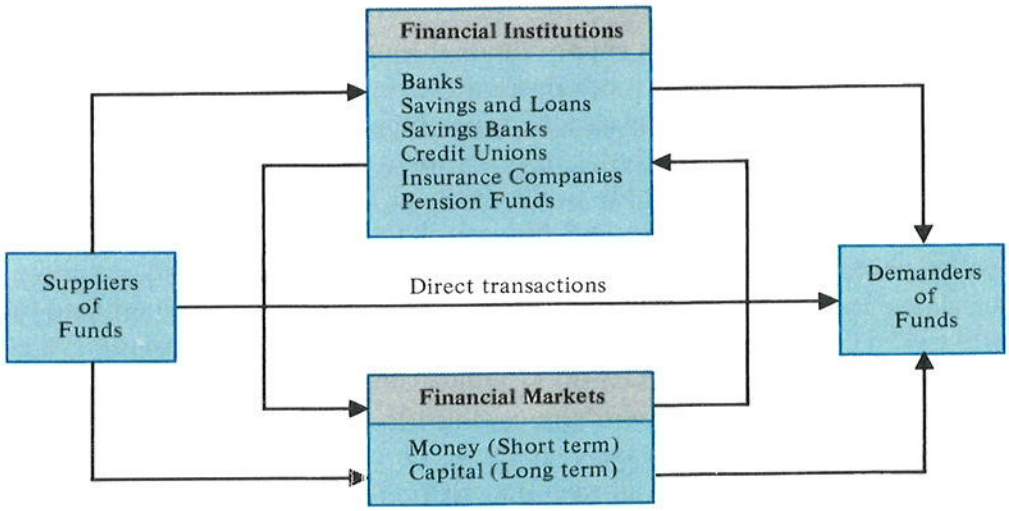
Figure 1.1 diagrams the investment process. Note that the suppliers of funds may transfer their resources to demanders through a financial institution, through a financial market, or directly. As the illustration shows, financial institutions can participate in financial markets as either suppliers or demanders of funds. The short-term financial market is called the *money market;* the long-term sector is the *capital market,* which is dominated by various securities exchanges. The characteristics of these markets will be discussed in greater detail in Chapter 2.

Participants in the Investment Process

Government, business, and individuals are the three key participants in the investment process. Each may act as a supplier or demander of funds.

Government

Each level of government—federal, state, and local—requires vast sums of money. Some goes to finance capital expenditures. These are long-term projects related to the construction of public facilities such as schools, hospitals, housing, and highways. Usually the financing for such projects is obtained by issuing various types of



• **FIGURE 1.1 The Investment Process**

Note that financial institutions participate in the financial markets as well as transfer funds between suppliers and demanders. Although the arrows go only from suppliers to demanders, for some transactions (such as the sale of a bond) the principal amount borrowed by the demander from the supplier (the lender) will eventually be returned.

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long-term debt securities. Another demand for funds comes from operating needs, the money needed to keep the government running. The federal government, for example, in recent years has spent more than it collects in taxes. It therefore must obtain outside funds. Or a city might need operating funds when the tax money it will collect is not due for some time. Usually governments finance these operating needs with short-term debt securities.

Sometimes, governments are also suppliers of funds. If a state has temporarily idle cash, rather than hold these resources in a checking account, it may make a short-term investment to earn a positive return. The financial activities of governments, both as demanders and suppliers of funds, significantly affect the behavior of financial institutions and financial markets. In general, government is a *net demander* of funds: that is, it demands more funds than it supplies.

Business

Most business firms, no matter what the type, require large sums of money to support operations. Like government, the financial needs of business are both short- and long-term. On the long-term side, businesses seek funds to build plants, acquire equipment and facilities, and develop products. Short-term needs center around the need to finance inventory, accounts receivable, and other operating costs. Businesses issue a wide variety of debt and equity securities to finance these needs. They also supply funds when they have excess cash. In fact, many large business firms have active and sophisticated cash-management operations and are major purchasers of short-term securities. But, like government, business firms in general are *net demanders* of funds.

Individuals

Individuals supply funds through the investment process in a variety of ways. They may place funds in savings accounts, buy debt or equity instruments, buy insurance, or purchase various types of property. Depending upon personal goals and objectives, the choice of investment vehicles is often a difficult one. Individuals typically demand funds in the form of loans to finance the acquisition of property, usually automobiles and homes. Although the demand for such funds seems great, as a group individuals are *net suppliers* of funds: they put more funds into the investment process than they take out. Since both government and business are net demanders of funds, the individual investor's role in providing the funds needed to finance economic growth is significant.

Types of Investors

institutional investors
investment professionals paid to manage other people's money.

Investors can be either of two types—institutional or individual. **Institutional investors** are investment professionals who are paid to manage other people's money. They are employed by financial institutions (such as banks, life insurance companies, mutual funds, and pension funds), large nonfinancial corporations, and, in some cases, by individuals. Financial institutions invest large sums in order to earn a significant return for their customers. For example, a bank trust department must

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earn an acceptable return on the funds with which it is entrusted. Likewise, a life insurance company must invest its premium receipts in order to earn returns that will permit the payment of contractual cash values or death benefits to policyholders of beneficiaries. Nonfinancial businesses such as manufacturers and distributors often have sums of money which they invest in order to earn a return on idle funds or to meet future investment and operating needs.

individual investors
investors who manage their own funds.

Individual investors manage their personal funds in order to achieve their financial goals. The individual investor usually concentrates on earning a return on idle funds, building a source of retirement income, or providing security for one's family. The sole activity of many individual investors involves selecting the investment vehicles to be included in their employer retirement plan or individual portfolio. Individuals with large sums of money to invest, or those who lack the time or expertise to make investment decisions, often employ an institutional investor such as a bank trust department or a professional investment adviser.

The fundamental principles used by both institutional and individual investors are similar. However, institutional investors generally invest larger sums of money on behalf of others and therefore are often more sophisticated in both knowledge and methods than individual investors. Thus the information presented in this text represents only the first step toward developing the expertise needed to qualify as an *institutional* investor.

INVESTING

investing
the process of placing funds in selected investment vehicles with the expectation of increasing their value or earning a positive return.

The process of placing funds in selected investment vehicles with the expectation of increasing their value or earning a positive return is called **investing.** This activity has broad economic importance, provides rewards, and can be pursued by following a logical progression of steps.

The Economic Importance of Investing

The functioning and growth of our economy depend on the ready availability of funds. As we've seen, governments and businesses, as well as individuals, need funds to finance their activities. For example, without mortgage loans, very few homes would be purchased. A lack of mortgage money would result in fewer persons being employed to build homes as well as to manufacture the needed components (lumber, nails, glass, and so on). Likewise, manufacturers of goods such as furniture, carpeting, and major appliances suffer decreased sales. The net effect of decreased mortgage financing would thus contribute to a general slowdown in economic activity. The availability of funds to qualified individuals (as well as government and business) is needed to allow the economy to grow and prosper. Because individuals as a group are net suppliers of such funds while government and business are net demanders, the process of investing thus has a profound impact.

The Rewards from Investing

The rewards, or returns, from investing are received in either of two basic forms—current income or increased value. For example, money placed in a bank savings

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account would provide current income in the form of periodic interest payments. On the other hand, a raw land investment would be expected to offer an increase in value between the time of purchase and the time the land is sold. Those needing funds must provide a reward or return adequate to compensate the suppliers for the risk involved in supplying them. Simply stated, in order for the investment process to function smoothly, funds suppliers must be rewarded and funds demanders must provide these rewards. The magnitude and form of such rewards depends on factors such as the type of security or property transaction, the length of time involved, and the risks embedded in the transaction.

Steps in Investing

Investing can be conducted in various ways. One approach is to rely on plans carefully developed to achieve specific goals. Another, and diametrically opposite, approach is the haphazard, ''seat-of-the-pants'' method, in which actions are taken on a strictly intuitive basis. Evidence suggests that the more logical approach usually results in better returns. The serious investor should therefore try to develop and execute an investment program consistent with his or her overall financial goals. Such a program should result in a collection of investment vehicles that possesses the return and risk behavior desired. The following brief overview of the steps in investing will help to set the stage for the more detailed discussion of the concepts, tools, and techniques presented throughout the text.

Meeting Investment Prerequisites

Before investing, an individual must make certain that the necessities of life are adequately provided for. Investments are the mechanism for using current funds to satisfy future needs. In addition, a pool of easily accessible funds, typically held in some form of liquid, short-term investment vehicle, should be established for meeting emergency cash needs. Another prerequisite would be adequate protection against the losses that could result from loss of life, illness or disability, damage to property, or a negligent act. Protection against such risks can be acquired through life, health, property, and liability insurance. Although some types of insurance possess certain investment attributes, provision for adequate insurance protection is a necessary prerequisite to investing.

Planning for adequate retirement income may also be viewed as an investment prerequisite. The achievement of this goal may partially depend on the success of the investment program. At a minimum, the individual needs to establish certain retirement goals prior to setting specific investment goals. Considerations involved in establishing and satisfying investment prerequisites are discussed in Chapter 3.

Establishing Investment Goals

investment goals statements of the timing, magnitude, form, and risks associated with a desired return.

Once the investor has satisfied the prerequisites and has clearly defined financial goals, he or she must establish **investment goals**—specific statements of the timing, magnitude, form, and risks associated with a desired return. For example, an investment goal might be to accumulate $15,000 for the down payment on a sum-

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mer home to be purchased in 1997, or to accumulate $250,000 for use at retirement in 2009. These goals must be not only consistent with overall financial goals but also realistic. The investor must have adequate funds available for investment, and must use an attainable rate of return to achieve them. The development of investment goals as part of the overall personal financial planning process is discussed in Chapter 3.

Evaluating Investment Vehicles

valuation
procedure for estimating the perceived worth of an investment vehicle; uses measures of return and risk to estimate value.

Before selecting investment vehicles, the investor must evaluate them in terms of his or her investment goals. The evaluation process involves assessing the potential returns and risks offered by each vehicle. This process typically involves **valuation,** a procedure for estimating the perceived worth of an investment vehicle. The valuation process uses measures of return and risk to estimate the value of an investment vehicle. A general discussion of the procedures for measuring these key dimensions of potential investments is included in Chapter 4. Subsequent chapters focus on the valuation of specific vehicles.

Selecting Suitable Investments

The *selection* of investments determines a course of action and can significantly affect the investor's success in achieving planned goals. The best investments may not be those that simply maximize return; other requirements, such as risk and tax considerations, may also be relevant. For example, an investor wishing to receive maximum annual dividends may purchase the common stock with the highest expected earnings. However, if the firm whose stock was purchased goes bankrupt, the investor could lose the money instead. Careful selection of investment vehicles consistent with established goals and having acceptable levels of return, risk, and value is key to successful investing.

Constructing a Diversified Portfolio

portfolio
a collection of investment vehicles assembled to meet one or more investment goals.

An investment **portfolio** is a collection of investment vehicles assembled to meet one or more investment goals. Joan Smith's investment portfolio might contain 20 shares of IBM common stock, $20,000 in government bonds, and 10 shares of IDS Growth mutual fund. Using a variety of available tools and techniques, the investor can combine vehicles in such a way that investment goals can be achieved and return, risk, and investment values are optimized.

diversification
the inclusion of a number of different investment vehicles in a portfolio, in order to increase returns or be exposed to less risk.

Diversification, the inclusion of a number of different investment vehicles, is fundamental to constructing an effective portfolio. By diversifying, investors are able to earn higher returns or be exposed to less risk than if they limit their investments to just one or two vehicles. A portfolio has the surprising quality of possessing a different risk-return characteristic from those of the individual investment vehicles that comprise it. For example, the common stocks of young, high-tech companies are by themselves extremely risky investments—their prices fluctuate constantly and often dramatically. Yet when they are held with common stocks of large, established companies in a diversified portfolio, over time the portfolio ex-

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hibits lower risk or a higher return than if common stock of only one type (high-tech or established company) were held. Chapter 16 is devoted to planning and building a portfolio.

Managing the Portfolio

Once a portfolio has been constructed, the investor must measure and evaluate its actual behavior in relation to expected performance. If, for example, the investment return, risk, or value is not consistent with his or her objectives, the investor may need to take corrective action. Such action usually involves selling certain investments and using the proceeds to acquire other vehicles for the portfolio. Portfolio management therefore involves not only selecting a compatible group of investments that meet the investor's goals, but also monitoring and restructuring the portfolio as dictated by the actual behavior of the investments. Chapter 17 is devoted to portfolio management and control.

INVESTMENT VEHICLES

A broad range of investment vehicles is available to individual investors. Some vehicles are securities, others are not. And there are many different types of securities, each type having different lives, costs, return and risk characteristics, and tax considerations. The same is true of property investments. As noted in the nearby Investor Insights box the growing number of vehicles available to the individual investor makes investing in the 1990s challenging indeed. We will devote the bulk of this book—Chapters 5 through 15—to describing the characteristics, special features, returns and risks, and possible investment strategies that can be used with vehicles available to the individual investor. Here we will introduce the various investment outlets and give a brief description of each.

Short-Term Vehicles

short-term vehicles
savings instruments that usually have lives of one year or less.

Short-term vehicles include savings instruments that usually have lives of one year or less. The most important of these are savings and NOW accounts, money market deposit accounts and mutual funds, central asset accounts, certificates of deposit (CDs), commercial paper, banker's acceptances, U.S. Treasury bills (T-bills), and even Series EE U.S. savings bonds. Often such instruments are used to ''warehouse'' idle funds and earn a return while suitable long-term vehicles are being evaluated. That is, they serve as a liquid reserve. Because these vehicles generally carry little or no risk, they tend to be popular among those wishing to earn something on temporarily idle funds. They also are popular among conservative investors who may use short-term vehicles as a primary investment outlet.

In addition to the ''warehousing'' function served by short-term vehicles, they also round out an investor's portfolio by meeting liquidity needs. Such needs are an important part of any financial plan. As a rule of thumb, financial planners often suggest that anywhere from three to six months of after-tax income should be held in short-term vehicles to meet unexpected needs. A serious illness or loss of a job could create a need for immediate cash. Being forced to sell the long-term securities at a time when security prices are low can result in substantial losses. A closer look at meeting liquidity needs is provided in Chapter 3.

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The Challenges of Investing in the '90s

Sophie Tucker, that grand old vaudevillian, once observed: "I've been rich, and I've been poor. Believe me, rich is better." For investors today, not only is rich better—it's almost a necessity. True, we wrestled inflation to the ground during the 1980s. But there is no guarantee it won't come surging back in the Nineties. Besides, despite a tamed CPI, many folks still seem to be losing ground.

The cost of life's main events, for example, have run well beyond the broad price indexes, and even outpaced most investments. The average tab for a normal hospital delivery jumped a spanking 14.4% annually over the past ten years, to $4,640. By comparison, the Standard & Poor's 500 stocks fell short, returning 13.9% a year on average over the same period. Feeling enriched by the 54% average appreciation in prices of homes over the past decade? Don't. The cost of a cemetery plot in Richmond, Virginia, rose faster—64%—over the same period, increasing the total price of dying to over $5,000.

The fight to stay ahead of rising costs will be tougher in the Nineties, even if inflation stays calm. Says Gary Brinson, president of Brinson Partners, a Chicago investment advisory firm: "We're not going to have the kind of investment returns that we had in the 1980s." The markets in stocks and bonds have cooled, and economies around the world are growing more slowly. But even if you cannot count on ever-rising markets to lift all your boats, you now have more investment vessels than ever to choose from. Take mutual funds: In 1980, Lipper Analytical Services, the Summit, New Jersey, financial research outfit, tracked 643 funds. Today Lipper follows over 3,000 of virtually every type and size.

In fact you can now invest in many ways that used to be open only to the pros. You can buy funds that invest in stocks just about anywhere in the world, or in a single sector of the economy—health care, say, or biotechnology. Some bond funds invest in the debt of countries all around the world; others confine themselves to municipals in a single state. Brokers and investment bankers now package and market nearly every kind of financial asset. You can buy a piece of your neighbor's mortgage or a contract that guarantees a future price for an ounce of gold or a quart of orange juice.

The task is to find your way through this financial marketplace. More than ever, investors need to devise a strategy that matches specific goals with the investments most likely to meet those goals. The challenge goes beyond choosing specific stocks, bonds, or mutual funds. You also need to combine your purchases so that you get the greatest return for your money at the least risk to your principal—and peace of mind....

You don't need an MBA to create an investment portfolio consistent with your goals. Nor will you need an oracle who can forecast the direction of interest rates. But following a little ancient advice is essential: Know thyself. That education begins with defining your financial goals.

Seems easy. With money, as with love, the point is to make lots of it, right? Not exactly, says Thomas Bailard, head of Bailard Biehl & Kaiser, a money management firm in San Mateo, California. You've got to specify what you will spend the money on. Says he: "Making 15% a year on your money isn't a goal. A goal is financing your son's college education in 2002 or taking a six-month sabbatical in Tanzania in 1995." . . .

Source: Terence P. Paré, "How to Maximize Your Profits," *Fortune 1992 Investor's Guide*, Fall 1991, pp. 38–46.

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Common Stock

common stock
equity investment representing ownership in a corporation; each share represents a fractional ownership interest in the firm.

dividends
periodic payments made by firms to their stockholders.

Common stock is an equity investment that represents ownership in a corporation. Each share of common stock represents a fractional ownership interest in the firm. For example, one share of common stock in a corporation that has 10,000 shares outstanding would represent 1/10,000 ownership interest. The return on common stock investment comes from either of two sources. One is the periodic receipt of **dividends,** which are payments made by the firm to its shareholders, and increases in value. The second source of return is *capital gains,* which result from selling the stock at a price above that originally paid. For example, imagine you purchased a single share of M and N Industries common stock for $40 per share. During the first year you owned it you received $2.50 per share in cash dividends; at the end of the year you sold the stock for $44 per share. If we ignore the costs associated with buying and selling the stock, you would have earned $2.50 in dividends and $4 in capital gains ($44 sale price − $40 purchase price). Next to short-term vehicles and home ownership, common stock, which offers a broad range of return-risk combinations, is the most popular form of investment vehicle. Because of the widespread popularity of common stock, three chapters—5, 6, and 7—are devoted to the study of this investment vehicle.

Fixed-Income Securities

fixed-income securities
investment vehicles that offer a fixed periodic return.

Fixed-income securities are a group of investment vehicles that offer a fixed periodic return. Some forms offer contractually guaranteed returns; others have specified, but not guaranteed, returns. Due to their fixed returns, fixed-income securities tend to experience their greatest popularity during periods of high interest rates, such as those during the late 1970s and early 1980s. The key forms of fixed-income securities are bonds, preferred stock, and convertible securities.

Bonds

bonds
long-term debt instruments (IOUs), issued by corporations and governments, that offer a known interest return plus the return of the face value at maturity.

Bonds are the long-term debt instruments (IOUs) of corporations and governments. A bondholder receives a known interest return, typically paid semiannually, plus the return of the face value of the bond at maturity (typically 20 to 40 years). If you purchased a $1,000 bond paying 9 percent interest in semiannual installments, you would expect to be paid $45 (that is, 9% × ½ year × $1,000) every six months; at maturity you would receive the $1,000 face value of the bond. An investor may be able to buy or sell a bond prior to maturity at a price different from its face value. As with common stock, a wide range of return-risk combinations is available to the bond investor. We will examine bond investments in detail in Chapters 8 and 9.

Preferred Stock

preferred stock
ownership interest in a firm, giving a stated dividend rate, payment of which is given preference over dividends to holders of the firm's common stock.

Like common stock, **preferred stock** represents an ownership interest in a corporation. Unlike common stock, preferred has a stated dividend rate, payment of which is given preference over common stock dividends of the same firm. Preferred stock has no maturity date. Investors typically purchase it for the dividends, but it may also provide capital gains. The key aspects of preferred stock are described in Chapter 10.

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Convertible Securities

convertible security
a fixed-income obligation (bond or preferred stock) with a feature permitting conversion into a specified number of shares of common stock.

A **convertible security** is a special type of fixed-income obligation (bond or preferred stock). It possesses a feature permitting the investor to convert it into a specified number of shares of common stock. Convertible bonds and convertible preferreds provide the fixed-income benefit of a bond (interest) or preferred stock (dividends), while offering the price-appreciation (capital gain) potential of common stock. A detailed discussion of convertibles appears in Chapter 10.

Speculative Investment Vehicles

speculative investment vehicles
investment vehicles with high levels of risk.

Speculative investment vehicles are those possessing high levels of risk. They usually have nonexistent or imperfect records of success, uncertain earnings, and unstable market values. Because of their above-average risk, these vehicles also have high levels of expected return. The key speculative vehicles are options, and commodities, financial futures, and tangibles.

Options

As noted earlier, *options* are derivative securities that provide the investor with an opportunity to sell or buy another security or asset at a specified price over a given period of time. They are acquired and used by investors in a variety of ways and for a variety of reasons. Most often options are purchased in order to take advantage of an anticipated decrease or increase in the price of common stock. However, the purchaser of an option is not guaranteed any return and could lose the entire amount invested, either because the option never becomes attractive enough to use or because the life of the option expires. Aside from their speculative use, options are sometimes used to protect existing investment positions against losses.

right
an option for a short period of time to buy a fraction of a share of an issue of common stock at a price below the current market price.

warrant
an option for a long period of time to buy one or more shares of common stock at a price initially above the market price.

put
an option to sell 100 shares of common stock at a specified price on or before some future date.

call
an option to buy 100 shares of common stock at a specified price on or before some future date.

Three common types of options are rights, warrants, and puts and calls (discussed in detail in Chapter 11). A **right** is an option to buy a *fraction of a share* of a new issue of common stock at a price *below* the current market price over a *short period* of time—generally one or two months. For example, one might obtain rights entitling the holder to buy one share of stock, with a current market price of $55 per share, at $50 per share for every 10 rights held (that is, each right is good for one-tenth of a share of common stock). A **warrant** is similar to a right but gives its holder an opportunity to purchase *one or more shares* of common stock at a price that is initially *above* the market price over a *long period* of time—typically 2 to 10 years or more. For example, a General Manufacturing warrant might allow its holder to purchase three shares of its stock currently selling for $70 per share at $80 per share at any time prior to December 31, 2000.

Puts and calls are types of options that have gained great popularity during the past 20 years. A **put** is an option to sell 100 shares of common stock on or before some future date at a specified price. A **call** is an option to buy 100 shares on or before some future date at a specified price. Most puts and calls have lives of 1 to 9 months and occasionally a year. The exercise or striking price of both puts and calls is set close to the market price at the time they are issued. An example of a call option might be a six-month call to buy 100 shares of Stable Industries at $30 per share. The holder of such an option could, at any time before its expiration, buy

100 shares of Stable at $30 per share regardless of the actual market price of the stock. Investors tend to purchase puts when they anticipate price declines and calls when they expect prices to rise. As we will see in Chapter 11, although put and call options are generally viewed as speculative investments, they can also be used to protect an investor's position against loss.

Commodities, Financial Futures, and Tangibles

commodities and financial futures contracts
obligations that the sellers of the contracts will make delivery and the buyers will take delivery of a specified commodity, foreign currency, or financial instrument at some specific date in the future.

tangibles
investment assets, other than real estate, that can be seen or touched.

Two other types of speculative investment vehicles are (1) commodities and financial futures and (2) tangibles. **Commodities and financial futures contracts** are legally binding obligations that the sellers of such contracts will *make delivery* and the buyers of the contracts will *take delivery* of a specified commodity, foreign currency, or financial instrument at some specific date in the future. Examples of commodities sold by contract include soybeans, pork bellies, and cocoa. Trading in commodities and financial futures is generally a highly specialized, high-risk proposition since the opportunity to make a profit depends on a variety of uncontrollable factors tied to world events and economic activity. **Tangibles,** in contrast, are investment assets, other than real estate, that can be seen or touched. They include gold and other precious metals, gems, and collectibles such as stamps, coins, art, and antiques. These speculative vehicles are purchased as investments in anticipation of price increases. During the ownership period some may also provide the investor with psychological or esthetic enjoyment. An expanded discussion of commodities, financial futures, and tangibles is presented in Chapter 12.

Mutual Funds

mutual fund
a company that invests in and professionally manages a diversified portfolio of securities and sells shares of the portfolio to investors.

A company that invests in and professionally manages a diversified portfolio of securities is called a **mutual fund.** The fund sells shares to investors, who thus obtain an interest in the portfolio of securities owned by the fund. Most mutual funds issue and repurchase shares as demanded at a price reflecting the value of the portfolio at the time the transaction is made. Chapter 13 is devoted to the study of this popular investment vehicle.

Other Popular Investment Vehicles

Various other investment vehicles are also widely used by investors. The most common are real estate, and tax shelters and limited partnerships.

Real Estate

real estate
property such as residential homes, raw land, and income property.

The term **real estate** includes investment in such entities as residential homes, raw land, and a variety of forms of income property, such as warehouses, office and apartment buildings, cooperatives (co-ops), and condominiums. As a result of generally increasing values and favorable tax treatments, real estate was a popular investment vehicle through the '70s and much of the '80s. Although its popularity has waned due to the recession and problems in many financial institutions, it is likely that real estate will experience a resurgence in popularity during the next few years. Historically, the appeal of real estate investment stemmed from the fact that it

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offered returns in the form of rental income, tax write-offs, and capital gains that were not available from alternative investment vehicles. A detailed look at the role real estate can play in the investment portfolio is presented in Chapter 14.

Tax Shelters and Limited Partnerships

tax shelters
investments structured to take advantage of existing tax laws.

limited partnerships
a form of passive investment offering partners limited liability, active professional management, and the resulting profit or loss.

Due to provisions in the federal tax law, some investment vehicles offer certain tax advantages over others. For example, interest received on most municipal bonds is not taxed at all, and income from Individual Retirement Accounts (IRAs) is deferred from taxes until the money is actually taken out of the account. Since the federal income tax rate for an individual can be as high as 31 percent, many investors look for **tax shelters**—investments structured to take advantage of existing tax laws. With these, they find that their after-tax rates of return can be far higher than with conventional investments. **Limited partnerships** may be attractive to those wishing to passively invest with limited liability; they receive the benefit of active professional management and apply the resulting profit or loss (under certain conditions) when calculating their tax liability. Various types of tax-sheltered investments, often structured as limited partnerships, were severely affected by the Tax Reform Act of 1986. A comprehensive review of the more common tax shelters and limited partnerships is presented in Chapter 15.

AN OVERVIEW OF THE TEXT

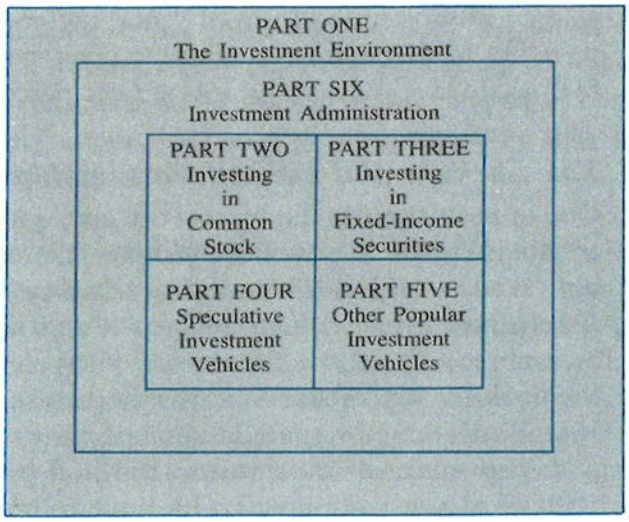
The text contains 17 chapters divided into six major parts listed below.

One: The Investment Environment
Two: Investing in Common Stock
Three: Investing in Fixed-Income Securities
Four: Speculative Investment Vehicles
Five: Other Popular Investment Vehicles
Six: Investment Administration

It begins with an overview of the investment environment (Part One), then describes the key aspects of the most popular investment vehicles (Parts Two through Five), and concludes with discussions of investment administration (Part Six). Each part, which is introduced with a listing of its chapters as well as its relationship to the overall investment process, explains an important aspect of investing. Figure 1.2 depicts the relationships among the six parts of the text. This plan of organization links the investor's activities in developing, implementing, and monitoring investment plans. It is intended to provide the understanding needed to establish an investment portfolio that provides an acceptable return for an acceptable level of risk.

To enhance the topical coverage and practical utility of the text, the computer has been introduced, where appropriate, as an investment decision-making aid. Keyed to various parts of the text is the *Investment Management Disk (IMD),* a menu-driven computer disk for use with IBM PCs and compatible microcomputers. The

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• **FIGURE 1.2 An Overview of the Major Parts of the Text**
The text approaches the individual investment process in a logical fashion, beginning with an overview of the investment environment (Part One). Next comes a description of the key aspects of the most popular investment vehicles (Parts Two through Five). The text concludes with a discussion of investment administration (Part Six).

disk can be used as an aid in performing many of the routine investment calculations and procedures presented. For convenience it is keyed to text discussions and end-of-chapter review questions, problems, and cases that can be solved with it. These items are clearly denoted by a disk symbol: . Appendix E describes this tool in more detail.

SUMMARY

1. An investment is any vehicle into which funds can be placed in order to earn an expected positive return. Some vehicles are securities; other are forms of property. Some investments are made directly, others indirectly. An investment can be a debt, an equity, or a derivative security such as an option. It can possess risk ranging from very low to extremely high. An individual can invest in either short-term or long-term vehicles.
2. The investment process is structured around financial institutions and financial markets that bring together suppliers and demanders of funds. The participants are government, business, and individuals. Of these groups, only individuals are net funds suppliers. Investors can be either institutional investors or individual investors. Investing is important since it makes available funds needed to permit our economy to function and grow. The rewards for investing can be received either as current income or increased value.
3. The steps in investing involve the following: meeting investment prerequisites; establishing investment goals; evaluating investment vehicles; selecting suitable investments; constructing a diversified portfolio; and managing the portfolio.

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4. A broad range of investment vehicles is available. Short-term vehicles have low risk. They are used to earn a return on temporarily idle funds or as a primary investment outlet of conservative investors. Common stocks offer dividends and capital gains. Fixed-income securities—bonds, preferred stock, and convertible securities—offer fixed periodic returns with some potential for gain in value.

5. Speculative investment outlets are high-risk vehicles such as options (rights, warrants, puts and calls), and commodities, financial futures, and tangibles that offer above-average expected returns. Mutual funds are popular investment vehicles that allow investors to conveniently buy or sell interests in a professionally managed diversified portfolio of securities. Other popular vehicles include real estate, and tax shelters and limited partnerships.

6. The text contains 17 chapters divided into six major parts. A simple model is used to link each part to the investment process.

QUESTIONS

1. Define the term *investment* and explain why individuals invest. What alternatives exist for investing idle funds?

2. Differentiate between securities and property investments. Which form of investment is more popular among individual investors?

3. What is the difference between direct and indirect investments? Cite an example of each.

4. Differentiate among debt, equity, and derivative securities. Give an example of each.

5. Describe how the term *risk* is used to depict the behavior of certain investments. Differentiate between low-risk and high-risk investments.

6. Describe the structure of the overall investment process. Define and explain the role played by financial institutions and financial markets.

7. Classify the role of: (a) government, (b) business, and (c) individuals as net suppliers or net demanders of funds. Discuss the impact of each on the investment process.

8. Define and differentiate between institutional investors and individual investors. Which group tends to be more sophisticated? Why?

9. Briefly discuss the economic importance of investing, and describe the rewards available to those placing funds in the investment process.

10. List and discuss the six steps involved in the personal investment process.

11. Discuss the role of short-term investment vehicles in an individual's investment plans and portfolio.

12. How much would an investor earn on a stock purchased one year ago for $63 if it paid an annual cash dividend of $3.75 and had just been sold for $67.50? Did the investor experience a capital gain? Explain.

13. Briefly define and differentiate the following fixed-income securities:
    a. Bonds.
    b. Preferred stocks.
    c. Convertible securities.
14. Explain the nature of an option and describe the opportunity for profit offered by this type of investment vehicle.
15. Describe the similarities and differences between a right and a warrant.
16. What is the difference between a put and a call? If you did not own shares of a company's stock but felt that its price would decline significantly in the near future, would you be likely to buy a put or a call? Explain.
17. Briefly describe each of the following types of investments, and indicate which factors are likely to affect the returns on each:
    a. Commodities and financial futures.
    b. Tangibles.
18. What is a mutual fund? Why is this form of investment popular among individual investors?
19. Briefly describe each of the following popular investment vehicles:
    a. Real estate.
    b. Tax shelters.
    c. Limited partnerships.

CASE PROBLEMS

1.1 Investments or Racquetball?

Judd Read and Judi Todd are senior accounting majors at a large midwestern university. They have been good friends since high school and look forward to their graduation at the end of next semester. Each has already found a job, which will begin upon graduation. Judd has accepted a position as an internal auditor in a medium-sized manufacturing firm. Judi will be working for one of the major public accounting firms. Each is looking forward to the challenge of a new career and to the prospect of achieving success both professionally and financially.

Judd and Judi are preparing to register for their final semester. Each has one free elective to select. Judd is considering taking a racquetball course offered by the physical education department; Judi is planning to take a basic investments course. Judi has been trying to convince Judd to take investments instead of racquetball. Judd believes he doesn't need to take investments, since he already knows what common stock is. He believes that whenever he has accumulated excess funds, he can invest in the stock of a company that is doing well. Judi argues that there is much more to it than simply choosing common stock. She feels an exposure to the field of investments would certainly be more beneficial than learning how to play racquetball.

Questions

1. Explain to Judd the structure of the investment process and the economic importance of investing.

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2. Describe to Judd the steps in investing and emphasize the importance of this process to his overall financial success.
3. List and discuss the other types of investment vehicles with which Judd is apparently unfamiliar.
4. Assuming Judd is in good physical condition, what arguments would you give to convince Judd to take investments rather than racquetball?

1.2 Evaluating Molly Porter's Investment Plan

Molly Porter's husband, Vance, was recently killed in an airplane crash. Fortunately, he had a sizable amount of life insurance, the proceeds of which should provide Molly with adequate income for a number of years. Molly is 33 years old and has two children, David and Phyllis, who are 6 and 7 years old, respectively. Although Molly does not rule out the possibility of marrying again, she feels it is best not to consider this when making her financial plans. In order to provide adequate funds to finance her children's college education as well as her own retirement. Molly has estimated that she needs to accumulate $400,000 within the next 15 years. If she continues to teach school, she believes sufficient excess funds will be available each year (salary plus insurance proceeds minus expenses) to permit her to achieve this goal. She plans to make annual deposits of these excess funds into her money market deposit account, which currently pays 6 percent interest.

Questions

1. In view of Molly's long-term investment goals, assess her choice of a money market deposit account as the appropriate investment vehicle.
2. What alternative investment vehicles might Molly consider prior to committing her money to the money market deposit account?
3. If you were Molly, given your limited knowledge of investments, in what vehicles would you invest the excess funds? Explain.

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2 Investment Markets and Transactions

After studying this chapter, you should be able to:

1. Describe the basic types of securities markets and the characteristics of both organized exchanges and the over-the-counter market.
2. Discuss globalization and regulation of the securities markets, ethical issues, and the general market conditions that have prevailed over the last fifty or so years.
3. Explain the role of the stockbroker and describe the basic types of orders and costs involved in making securities transactions.
4. Understand the economic motives and procedures for making margin transactions.
5. Summarize the various margin requirements and discuss the popular uses of margin trading.
6. Describe the motives for short selling, the procedures used by short sellers, and the popular applications of this trading technique.

In general, it would be difficult to drive cross country from one city to another without knowing how to read a map. In addition, an understanding of traffic regulations is needed to safely make such a trip. In spite of the fact that you may be able to drive a car, without these other skills you will probably be unable to complete the cross-country drive. The same logic applies to investing. Although investing is far more challenging than driving, it too involves a number of important procedures and rules that you need to know. Regardless of how well prepared you might be to select the best vehicle for achieving your particular investment goals, you must know other things as well: You need to understand the workings of the market in which that vehicle is bought and sold. You must know how to find and enter the market. And you should understand the basic types of transactions required. In this chapter we will look at key aspects of the investment environment so that you will know which market to enter for your purposes, how to enter it, and which basic types of transactions to make.

SECURITIES MARKETS

securities markets
markets allowing suppliers and demanders of funds to make transactions, in either money or capital.

Securities markets are the mechanism that allows suppliers and demanders of funds to make transactions. They also permit such transactions to be made *quickly* and at a fair price. Before describing the methods used to enter these markets, let us look at the various types of markets, their organization, their regulation, and their general behavior.

Types of Markets

money market
market in which short-term securities are bought and sold.

capital market
market in which long-term securities such as stocks and bonds are bought and sold.

The securities markets may be classified as either money markets or capital markets. In the **money market** short-term securities are bought and sold. In the **capital market** transactions are made in longer-term securities such as stocks and bonds. In this book we will devote most of our attention to the capital market, through which stock, bond, options, and futures investments can be made. Capital markets can be classified as either primary or secondary.

Primary Markets

primary market
market in which new issues of securities are sold to the public.

initial public offering (IPO)
the public sale of stock by a privately owned company.

The market in which new issues of securities are sold to the public is the **primary market.** It is the market in which the proceeds of sales go to the issuer of the securities. The main vehicle in the primary market is the **initial public offering (IPO)**—the public sale of stock by a privately owned company. In order to better understand primary markets, it is helpful to consider the process of registering new securities and the role of the investment banker.

shelf registration
securities registration procedure that allows a firm to sell securities during a two-year period under a "master registration statement" filed with the SEC.

Registration of New Securities. To offer its securities for public sale, the issuer must register them with and obtain approval from the *Securities and Exchange Commission (SEC),* a regulatory agency of the federal government. Since 1982, the SEC has allowed a streamlined registration procedure called **shelf registration** that allows issuers to better time their offerings. Under it, firms with more than $150 million in outstanding common stock can file a "master registration statement" that covers planned funding needs over a two-year period. Once the master statement is

approved by the SEC, the firm can file a short statement and without further delay sell securities already approved under the master statement.

public offering the sale of a firm's securities to the general public.

rights offering an offer of a new issue of stock to existing stockholders on a pro rata basis.

private placement the sale of new securities directly to selected groups of investors, without SEC registration.

investment banker financial intermediary that purchases new securities from the issuing firm at an agreed-upon price and resells them to the public.

underwriting the role of the investment banker in bearing the risk of reselling at a profit the securities purchased from an issuing corporation at an agreed-upon price.

underwriting syndicate a group formed to spread the financial risk associated with the selling of new securities.

selling group a large number of brokerage firms that join to accept responsibility for selling a certain portion of the issue of a new security.

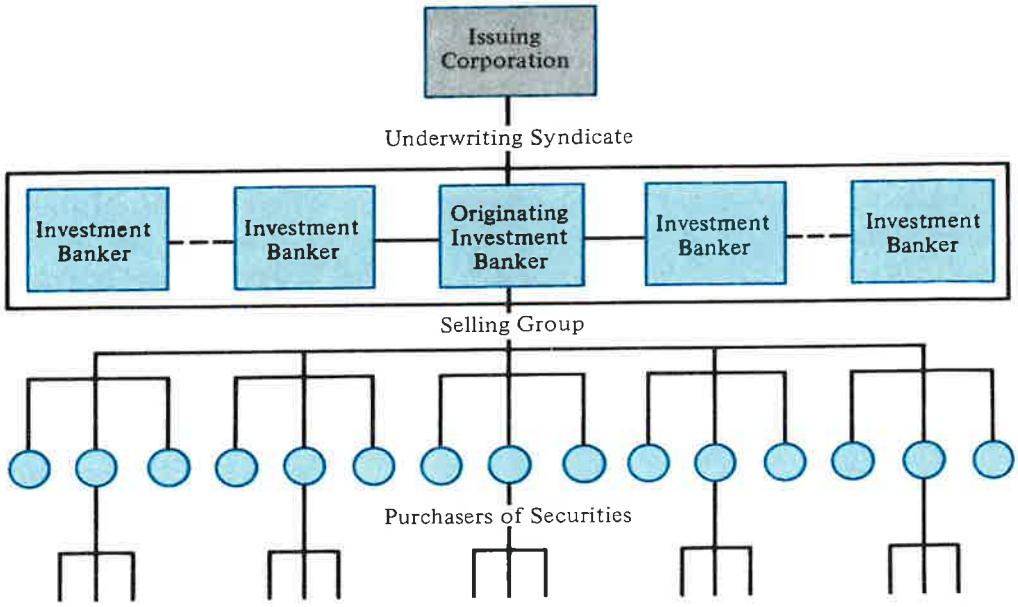
secondary market the market in which securities are traded after they have been issued.

Role of the Investment Banker. To market its securities, the firm has two choices: It can either make a **public offering,** in which it offers its shares for sale to the general public or a **rights offering,** in which it offers shares to existing stockholders on a pro rata basis. It can also make a **private placement,** in which new securities are sold directly, without SEC registration, to selected groups of investors such as insurance companies and pension funds. Most public offerings are made with the assistance of an **investment banker**—a financial intermediary (such as Goldman, Sachs, or Salomon Brothers) that specializes in selling new security issues. The main activity of the investment banker is **underwriting.** This process involves purchasing the security issue from the issuing firm at an agreed-upon price and bearing the risk of reselling it to other investors at a profit. The investment banker also provides issuers with advice about pricing and other important aspects of their issues. In the case of very large security issues, the investment banker will bring in other bankers as partners to form an **underwriting syndicate,** in order to spread the financial risk associated with the selling of the new securities. The originating investment banker and the syndicate members put together a **selling group,** normally made up of a large number of brokerage firms, each of which accepts the responsibility for selling a certain portion of the issue. The selling process for a new security issue is depicted in Figure 2.1. The relationships among the participants in this process can also be seen in the announcement of the offering of a new security issue, shown in Figure 2.2. The roles of the various participating firms can be identified from the layout of the announcement. Isolated firm names (or in many cases, a larger typeface) reflect the importance of the firm in the sale process. (In the figure, the key participants in the offering are labeled in the margin at the right.)

Compensation for underwriting and selling services typically comes in the form of a discount from the sale price of the securities. For example, an investment banker may pay the issuer $24 per share for stock to be sold for $25 per share. The investment banker may then sell the shares to members of the selling group for $24.75 per share. In this case, the original investment banker earns $0.75 per share ($24.75 sale price less $24 purchase price), and the members of the selling group earn $0.25 for each share they sell ($25 sale price less $24.75 purchase price). Although some primary security offerings are directly placed by the issuer, the majority of new issues are sold through public offering using the mechanism just described.

Secondary Markets

The market in which securities are traded after they have been issued is the **secondary market,** or the *aftermarket*. The secondary market exists because after a security has been issued, some purchasers may wish to sell their shares, and others may wish to buy them. In the secondary market, unlike the primary market, the corporation whose securities are traded is not involved in the transaction. Instead, money



• FIGURE 2.1 The Selling Process for New Securities

The investment banker hired by the issuing corporation may form an underwriting syndicate, which then establishes a selling group to sell the new security issue in the primary market.

and securities are exchanged between investors—the seller exchanges securities for cash paid by the buyer. The secondary market gives security purchasers liquidity. It also provides a mechanism for continuous pricing of securities to reflect their value at each point in time based upon the best information then available.

Included among secondary markets are the various organized securities exchanges and the over-the-counter market. **Organized securities exchanges** are centralized institutions in which the forces of supply and demand for already outstanding securities are brought together. The **over-the-counter (OTC) market,** on the other hand, is a widely scattered telecommunications network through which buyers and sellers of certain securities can be brought together. Because popular investment vehicles are traded on both the organized exchanges and over-the-counter markets, the individual investor will probably make transactions in both of these markets.

organized securities exchanges centralized institutions in which transactions are made in already outstanding securities.

over-the-counter (OTC) market widely scattered telecommunications network through which buyers and sellers of certain securities can be brought together.

Organized Securities Exchanges

Securities traded on organized securities exchanges account for about 72 percent of the total *dollar volume* of domestic shares traded. All trading at a given exchange is carried out in one place (such as the New York Stock Exchange on Wall Street) and under a broad set of rules by persons who are members of that exchange. The best known exchanges on which stock and bond transactions are made are the New York Stock Exchange (NYSE) and the American Stock Exchange (AMEX), both located in New York City. They account for approximately 86 and 2 percent, respectively, of the total annual dollar volume of shares traded on organized U.S. exchanges.

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This announcement is not an offer to sell or a solicitation of an offer to buy any of these securities. The offering is made only by the Prospectus, copies of which may be obtained in any State in which this announcement is circulated only from such of the several underwriters as may lawfully offer these securities in such State.

NEW ISSUE

January 7, 1992

2,587,500 Shares

F&C International, Inc.

Common Stock

Price $13.50 Per Share

2,472,500 Shares

Investment Banking Syndicate

PaineWebber Incorporated

J. C. Bradford & Co.

The Chicago Corporation

Selling Group

Alex. Brown & Sons Incorporated — The First Boston Corporation

A.G. Edwards & Sons, Inc. — Goldman, Sachs & Co. — Merrill Lynch & Co.

Morgan Stanley & Co. Incorporated — Oppenheimer & Co., Inc. — Salomon Brothers Inc

Smith Barney, Harris Upham & Co. Incorporated — Wertheim Schroder & Co. Incorporated

William Blair & Company — Gruntal & Co., Incorporated

Kemper Securities Group, Inc. — Ladenburg, Thalmann & Co. Inc.

McDonald & Company Securities, Inc — Neuberger & Berman — Piper, Jaffray & Hopwood Incorporated

Sutro & Co. Incorporated — Tucker Anthony Incorporated — Wheat First Butcher & Singer Capital Markets

Brean Murray, Foster Securities Inc. — Fahnestock & Co. Inc.

First of Michigan Corporation — The Ohio Company — Roney & Co.

This tranche is being offered in the United States and Canada.

115,000 Shares

PaineWebber International

This tranche is being offered outside the United States and Canada.

• **FIGURE 2.2 An Offering Announcement**

This form of offering announcement is commonly referred to as a "tombstone." The participants in both the investment banking syndicate and the selling group established to sell the common stock of F&C International, Inc., are clearly noted on the tombstone. (*Source: The Wall Street Journal,* January 7, 1992, p. C20.)

Other domestic exchanges include *regional exchanges* such as the Midwest Stock Exchange and the Pacific Stock Exchange. Together, these exchanges, which deal primarily in securities with local or regional appeal, account for about 11 percent of the annual dollar share volume on organized U.S. exchanges. In addition, foreign stock exchanges list and trade shares of firms in their own foreign markets. Separate domestic exchanges exist for options trading and trading in commodities and financial futures. Here we will consider the basic structure, rules, and operations of each of these organized domestic securities exchanges. (Foreign exchanges are discussed later.)

The New York Stock Exchange

Most organized securities exchanges are modeled after the New York Stock Exchange (NYSE). In order to be a member, an individual or firm must own or lease a "seat" on the exchange. The word *seat* is used only figuratively, since members trade securities standing up. There are a total of 1,366 seats on the NYSE. During this century, seats on the exchange have sold for as much as $1,150,000 (in 1987) and as little as $17,000 (in 1947). Recently, seats have sold for around $400,000. The majority of seat holders are brokerage firms, each typically owning more than one seat. (The largest brokerage firm, Merrill Lynch Pierce Fenner & Smith, Inc., owns over 20 seats.) Firms such as Merrill Lynch designate officers to occupy seats. Only such designated individuals are permitted to make transactions on the floor of the exchange. Membership is often divided into broad classes based on the members' activities. Although the majority of members make purchase and sale transactions on behalf of their customers, some members specialize in making transactions for other members or for their own account. Table 2.1 classifies and briefly describes member activities. You can see that commission brokers and specialists perform the majority of the activities on the exchange.

Listing Policies. To become listed on an organized stock exchange, a firm must file an application. Some firms are listed on more than one exchange; they are said to have **dual listing.** The New York Stock Exchange has the most stringent listing requirements. Currently over 1,800 firms, accounting for about 2,300 stocks (common and preferred) and 2,900 bonds, are listed on the NYSE.

dual listing
a listing of a firm's shares on more than one exchange.

In order to be eligible for listing on the NYSE, a firm must have at least 2,000 stockholders owning 100 or more shares. It must have a minimum of 1.1 million shares of publicly held stock, a demonstrated earning power of $2.5 million before taxes at the time of the listing and $2 million before taxes for each of the preceding two years, net tangible assets of $18 million, and a total of $18 million in market value of publicly traded shares. It also must pay a listing fee. Once a firm's securities have been accepted for listing, it must meet the requirements of the federal Securities and Exchange Commission (SEC), which regulates certain aspects of listed securities. If listed firms do not continue to meet specified requirements, they may be **de-listed** from the exchange.

de-listed
to be removed from listing on an organized stock exchange.

TABLE 2.1 NYSE Member Activities

Type of Member	Approximate % Total Membership*	Primary Activities
A. Make Transactions for Customers		
Commission brokers	52%	Make purchase and sale transactions of stocks and bonds as requested by customers.
Bond brokers	2	Commission brokers who only make bond transactions for customers.
B. Make Transactions for Other Members		
Floor brokers ("Two-dollar brokers")	10	Execute orders for other brokers who are unable to do so due to excessive market activity.
Specialists	29	Make a continuous, fair, and orderly market in the 6 to 15 issues assigned to them. Also make purchase and sale transactions of less than 100 shares (odd lots) for members of the exchange.
C. Make Transactions for Their Own Account		
Registered traders	4	Purchase and sell securities for their own account. Must abide by certain regulations established to protect the public.

*Because approximately 3 percent of the members are inactive, the percentages given total to only 97 percent.

Trading Activity. Trading is carried out on the floor of an exchange. The floor of the NYSE is an area about the size of a football field. On the floor are 18 trading posts. Certain stocks are traded at each of the posts. Bonds and less active stocks are traded in an annex. All trades are made on the floor of the exchange by members of the exchange. Around the perimeter are telephones and telegraph equipment used to transmit buy-and-sell orders from brokers' offices to the exchange floor and back again once an order has been executed.

All transactions on the floor of the exchange are made through an auction process. The goal is to fill all buy orders at the lowest price and to fill all sell orders at the highest price. The actual auction takes place at the post where the particular security is traded. Members interested in purchasing a given security publicly negotiate a transaction with members interested in selling that security. The job of the **specialist**—exchange member who specializes in making transactions in one or more stocks—is to provide for a continuous and orderly market in that security. The specialist offers to buy or sell (at specified prices) whenever there is a lack of continuity or order in the market for the security.

specialist
stock exchange member who specializes in one or more stocks.

The American Stock Exchange

The American Stock Exchange (AMEX) is the second largest organized U.S. security exchange in terms of the number of listed companies. In terms of dollar volume

of trading, the AMEX is actually smaller than the two largest regional exchanges—the Midwest and the Pacific. Its organization and procedures are similar to those of the NYSE, except that its listing requirements are not as stringent. In March of 1992 the AMEX initiated a new market, the *Emerging Company Marketplace (ECM)*, geared toward raising capital for smaller growth companies. Initially viewed as an experiment, this market may provide investors with an opportunity to conveniently invest in emerging company stocks. There are approximately 660 seats on the AMEX, with over 1,000 listed stocks and 260 (corporate) listed bonds.

Regional Stock Exchanges

The number of companies having securities listed on each of the regional exchanges is typically in the range of 100 to 500. As a group these exchanges handle about 12 percent of the dollar volume of all shares traded on organized U.S. exchanges. The best-known regional exchanges are the Midwest, Pacific, Philadelphia, Boston, and Cincinnati. Most are modeled after the NYSE, but their membership and listing requirements are considerably more lenient. It is not uncommon for the regional exchanges to list securities that are also listed on the NYSE or AMEX. This dual listing is often done to enhance a security's trading activity. In addition, a number of the regional exchanges, along with the NYSE, AMEX, and the over-the-counter market, are linked together through an electronic communications network—the *Intermarket Trading System (ITS)*—which allows brokers and other traders to make transactions at the best prices.

Options Exchanges

Options allow the holder to sell or purchase a financial asset at a specified price over a stated period of time. They are listed and traded on the Chicago Board Options Exchange (CBOE), as well as on the American Stock Exchange, the New York Stock Exchange, the Pacific Stock Exchange, and the Philadelphia Stock Exchange. The dominant options exchange is the CBOE. Usually an option for the sale (a *put*) or purchase (a *call*) of a given financial asset is listed on only one of the options exchanges, although dual listing does sometimes occur. Options exchanges deal only in security options; options to purchase or sell property are not traded in this marketplace.

Futures Exchanges

Futures contracts guarantee the future delivery of a specified commodity, foreign currency, or financial instrument at a given future date. The dominant exchange on which commodity and financial futures are traded is the Chicago Board of Trade (CBT). There are a number of other futures exchanges, some of which specialize in certain commodities rather than the broad spectrum listed on the CBT. The larger of these exchanges include the New York Mercantile Exchange, the Chicago Mercantile Exchange, the Commodity Exchange of New York, the New York Coffee, Sugar & Cocoa Exchange, the New York Cotton Exchange, the Kansas City Board of Trade, and the Minneapolis Grain Exchange.

The Over-the-Counter Market

The over-the-counter market is not a specific institution; rather, it is another way of trading securities. It accounts for about 28 percent of the total *dollar volume* of domestic shares traded. Securities traded in this market are sometimes called *unlisted securities*. The over-the-counter (OTC) market is the result of an intangible relationship among purchasers and sellers of securities, who are linked by a telecommunications network. The prices at which securities are traded are determined by both competitive bids and negotiation. The actual process depends on the general activity of the security. A numerical majority of stocks are traded over the counter, as are most government and corporate bonds. Of the over 35,000 issues traded over the counter, about 4,700 have an active market in which frequent transactions take place. A numerical majority of all corporate bonds, some of which are also listed on the NYSE, are traded in the OTC market.

New Issues and Secondary Distributions

secondary distributions
the public sales of large blocks of previously issued securities held by large investors.

In order to create a continuous market for unlisted securities, the OTC market also provides a forum in which initial public offerings (IPOs), both listed and unlisted, are sold. If they are listed, subsequent transactions will be made on the appropriate organized securities exchange; unlisted securities will continue to trade in the OTC market. **Secondary distributions**—the public sales of large blocks of previously issued securities held by large investors—are also made in the OTC market in order to minimize the potentially negative effects of such transactions on the price of listed securities. These transactions are forms of *third or fourth market* trades, which are described below.

The Role of Dealers

dealers
traders who make markets by offering to buy or sell certain over-the-counter securities at stated prices.

bid price
the highest price offered by a dealer to purchase a given security.

ask price
the lowest price at which a dealer is willing to sell a given security.

The market price of OTC securities results from a matching of the forces of supply and demand for the security by traders known as **dealers.** Each makes markets in certain securities by offering to buy or sell at stated prices. Thus, unlike the organized exchanges (where the buyer and seller of a security are brought together by a broker), dealers are always the second party to a transaction. For example, a dealer making a market in Raco Enterprises might offer to buy shares from investors at $29.50 and sell shares to other investors at $31. The **bid price** is the highest price offered by the dealer to purchase a given security; the **ask price** is the lowest price at which the dealer is willing to sell the security. As an investor, you could *sell* stock in Raco Enterprises at the (lower) bid price of $29.50; or you could *buy* it at the (higher) ask price of $31. The dealer makes a profit from the spread between the bid and the ask price.

Nasdaq

National Association of Securities Dealers Automated Quotation (Nasdaq) System
an automated system that provides up-to-date bid and ask prices on certain selected, highly active OTC securities.

OTC dealers are linked with the purchasers and sellers of securities through the **National Association of Securities Dealers Automated Quotation (Nasdaq) System.** Nasdaq is an automated system that provides up-to-date bid and ask prices on over 4,700 selected, highly active OTC securities. It enables buyers and sellers to

locate one another easily. To trade in securities not quoted on Nasdaq, purchasers and sellers must find each other through references or through known dealers in the securities.

About 2,600 of the Nasdaq stocks meeting the qualification standards relative to financial size, performance, and trading activity are included in the **Nasdaq/National Market System (Nasdaq/NMS).** Transactions in stocks on this list are carefully tracked, and their more detailed quotations are therefore isolated from other OTC stocks when published in the financial press.

Nasdaq/National Market System (Nasdaq/NMS) a list of Nasdaq stocks meeting certain standards of financial size, performance, and trading activity.

Third and Fourth Markets

The **third market** is the name given to over-the-counter transactions made in securities listed on the NYSE, AMEX, or one of the other organized exchanges. It exists to serve the needs of large institutional investors, such as mutual funds, pension funds, and life insurance companies, by allowing them to make large transactions at a reduced cost. These transactions are typically handled by firms or dealers that are not members of an organized securities exchange. For bringing together large buyers and sellers, these firms charge commissions below those charged for making similar transactions on the associated securities exchange. Institutional investors are thus often able to realize sizable savings in brokerage commissions as well as to have minimal impact on the price of the transaction. Since the introduction of negotiated commissions on the organized exchanges in 1975, the importance of this market has been somewhat reduced.

third market over-the-counter transactions made in securities listed on the NYSE, AMEX, or other organized exchanges.

The **fourth market** is the name given to transactions made directly between large institutional buyers and sellers. Unlike the third market, fourth-market transactions bypass the dealer. But in order to find a suitable seller or buyer, an institution may hire a firm to facilitate the transaction.

fourth market transactions made directly between large institutional buyers and sellers.

Globalization of Securities Markets

Today, investors, issuers of securities, and securities firms look beyond the markets of their home countries to find the best returns, lowest costs, and best international business opportunities. Advances in technology and communications, together with the elimination of many political and regulatory barriers, allow investors to make cross-border securities transactions with relative ease. In short, we are experiencing a *globalization* of the securities markets, enabling investors to seek out opportunities to profit from rapidly expanding economies throughout the world.

The international equity markets currently have a combined market value of over $8.4 trillion, and the worldwide bond markets have a market value in excess of $10 trillion. In the U.S. alone, American investments in foreign assets exceed $650 billion. Foreign ownership of U.S. assets is more than $1 trillion. Clearly, as discussed in the nearby Investor Insights Box, global investing can represent a prudent strategy that reduces risk and enhances returns. To enter the international investment arena, today's investors need to understand how international securities markets operate, ways to invest in foreign securities, and the rewards and risks of international investing.

INVESTOR INSIGHTS

Global Investing: A Prudent Strategy

Prevalent among U.S. investors not so very long ago was the illusion that putting money into foreign securities was only for daring risk takers. But in recent years more and more Americans have come to understand that having part of your stake invested abroad is prudent, lessening risk rather than increasing it. . . .

Despite all the interconnectedness of national economies, some will be doing better than others at any given time, so having stakes in several countries spreads your risks. It is pretty certain, moreover, that some countries will grow more vigorously than the U.S. during the Nineties. Accordingly, there is a good chance that an American with well-chosen investments abroad will get larger overall returns than a stay-at-home investor.

While the U.S. stock market did very well for investors in the Eighties, quite a few stock markets abroad did even better. Morgan Stanley reports that over the decade, the U.S. stock market had a total return of 325%. Very nice, but eight markets abroad topped that by substantial margins, with returns ranging from 431% for Britain to more than 1,100% for Japan and Sweden.

Philippe Jorion, associate professor of international finance at Columbia's business school, advises American investors to commit 20% or more of their portfolios to a diverse mix of foreign securities. Those who did so during the years 1978 to 1988, a study by Jorion shows, would have fared significantly better than investors who stuck to the U.S.

But what do you do when confronted with a world of stocks—so many stocks, so little time to choose among them? To begin with, remember that when you buy a foreign stock you also buy into a foreign stock market. The markets where prices are rising the fastest are not always the best to invest in, and neither are those where stocks look extraordinarily

Growing Importance of International Markets

Although the U.S. equity market is still the world's largest, today it represents about 30 percent of total share value, compared to almost two-thirds of total share value in 1971. Japan is second largest at about 25 percent followed by Great Britain at about 9 percent. U.S. money and capital markets therefore face stiff competition for investment dollars from major stock exchanges around the world.

Foreign Securities Markets. There are organized securities exchanges in more than 30 countries worldwide. They are located not only in the major industrialized nations such as Japan, Great Britain, Canada, and Germany, but also in emerging economies such as Brazil, Chile, Malaysia, Mexico, Taiwan, and Thailand. The top three securities markets worldwide are the New York, Tokyo, and London stock exchanges. Other important foreign exchanges include Frankfurt, Paris, Toronto, Montreal, Sydney, Hong Kong, Zurich, and Bueños Aires. The European stock markets are expected to take on additional importance with economic integration of the European Community (EC) during the 1990s. Among the EC's major goals are the development of a central capital market, a central bank, and a single currency

cheap. Prices in torrid markets can overheat in a hurry, and low prices sometimes betray high risk. . . .

It is well to be aware also that returns from owning foreign securities can be wagged by the performance of the dollar in exchange markets. If you buy a Swiss stock and the dollar goes down relative to the Swiss franc, that increases the value of the stock in terms of dollars. If the dollar goes up instead, that decreases the dollar value of the stock.

The dollar's sustained skid against other currencies from 1985 to 1988 gave a big boost to Americans' returns on foreign securities. During that stretch, a Morgan Stanley index of stock markets outside the U.S. climbed a dazzling 210% when measured in dollars but only 76% when measured in local currencies.

A divergence that wide, or anything near it, is not in prospect for the Nineties. The dollar may sink some more, but it will hardly keep sinking as persistently as in the past several years. . . . A larger proportion of any returns will have to come from the performance of the securities themselves.

An investor who wants to go international has a choice between buying shares in a mutual fund that invests abroad or buying individual stocks. A personal portfolio of stocks might bring larger rewards, but most pros discourage that approach for anyone who has less than $200,000 to stake abroad. It takes at least that much to achieve a prudent degree of diversification. Says George Foot, a partner at Newgate Management, a New York investment adviser specializing in foreign markets: "The trick to international investing is not to hit the hot stock, but to diversify your risks." . . .

Source: David Carey, "Why Investors Should Go Global," *Fortune 1991 Investor's Guide,* Fall 1990, pp. 97–108.

unit for the 12 member countries. The current market capitalization of the combined EC markets represents a market competitive with New York and Tokyo.

Bond markets, too, are going global as investors are purchasing government and corporate fixed-income securities in foreign markets. The United States dominates the international government bond market, followed by Japan, Germany, and Great Britain.

American Depositary Receipts (ADRs) (ADRs) negotiable receipts for company stock held in trust in a foreign branch of a U.S. bank

Yankee bonds debt securities issued by foreign governments or corporations and traded in U.S. securities markets.

Purchasing Foreign Securities. There are several ways to invest in foreign securities. Investors can purchase dollar-denominated securities that are linked to foreign stocks and bonds, make direct purchases of foreign shares, or buy shares of mutual funds composed of foreign securities (discussed in Chapter 13). Two dollar-denominated securities are *American Depositary Receipts (ADRs)* and *Yankee bonds*. **American Depositary Receipts (ADRs)** are dollar-denominated negotiable receipts representing stock of a foreign company that is held in trust by foreign branches of U.S. banks. Currently about 900 ADRs representing 38 countries are listed in the United States; of these, about 200 trade actively. **Yankee bonds** are dollar-denominated debt securities issued by foreign governments or corporations

and traded in U.S. securities markets. In addition, many investors choose to diversify their portfolios internationally by acquiring shares in U.S.–based multinationals with substantial foreign operations. For example, Exxon, IBM, Citicorp, Dow Chemical, Coca-Cola, Colgate-Palmolive, and Hewlett-Packard are among U.S. corporations receiving over 50 percent of their revenues from overseas operations.

Investments in dollar-denominated foreign securities are handled by the investor's broker in much the same way as U.S. securities transactions. Shares of a foreign company can also be purchased directly; however, doing so is complex and is not for the timid or inexperienced investor. The basic steps in investment transactions—placing the order to buy or sell, exchanging money and the securities, and holding the securities, paying taxes, and receiving dividends—occur no matter where you buy securities. However, each country's exchange has its own regulations and procedures with regard to these steps. Therefore, investors must be prepared to cope not only with varying degrees of market regulation and efficiency, but also with different stock exchange rules, settlement procedures, accounting standards, tax laws, and language barriers.

The best way for U.S. individual investors to buy foreign securities is through brokers at major U.S. Wall Street firms with large international operations. Such firms include Merrill Lynch, Dean Witter, PaineWebber, Lehman Brothers, and large discount broker Charles Schwab. In addition, major banks such as Bankers Trust and Citicorp have special brokerage units to handle foreign securities transactions. Brokers at any of these institutions can provide advice on transaction procedures and often have research on major foreign stocks. These institutions are governed by U.S. securities regulations and will execute orders for foreign securities in much the same way as for U.S. securities. They will deal with foreign currency conversion for purchase, sale, and dividend payments. The currency conversion is typically made at the exchange rate at the time of the trade or when dividends are received. Generally, foreign security certificates are held for the investor by a foreign correspondent bank.

It is also possible to deal directly with a foreign broker-dealer. In this case, the investor must comply with local securities regulations and customs and deal with the problems of currency conversion, possible delays in settlement, and risk of fraud or broker bankruptcy.

International Investment Performance

A primary motive for investing overseas is the lure of high returns. In fact, only once since 1980 did the United States finish number one among the major stock markets of the world. For example, in 1990, investors would have earned higher returns in such markets as Great Britain, Hong Kong, and Austria than in the United States. For the ten-year period 1981–1990, the London Stock Exchange outperformed the New York Stock Exchange with an average annual return of 18.26 percent, compared to 13.96 percent on the NYSE. Of course, foreign securities markets tend to be more risky than U.S. markets. A market with high returns in one year may not do so well the next year.

Investors can compare activity on U.S. and foreign exchanges by following market indexes that track the performance of those exchanges. (We'll discuss indexes in more detail in Chapter 3.) Most of the major indexes, trading activity in selected stocks on major foreign exchanges, and foreign exchange rates are reported daily in *The Wall Street Journal* and regularly in other financial publications such as *Barron's* and *Business Week*. Also, *The Wall Street Journal*'s Investor Insight section frequently compares performance of the U.S. and selected foreign markets.

Risks of Investing Internationally

Investing abroad is not without its pitfalls, however. In addition to the risks involved in making *any* security transaction, the international investor must consider the risks associated with doing business in a particular foreign country. Changes in government regulations such as trade policies, labor laws, and taxation may affect operating conditions for the country's firms. The government itself may not be stable.

U.S. securities markets are generally viewed as highly regulated, efficient, and reliable. This is not always the case in foreign markets, many of which lag substantially behind the U.S. in both operations and regulation. Some countries place various restrictions on foreign investment. In Korea, Brazil, and Thailand, for example, mutual funds are the only way for foreigners to invest; Mexico has a two-tier market with some securities restricted to foreigners. Some countries make it difficult for foreigners to get their funds out, and many impose taxes on dividends—Swiss taxes are about 20 percent on dividends paid to foreigners. Accounting standards vary from country to country. Other difficulties include illiquid markets and an inability to obtain reliable investment information due to a lack of reporting requirements.

Because international investing involves securities denominated in foreign currencies, trading profits and losses are affected not only by a security's price changes but also by changes in foreign exchange rates. The values of the world's major currencies fluctuate with respect to each other on a daily basis, and the relationship between two currencies is called the **foreign exchange rate.** On December 4, 1991, the foreign exchange rate for the French franc (Ff) and the U.S. dollar (US$) was expressed as follows:

foreign exchange rate the relationship between two currencies at a specific date.

$$\text{US\$1.00} = \text{Ff } 5.49$$
$$\text{Ff } 1.00 = \text{US\$.182}$$

On that day, you would have received 5.49 French francs for every $1. Conversely, each French franc was worth $.182.

Changes in the value of a particular foreign currency with respect to the US$—or any other currency—are called *appreciation* and *depreciation*. For example, on December 11, 1991, the Ff/US$ exchange rate was 5.40, indicating that in one week the French franc *appreciated* relative to the dollar (and the dollar depreciated relative to the franc). On December 11 it took *fewer* French francs to buy $1 (5.40 versus 5.49), so each franc was worth more in dollar terms ($.185 versus $.182).

EBURY Exhibit 1016, Page 49

However, compared to a year earlier, the value of the French franc *depreciated*. On December 11, 1990, the exchange rate was Ff/US$ = 5.03; on December 11, 1991, it took *more* French francs to buy $1 (5.40 versus 5.03) than it did on the same day in 1990, and each franc was worth $.199.

foreign exchange risk
the risk caused by varying exchange rates between two countries.

Foreign exchange risk is the risk caused by the varying exchange rates between the currencies of two countries. For example, assume that on December 11, 1990, you bought 100 shares of a French stock at 100 Ff per share, held it for one year, and then sold it for 105 French francs. The following table summarizes the transactions:

Date	Transaction	Number of Shares	Price in Ff	Value of Transaction, Ff	Exchange Rate Ff/US$	Value in US$
12/11/90	Purchase	100	100	10,000	5.03	$1,988.07
12/11/91	Sell	100	105	10,500	5.40	$1,944.44

Although you realized a *gain* of 500 French francs, in dollar terms the transaction resulted in a *loss*. The value of the stock in dollars decreased because the French franc was worth less (had depreciated) relative to the dollar. Therefore, investors in foreign securities must be aware that value of the foreign currency in relationship to the dollar can have a profound effect on their returns from foreign security transactions.

Trading Hours

To compete more effectively with foreign securities markets, in which investors can execute trades when U.S. markets are closed, both the organized U.S. exchanges and Nasdaq recently expanded trading hours beyond the traditional session (9:30 A.M.–4:00 P.M., Eastern time). In mid-1991, the NYSE added two short electronic trading sessions that begin after the 4 P.M. closing bell. The first, from 4:15 to 5 P.M., trades stocks at that day's closing prices via a computer-matching system. Transactions occur only if a match can be made and are handled on a first-come, first-served basis. The second session lasts from 4 to 5:15 P.M. and allows institutional investors to trade large blocks of stock valued at $1 million or more.

Nasdaq began its own expanded-hours electronic trading session in January 1992. Called Nasdaq International, it runs from 3:30 A.M. (when the London Exchange opens) to 9 A.M. Eastern time, one-half hour before the start of regular trading sessions in U.S. markets. Because it lists NYSE stocks as well as other U.S. equities and has less stringent disclosure requirements than other markets, Nasdaq International is designed to attract traders from both the New York and London exchanges. Unlike the NYSE and Nasdaq, the Pacific Stock Exchange conducts its after-hours trading session from 4 to 4:50 P.M., Eastern time, on an auction basis. It continues to make markets, rather than trading electronically at fixed prices. Other U.S. markets such as the American and Philadelphia Stock Exchanges are considering expanded hours as well.

These actions represent the first steps toward the development of 24-hour global trading of securities, both electronically and at auction through organized ex-

changes. Actually, investors are already able to trade securities after hours (from 4 P.M. to 9:30 A.M., Eastern time) through Instinet, a private electronic trading system owned by Reuters, the British communications conglomerate. This system lists 10,000 U.S. and European stocks. Many experts expect longer trading sessions to be used primarily by institutional investors but question their value for the average individual investor.

Regulation of Securities Markets

A number of state and federal laws provide for adequate and accurate disclosure of information to potential and existing investors. Such laws also regulate the activities of various participants in the securities markets. State laws, which regulate the sale of securities within state borders, are commonly called "blue sky laws" because they are intended to prevent investors from being sold nothing but "blue sky." These laws typically establish procedures for regulating both security issues and sellers of securities doing business within the state. As part of this process, most states have a regulatory body, such as a state securities commission, that is charged with the enforcement of the related state statutes. However, the most important securities laws are those enacted by the federal government.

Securities Act of 1933

This act was passed by Congress to ensure full disclosure of information with respect to new security issues and prevent a stock market collapse similar to that which occurred in 1929–1932. It requires the issuer of a new security to file with the Securities and Exchange Commission (SEC) a registration statement containing information with respect to the new issue. The firm cannot sell the security until the SEC approves the registration statement, a process that usually takes about 20 days.

prospectus
a portion of a security registration statement that details the key aspects of the issue, the issuer, and its management and financial position.

red herring
a preliminary prospectus made available to prospective investors after a registration statement has been filed but before its approval.

One portion of the registration statement, called the **prospectus,** details the key aspects of the issue, the issuer, and its management and financial position. During the waiting period between filing the statement and its approval, a **red herring,** which is a *preliminary prospectus* indicating the tentative nature of the offer, is made available to prospective investors. It is so named because, printed in red on the front of the prospectus, it states that the information contained therein is preliminary and subject to change. Once the statement has been approved, the new security issue can be offered for sale. If the registration statement is found to be fraudulent, the SEC will reject the issue and may also sue the directors and others responsible for the misrepresentation. *Approval of the registration statement by the SEC does not mean the security is a good investment; it merely indicates that the facts presented in the statement appear to reflect the firm's true position.*

Securities Exchange Act of 1934

This act formally established the SEC as the agency in charge of the administration of federal securities laws. The act established the SEC's power to regulate the organized securities exchanges and over-the-counter markets by extending disclosure requirements to outstanding securities. It required the stock exchanges as well as the stocks traded on them to be registered with the SEC.

EBURY Exhibit 1016, Page 51

As a result of this act, the SEC covered exchanges and the OTC market, their members, brokers and dealers, and the securities traded in these markets. Each of these participants must report with the SEC and must periodically update such data. The act has been instrumental in providing adequate disclosure of facts on outstanding issues that are traded in the secondary markets. The 1934 act, which has been amended several times over the years, and the Securities Act of 1933, remain the key pieces of legislation that protect participants in the securities markets.

Maloney Act of 1938

This act, an amendment to the Securities Exchange Act of 1934, provided for the establishment of trade associations for the purpose of self-regulation within the securities industry. Since its passage, only one such trade association, the National Association of Securities Dealers (NASD), has been formed. NASD members include nearly all of the nation's securities firms that do business with the public. Membership in NASD allows member firms to make transactions with other member firms at rates below those charged to non-members. Today any securities firms that are not members of NASD must agree to be supervised directly by the SEC. Because the SEC has the power to revoke NASD's registration, its power over this organization is the same as over the exchanges. In addition to its self-regulatory role, NASD has greatly streamlined the functioning of the over-the-counter market by creating Nasdaq.

Investment Company Act of 1940

This act was passed to protect those purchasing investment company shares. An *investment company* is one that obtains funds by selling its shares to numerous investors and uses the proceeds to purchase securities. (The dominant type of investment company, the mutual fund, is discussed in detail in Chapter 13.) The Investment Company Act of 1940 established rules and regulations for investment companies and formally authorized the SEC to regulate their practices and procedures. It required the investment companies to register with the SEC and to fulfill certain disclosure requirements. The act was amended in 1970 to prohibit investment companies from paying excessive fees to their advisors as well as from charging excessive commissions to purchasers of company shares.

Investment Advisers Act of 1940

This act was passed to protect investors against potential abuses by *investment advisers*—persons hired by investors to advise them about security investments. It requires the advisers disclose all relevant information about their backgrounds, conflicts of interest, and so on, as well as about any investments they recommend. The act requires advisers to register and file periodic reports with the SEC. A 1960 amendment extended the SEC's powers to permit inspection of the records of investment advisers and revocation of the registration of advisers who violate the act's provisions. *This act does not provide any guarantee of competence on the part of advisers; it merely helps to protect the investor against fraudulent and unethical practices by the adviser.*

Securities Acts Amendments of 1975

In 1975 Congress amended the securities acts to require the SEC and the securities industry to develop a competitive national system for trading securities. As a first step the SEC abolished fixed commission schedules, thereby providing for negotiated commissions. A second action was the establishment of the Intermarket Trading System (ITS). Today this electronic communications network links eight markets, including the NYSE, AMEX, major regional exchanges, and the Nasdaq market, and trades over 2,100 eligible issues. Unquestionably the Securities Acts Amendments have been highly effective in initiating a national market system. However, many institutional and organizational barriers remain to be overcome before a truly competitive national market system can be established.

Ethical Issues

The 1980s were a decade of general economic prosperity and rapidly rising stock prices. As typically happens during periods of excess in the financial markets, the decade also witnessed a takeover and buyout mania that spawned a host of greedy speculators intent on profiting from the values created by the market. Many times these speculators operated without regard for the legality of their actions. Although the tactics varied, many of the illegal gains were achieved through insider-trading practices. **Insider trading** involves using *inside information,* which is private (non-public) information about a company's plans or performance to make profitable securities transactions. Such information may have been obtained from a company's directors, officers, major shareholders, bankers, investment bankers, accountants, or attorneys. *Insider trading is both illegal and unethical.*

insider trading
the illegal use of non-public information about a company to make profitable securities transactions.

Of all the unethical players in the 1980s, none achieved the notoriety and wealth of Michael Milken, the ''junk bond king.'' Not content with over $1 billion in salary and bonuses he received from his employer Drexel Burnham Lambert in the late 1980's, Milken made hundreds of millions more through a variety of illegal and unethical means. Through his network of corporate raiders and investors, Milken profited significantly from an avalanche of inside information. He also created hundreds of private partnerships which received fees, stock warrants, and bargain-priced securities in connection with securities transactions arranged by Drexel. These fees and warrants were intended to go to investors buying securities from Drexel, but Milken used them for his personal gain and to reward favored clients. Some of these interests were given to bank officers to induce their banks to purchase junk bonds from Drexel. Though cleverly disguised, this practice would usually be called a ''kickback'' in non-financial circles.

Michael Milken was apprehended and punished for his crimes, including racketeering, insider trading, and fraud. He received a ten-year prison sentence and a $600 million fine as part of a plea bargain agreement. Many argue that this punishment was too lenient given the magnitude of his offenses. The conviction of Milken and others like him created a body of case law which more clearly defines illegal and unethical acts. The definition of ''insider,'' which originally referred only to a company's employees, directors, and their relatives, was expanded to include *any-*

one who obtains private information about a company. New legislation substantially increased the penalties for insider trading and gave the SEC greater power to investigate and prosecute claims of illegal insider trading activity.

ethics
standards of conduct or moral judgment.

Clearly, the many insider-trading cases of the 1980s have significantly heightened the public's awareness of **ethics**—standards of conduct or moral judgment—in business. Today the financial community is involved in developing and enforcing ethical standards that will motivate market participants to adhere to laws and regulations. Although it is indeed difficult to enforce ethical standards, it appears that opportunities for abuses in the financial markets will be reduced, thereby providing a more level playing field for market participants.

General Market Conditions: Bull or Bear

Conditions in the securities markets are commonly classified as ''bull'' or ''bear,'' depending on whether securities prices are rising or falling over time. Changing market conditions generally stem from changes in investor attitudes, changes in economic activity, and government actions aimed at stimulating or slowing down the level of economic activity. **Bull markets** are favorable markets normally associated with rising prices, investor optimism, economic recovery, and governmental stimulus. **Bear markets** are unfavorable markets normally associated with falling prices, investor pessimism, economic slowdowns, and government restraint.

bull markets
favorable markets associated with rising prices, investor optimism, economic recovery, and governmental stimulus.

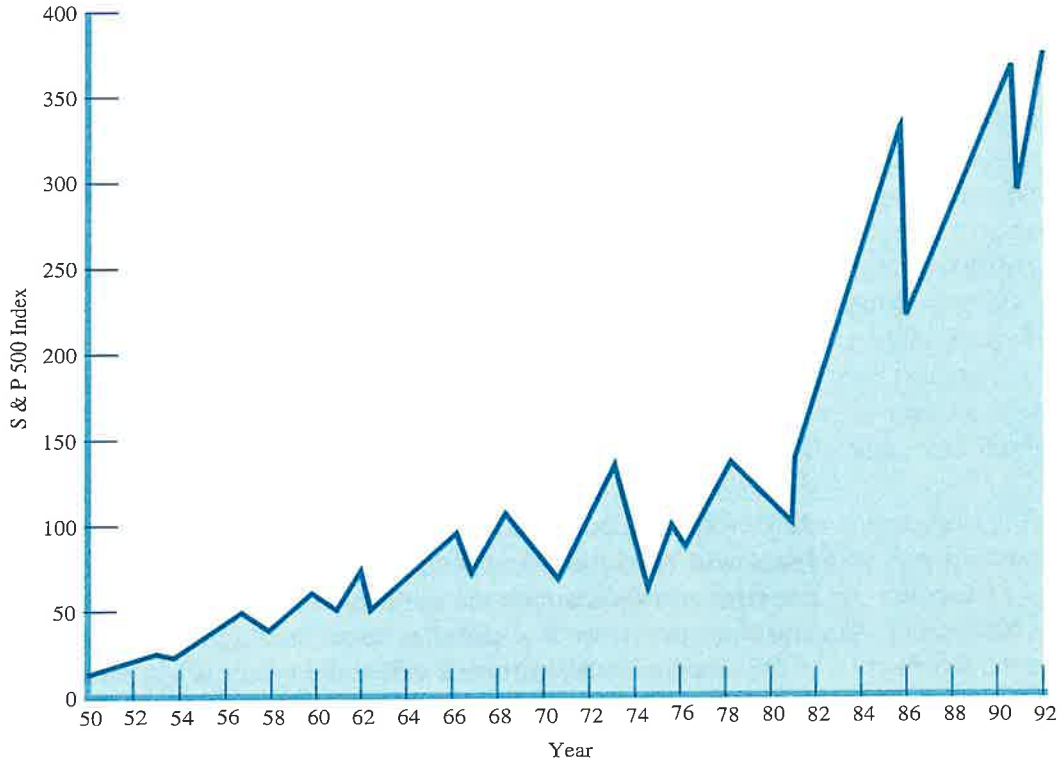
bear markets
unfavorable markets associated with falling prices, investor pessimism, economic slowdowns, and government restraint.

Over the past fifty or so years, the behavior of the stock market has been generally bullish, reflecting the growth and prosperity of the economy. Figure 2.3 shows the stock price movements from 1950 to 1991. Both the bull (downward lines) and bear (upward lines) can be seen. The most notorious bull market was surely the one that started in August of 1982 and peaked in August of 1987. It is the one that's associated with the big market crash of October 19, 1987. Actually, the market had started dropping in late August of 1987 and by mid-October, the market (averages) had already fallen about 15 percent. Then came ''black Monday,'' when the market experienced its biggest and hardest crash in history: in *one day* the market fell nearly 23 percent, and the market lost roughly half a *trillion* dollars in value. The bear market initiated with this decline was the result of major federal budget deficits, unfavorable trade balances, and congressional discussions directed at regulating acquisitions and the issuance of junk bonds.

In general, investors experience higher (or positive) returns on common stock investments during a bull market. However, some securities are bullish in a bear market or bearish in a bull market. Of course, during bear markets many investors will invest in vehicles other than securities to obtain higher and less risky returns. Market conditions are difficult to predict and usually can be identified only after they exist. The actual assessment of market conditions and the use of this information by investors is described in Chapter 3.

MAKING SECURITY TRANSACTIONS

Understanding how the securities markets are structured and how they function is just the first step in developing a sound investment program. The individual investor



• FIGURE 2.3 Bull and Bear Markets, 1950–1991

Rising stock prices, shown here by increases in the Standard & Poor's 500 Composite Index (upward lines) are called *bull markets*. *Bear markets* are periods of falling prices (downward lines). (*Source:* Graph data for 1950–1989 from Manuel Schiffres, "Investing in a Perilous Market," *Changing Times,* October 1990, pp. 40–41. Data for 1990 from "Daily Action Stock Charts," *Trendline,* Standard & Poor's Corporation, November 22, 1991.)

must also understand the procedures required to make transactions, the various types of orders that can be placed, and the costs associated with making investment transactions.

Stockbrokers

stockbrokers
individuals licensed by stock exchanges to enable investors to buy and sell securities; also called *account executives.*

Stockbrokers, or *account executives,* as they are sometimes called, enable investors to buy and sell securities. They must be licensed by the exchanges on which they place orders and must abide by the ethical guidelines of the exchanges and the SEC. Stockbrokers work for the brokerage firms that own seats on the organized securities exchanges. Members of the securities exchange actually execute orders transmitted to them by the brokers in the various sales offices. For example, the largest U.S. brokerage firm, Merrill Lynch Pierce Fenner & Smith, has offices in most major cities throughout the country. Orders from these offices are transmitted to the main office of Merrill Lynch and then to the floor of the stock exchange (NYSE and AMEX) or to the OTC market, where they are executed. Confirmation of the order is sent back to the broker placing the order, who then relays it to the

customer. This process can be carried out in a matter of minutes with the use of sophisticated telecommunications networks.

Orders for over-the-counter securities must be executed through *market makers,* who are dealers specializing in that security. The Nasdaq system, along with the available information on who makes markets in certain securities, enables brokers to execute orders in OTC securities. Normally, OTC transactions can be executed rapidly, since market makers maintain inventories of the securities in which they deal. Although the procedure for executing orders on organized exchanges may differ from that in the OTC market, an investor always places orders with his or her broker in the same manner, regardless of the market in which the security is traded.

Brokerage Services

The primary activity of stockbrokers involves making the purchase and sale transactions requested by clients. Account executives do not actually buy or sell securities; they only execute their clients' transactions at the best possible price. Brokerage firms will hold the client's security certificates for safekeeping. The stocks kept by the firm in this manner are said to be held in ''street name,'' since the broker can liquidate them for the client without having to obtain the latter's signature.

In addition, stockbrokers offer clients a variety of other services. For example, the stockbrokerage normally provides free information ranging from stock and bond guides that summarize the activity of securities to research reports on specific securities or industries. Quite often the firm will have a research staff that periodically issues analyses of economic, market, industry, or company behavior and makes recommendations to buy or sell certain securities. It is the job of the stockbroker to provide the client with relevant information. As a client of a large brokerage firm, you can expect to receive regular bulletins discussing market activity and possibly a recommended investment list. You will also receive a statement describing your transactions for the month and showing commission and interest charges, dividends and interest received, and your account balance.

Today, most brokerage firms will invest surplus cash left in a customer's account in a money market fund, allowing the customer to earn a reasonable rate of interest on these balances. Such arrangements help the investor manage cash effectively and earn as much as possible on temporarily idle funds. Most brokerage offices also have electronic equipment that provides up-to-the-minute stock price quotations and world news. Price information can be obtained from the quotation board (a large screen that electronically displays all NYSE and AMEX security transactions within minutes after they take place) or by keying into a computer system that provides a capsulized description of almost all securities and their prices. World news, which can significantly affect the stock market, is obtained from a wire service subscribed to by the brokerage office. Finally, most offices have a reference library available for use by the firm's clients.

Selecting a Stockbroker

It is of primary importance to select a stockbroker who understands your investment goals and who can effectively assist you in pursuing these goals. If you choose a broker whose own disposition toward investing is similar to yours, you should be

able to establish a solid working relationship. In addition, when selecting a broker you should consider the cost and types of services available from the firm with which he or she is affiliated. Often, significant difference can be found among firms. The broker you select should be the person you believe best understands your investment goals and will provide the best service at the lowest possible cost to you. It is probably wise to ask friends or business associates to recommend a broker. However, it is not important—and often not even advisable—to know your stockbroker personally. A strictly business relationship eliminates the possibility that social concerns will interfere with the achievement of your investment goals. This does not mean that your broker's sole interest should be commissions. Responsible brokers do not engage in **churning**—that is, causing excessive trading of their clients' accounts in order to increase commissions, often leaving clients no better off than before. Churning is both illegal and unethical under SEC and exchange rules. However, it is often difficult to prove.

churning
an illegal and unethical act by a broker to increase commissions through excessive trading of clients' accounts.

Investors who wish merely to make transactions and are not interested in obtaining the full array of brokerage services mentioned above should consider using a **discount broker.** These brokers merely make transactions for customers—they provide little or no research information or investment advice. Transactions are initiated by calling a toll-free number; the discount broker then confirms the transaction by return mail. Discount brokers that charge the lowest commissions and provide virtually no services are commonly referred to as *deep discounters*. The rapidly growing volume of business done by discount brokers attests to their success.

discount broker
brokers who make transactions for customers but provide little or no research information or advice.

Today many banks and savings institutions are making discount brokerage services available to their depositors; some have set up investment centers where customers can buy stocks, bonds, and mutual funds. Brokerage services can also be obtained at a **financial supermarket,** which is a financial institution at which a customer can obtain a full array of financial services. Such services include checking, savings, brokerage, insurance, retirement, and estate planning. These one-stop financial centers appeared to be gaining in popularity during the 1980s and early 1990s. Sears, Roebuck and Company's ''Sears Financial Network'' offered a broad range of financial services and was widely touted as a model financial supermarket. But in late 1992 Sears began to dismantle its supermarket by selling its Dean Witter Financial Services unit, which included both stock brokerage and Discover card operations, most of its Coldwell Banker real estate holdings, and 20 percent of its Allstate insurance unit. At the same time, a number of other emerging financial supermarkets were rumored to be preparing to dismantle their operations. Apparently, the break-up of the one-stop financial supermarket resulted from an inability to achieve the expected benefits of combining a number of financial service firms. It appears that the financial supermarket, formerly touted as the financial services institution for the 1990s, may be on its way to extinction.

financial supermarket
a financial institution at which customers can obtain a full array of financial services.

Opening an Account

To open an account, the customer will be asked to fill out various documents that establish a legal relationship between the customer and the brokerage firm. By filling out and signing a signature card and a personal data card, the client provides the information needed to identify his or her account. The stockbroker must also

have a reasonable understanding of a client's personal financial situation in order to assess his or her investment goals and also to be sure that the client can pay for the securities purchased. Instructions relating to the transfer and custody of securities must also be given to the broker. If the customer wishes to borrow money in order to make transactions, a *margin account* (described below) will have to be established. If the customer is acting as a trustee or an executor, or is a corporation, additional documents will be necessary to establish the account. No laws or rules prohibit an investor from establishing accounts with more than one stockbroker. Many investors establish accounts at different firms in order to obtain the benefit and opinions of a diverse group of brokers.

Types of Accounts

A number of different types of accounts can be established with a stockbroker. We will briefly consider several of the more popular types.

Single or Joint. A brokerage account may be either single or joint. Joint accounts are most common between husband and wife or parent and child. The account of a minor (a person less than 18 years of age) is a **custodial account,** in which a parent or guardian must be part of all transactions. Regardless of which form of account is maintained, the name(s) of the account holder(s), along with an account number, are used to identify the account.

custodial account the brokerage account of a minor, in which a parent or guardian must be part of all transactions.

Cash or margin. A **cash account,** the most common type, is one in which the customer can make only cash transactions. Customers can initiate transactions via the phone, even though they may not have sufficient cash in their account to cover the cost of the transaction. They are given five business days in which to get the cash to the brokerage firm. The firm is likewise given five business days in which to deposit the proceeds from the sale of securities in the customer's account.

cash account a brokerage account in which a customer can make only cash transactions.

A **margin account** is an account in which the customer has been extended borrowing privileges by the brokerage firm. By leaving securities with the firm to be held as collateral, the customer is permitted to borrow a prespecified proportion of the purchase price. Prior to opening a margin account, the brokerage firm will assess the creditworthiness of the customer. It will of course charge the customer a specified rate of interest on borrowings. (A more detailed discussion of margin trading is included later in the chapter.)

margin account a brokerage account in which the customer has borrowing privileges.

Wrap. The **wrap account** allows brokerage customers with large portfolios (generally $100,000 or more) to conveniently shift the burden of stock-selection decisions to a professional—either in-house or independent—money manager. In return for paying a flat annual fee equal to between 2 and 3 percent of the portfolio's total asset value, the brokerage firm helps the investor select a money manager, pays the manager's fee, and executes the money manager's trades. Of course the investor's overall goals are initially communicated to the manager. Wrap accounts are appealing for a number of reasons other than convenience. Because the annual fee in most cases covers commissions on *all* trades, the chance of the broker *churning* the

wrap account an account in which customers with large portfolios pay a brokerage firm a flat annual fee that covers the cost of a money manager's services and the cost of commissions.

account is virtually eliminated. In addition, the broker monitors the manager's performance and provides the investor with detailed reports, typically quarterly.

Odd-Lot or Round-Lot Transactions

odd lot
less than 100 shares of stock.

round lot
100 share units of stock or multiples thereof.

Stock transactions can be made in either odd or round lots. An **odd lot** consists of less than 100 shares of a stock, while a **round lot** is a 100-share unit or multiple thereof. Thus, you would be dealing in an odd lot if you bought, say, 25 shares of stock, but a round lot if you bought 200 shares. A trade of 225 shares would be a combination of an odd and two round lots. Because the purchase or sale of odd lots requires additional processing and the assistance of a specialist, an added fee—known as an *odd-lot differential*—is tacked on to the normal commission charge, driving up the costs of these small trades. Small investors in the early stages of their investment programs are primarily responsible for odd-lot transactions.

Basic Types of Orders

Different types of orders are used in making security transactions. The type placed normally depends on the investor's goals and expectations. The three basic types of orders are the market order, the limit order, and the stop-loss order.

Market Order

market order
an order to buy or sell stock at the best price available when the order is placed.

An order to buy or sell stock at the best price available when the order is placed is a **market order.** It is usually the quickest way to have orders filled, since market orders are usually executed as soon as they reach the exchange floor or are received by the dealer. Because of the speed with which market orders are executed, the buyer or seller of a security can be sure that the price at which the order is transacted will be very close to the market price prevailing at the time the order was placed.

Limit Order

limit order
an order to buy at or below a specified price or to sell at or above a specified price.

An order to buy at a specified price or lower, or sell at or above a specified price, is known as a **limit order.** When a limit order is placed, the broker transmits it to a specialist dealing in the security. The specialist makes a notation in his or her book, indicating the number of shares and price of the limit order. The order is executed as soon as the specified market price (or better) exists and all other orders with precedence (similar orders received earlier, or buy orders at a higher specified price, or sell orders at a lower specified price) have been satisfied. The order can be placed as: (1) a *fill-or-kill order* that if not immediately executed is cancelled; (2) a *day order* that if not executed is automatically cancelled at the end of the day; or (3) a *good-'til-cancelled (GTC) order* that generally remains in effect for six months unless executed, cancelled, or renewed.

Assume, by way of example, that you place a limit order to buy 100 shares of a stock currently selling at 30½ (security market terminology for $30.50) at a limit price of $30. Once the specialist has cleared all similar orders received before yours, and once the market price of the stock has fallen to $30 or less, the order is executed. It is possible, of course, that your order might expire (if it is not a GTC order) before the stock price drops to $30.

Although a limit order can be quite effective, it can also keep you from making a transaction. If, for instance, you wish to buy at $30 or less and the stock price moves from its current $30.50 price to $42 while you are waiting, your limit order has caused you to forgo the opportunity to make a profit of $11.50 per share ($42 − $30.50). Had you placed a market order to buy at the best available price ($30.50), the profit of $11.50 would have been yours. Limit orders for the sale of a stock are also disadvantageous when the stock price closely approaches but does not attain the minimum sale price limit before dropping substantially. Generally speaking, limit orders are most effective when the price of a stock is known to fluctuate greatly, since there is then a better chance that the order will be executed.

Stop-Loss Order

stop-loss order
an order to sell a stock when its market price reaches or drops below a specified level; also called a *stop order.*

An order to sell a stock when its market price reaches or drops below a specified level is called a **stop-loss** or **stop order.** Stop-loss orders are *suspended orders* that are placed on stocks when and if a certain price is reached. The stop-loss order is placed on the specialist's book and becomes active once the stop price has been reached. When activated, the stop order becomes a *market order* to sell the security at the best price available. Because of this, it is possible that the actual price at which the sale is made could be well below the price at which the stop was initiated. These orders are used to protect investors against the adverse effects of a rapid decline in share price. For example, assume you own 100 shares of Ballard Industries, which is currently selling for $35 per share. Because you believe the stock price could decline rapidly at any time, you place a stop order to sell at $30. If the stock price does in fact drop to $30, the specialist will sell the 100 shares of Ballard at the best price available at that time. But if the market price declines to $28 by the time your stop-loss order comes up, you will receive less than $30 per share. Of course, if the market price stays above $30 per share you will have lost nothing as a result of placing the order, since the stop order will never be initiated. Often investors will raise the level of the stop as the price of the stock rises; such action helps to lock in a higher profit when the price is increasing.

Stop orders can also be placed to *buy* a stock, although they are far less common than sell orders. For example, an investor may place a stop order to buy 100 shares of MJ Enterprises, currently selling for $70 per share, once its price rises to, say, $75—the stop price. These orders are commonly used to limit losses on short sales (discussed later) and to get into a stock as its price supposedly starts to rise.

To avoid the risk of the market moving against you when your stop order becomes a market order, you can place a *stop-limit* order, rather than a plain stop order. It is an order to buy or sell stock at a given price or better once a stipulated stop price has been met. For example, in the Ballard Industries illustration above, had a stop-limit order been in effect, once the market price of Ballard dropped to $30, the broker would have entered a limit order to sell your 100 shares at $30 a share, *or better*. Thus, there would be no risk of you getting less than $30 a share for your stock—*unless the price of the stock kept right on falling*. Then, like any limit order, you might miss the market altogether and end up with stock worth much less than $30. Even though the stop order to sell was triggered (at $30), the stock will *not* be sold, with a limit order, if it keeps falling in price.

Transaction Costs

Rather than going through the trouble of direct negotiation trying to find someone who wants to buy that which they want to sell (or vice versa), investors make transactions through brokers or dealers. Transaction costs are paid by the investor to compensate the broker for executing the transaction. Such costs are usually levied on both the purchase and the sale of securities. The structure and magnitude of transaction costs need to be considered when making investment decisions, since they affect returns.

With the passage of the Securities Acts Amendments of 1975, brokers have been permitted to charge whatever commission they deem appropriate. Most firms have established **fixed-commission schedules** that are applicable to small transactions, the ones most often made by individual investors. On large institutional transactions, **negotiated commissions**—commissions agreed upon by the client and broker as a result of their negotiations—are usually used. Brokerage firms can thus compete not only on the basis of services offered, but also on a cost basis. Negotiated commissions are also available to individual investors who maintain sizable accounts—typically in the range of $25,000 or more.

fixed-commission schedules fixed brokerage charges applicable to small transactions.

negotiated commissions commissions agreed upon by the client and the broker as a result of their negotiations.

The commission structure varies depending upon the type of security and type of broker. The basic commission structures for various types of securities are described in subsequent chapters as part of the detailed discussion of given securities. The commissions charged on differing sizes of transactions in a $26 stock, shown (both in dollars and as a percentage of purchase cost) in Table 2.2, clearly demonstrate varying transactions costs among full-service, discount, and deep-discount brokers. Obviously, discount brokers charge substantially less than full-service brokers for the same transaction. Most discounters charge a minimum fee to discourage small orders. For example, Charles Schwab, the nation's largest discounter, charges

TABLE 2.2 Comparative Brokerage Commissions on a $26 Stock (March 1991)

Brokerage Firm	Number of Shares Traded		
	100	200	1,000
	Commissions (Percent of Purchase Cost)		
Full Service:			
Merrill Lynch	$80 (3.1%)	$132 (2.6%)	$418 (1.6%)
Shearson Lehman	75 (2.9)	139 (2.7)	497 (1.9)
Discounter:			
Quick & Reilly	49 (1.9)	61 (1.2)	121 (0.5)
Charles Schwab	49 (1.9)	82 (1.6)	143 (0.6)
Deep Discounter:			
Waterhouse Securities	35 (1.4)	35 (0.7)	128 (0.5)
York Securities	35 (1.4)	35 (0.7)	75 (0.3)

Note: Many firms offer additional discounts or rebates for active traders, with the amount linked to trading activity.

Source: Tom Herman, "Not All Discount Brokers Offer the Same Bargains," *The Wall Street Journal*, March 6, 1991, p. C1.

a minimum fee of about $40 for any stock transaction. Depending on the size and type of transaction, the discount broker can typically save investors between 30 and 80 percent of the commission charged by the full-service broker. The savings from the discounter are substantial. However, investors must weigh the added commissions they pay a full-service broker against the value of the advice they receive, since that is the only major difference between the discount and the full-service broker.

Investor Protection: SIPC and Arbitration

Securities Investor Protection Corporation (SIPC)
a nonprofit membership corporation authorized by the federal government that insures each brokerage customer's account for up to $500,000.

As a client, you are protected against the loss of the securities or cash held by your broker. The **Securities Investor Protection Corporation (SIPC)**, a non-profit membership corporation, was authorized by the Securities Investor Protection Act of 1970 to protect customer accounts against the consequences of financial failure of the brokerage firm. Although subject to SEC and congressional oversight, SIPC is *not* an agency or establishment of the U.S. government. It insures each customer's account for up to $500,000, except that claims for cash are limited to $100,000 per customer. Note, however, that SIPC insurance *does not* guarantee that the dollar value of the securities will be recovered; it guarantees only that the securities themselves will be returned. Some brokerage firms insure certain customer accounts for amounts in excess of the required $500,000 of SIPC insurance. Certainly, in light of the diversity and quality of services available among brokerage houses, careful consideration should be given not only to the selection of an individual broker (the *person* you deal with), but also to the choice of a *firm*.

SIPC provides protection in case your brokerage firm fails. But what happens if your broker gave you bad advice and as a result, you lost a lot of money on an investment? SIPC won't help. It's not intended to insure you against bad investment advice. Instead, if you have a dispute with your broker, the first thing you should do is discuss the situation with the managing officer at the branch where you do your business. If that doesn't do any good, then write or talk to the firm's compliance officer, and contact the securities commission in your home state.

arbitration
a dispute process in which a broker and customer present their cases before a panel which then decides the case.

If you still don't get any satisfaction, you may have no choice but to take the case to **arbitration,** a process whereby you and your broker present the two sides of the argument before an arbitration panel. The panel then decides the case. Many brokerage firms *require* you to resolve disputes by binding arbitration; in this case, you don't have the option to sue. You must accept the arbitrator's decision, and you cannot go to court to appeal your case. Thus, before you open an account, check whether the brokerage agreement contains a binding arbitration clause.

Settling securities disputes through arbitration rather than litigation has advantages and disadvantages. Arbitration proceedings typically cost less and are resolved more quickly than litigation. However, until recently many brokerage agreements not only required investors to submit to binding arbitration but also specified the use of securities industry arbitration panels. There was considerable controversy as to whether these panels, which prior to 1989 were often composed entirely of persons who had relationships to the securities industry, were fair to investors. As a result of pressure from the SEC and a July 1990 court decision in New York State,

many investors now have the option of using either securities industry panels or independent arbitration panels such as those sponsored by the American Arbitration Association (AAA), which are considered more sympathetic toward investors. In addition, only one of the three arbitrators on a panel can be connected with the securities industry. Recently, the NASD and other securities organizations began encouraging investors to mediate disputes and voluntarily negotiate a settlement rather than immediately starting arbitration proceedings. Although mediation is not binding, it can further reduce costs and time for both investors and brokers. Even so, probably the best thing you can do to avoid such a situation is to use care when selecting a broker, understand the financial risks involved in the broker's recommendations, and carefully evaluate the advice he or she offers.

BASIC TYPES OF TRANSACTIONS

An investor can make a number of basic types of security transactions. Each type is available to those who meet certain requirements established by various government agencies as well as by brokerage firms. Although the various types of transactions can be used in a number of ways to meet investment objectives, only the most popular use of each transaction is described here. The three most common types of transaction are the long purchase, margin trading, and short selling.

Long Purchase

long purchase
a transaction in which investors buy securities in the hope that they will increase in value and can be sold at a later date for profit.

The **long purchase** is a transaction in which investors buy securities in the hope that they will increase in value and can be sold at a later date for profit. The object, then, is to buy low and sell high. A long purchase is the most common type of transaction. Each of the basic types of orders described above can be used with long transactions. Because investors generally expect the price of the security to rise over the period of time they plan to hold it, their return comes from any dividends or interest received during the ownership period, plus the difference between the price at which they sell the security and the price paid to purchase it (capital gains). This return, of course, is reduced by the brokerage fees paid to purchase and sell the securities.

Ignoring any dividends (or interest) and brokerage fees, the long purchase can be illustrated by a simple example. After studying various aspects of Varner Manufacturing, Inc., Fae Johnson is convinced that its common stock, which currently sells for $20 per share, will increase in value over the next few years. Based on her analysis, Fae expects the stock price to rise to $30 per share within two years. She places a limit order and buys a round lot (100 shares) of Varner for $20. If the stock price rises to, say, $40 per share, Fae will profit from her long purchase; if it drops below $20 per share, she will experience a loss on the transaction. Obviously, one of the major motivating factors in making a long transaction is an expected rise in the price of the security.

Margin Trading

margin trading
the use of borrowed funds to purchase securities; magnifies returns by reducing the amount of capital that must be put up by the investor.

Most security purchases do not have to be made on a cash basis; borrowed funds can be used instead. This activity is referred to as **margin trading,** and it is used for one

basic reason: to magnify returns. This is possible because the use of borrowed funds reduces the amount of capital that must be put up by the investor. As peculiar as it may sound, the term *margin* itself refers to the amount of *equity* in an investment, or the amount that is not borrowed. If an investor uses 75 percent margin, for example, it means that 75 percent of the investment position is being financed with the person's own capital and the balance (25 percent) with borrowed money. The Federal Reserve Board (''the Fed''), which governs our banking system, sets the **margin requirement** that specifies the minimum amount of equity that must be the margin investor's own funds. By raising or lowering margin requirements, the Fed can depress or stimulate activity in the securities markets.

margin requirement the minimum amount of equity (stated as a percentage) a margin investor must put up; established by the Federal Reserve Board.

Margin purchases must be approved by a broker. The brokerage firm then lends the purchaser the needed funds and retains the purchased securities as collateral. Margin requirements for stocks have been at 50 percent for some time. It is important to recognize that margin purchasers must pay a specified rate of interest on what they borrow. This rate is usually 1 to 3 percent above the **prime rate**—the lowest interest rate charged the best business borrowers—or at the prime rate for large accounts.

prime rate the lowest interest rate charged the best business borrowers.

A simple example will help to clarify the basic margin transaction. Jeffrey Lawrence wishes to purchase 70 shares of Universal Fiber common stock, which is currently selling for $63.50 per share. Since the prevailing margin requirement is 50 percent, Jeffrey must put up only 50 percent of the total purchase price of $4,445 ($63.50 per share × 70 shares), or $2,222.50, in cash. The remaining $2,222.50 will be lent to Jeffrey by his brokerage firm. Jeffrey will, of course, have to pay interest on the $2,222.50 he borrows, along with the applicable brokerage fees. It should be clear that with the use of margin an investor can purchase more securities than he or she could afford on a strictly cash basis. In this way investors can magnify their returns.

Essentials of Margin Trading

Margin trading can be used with most kinds of securities. It is regularly used, for example, with both common and preferred stocks, most types of bonds, warrants, commodities, financial futures, and mutual funds. It is not normally used with tax-exempt municipal bonds since the interest paid on such margin loans is not deductible for income tax purposes. For simplicity we will use common stock as the vehicle in our discussion of margin trading, and assume that the securities have already been analyzed along the lines to be discussed in Chapters 6 and 7.

Although margin trading normally leads to increased returns, there are also some substantial risks. One of the biggest is that the issue may not perform as expected. If this in fact occurs, no amount of margin trading can correct matters. Margin trading can only *magnify* returns, not *produce* them. Because the security being margined is always the ultimate source of return, *the security selection process is critical to this trading strategy.*

Magnified Profits and Losses. Using an investor's equity as a base, the idea of margin trading is to employ *financial leverage,* or debt, to magnify returns. Here is how it works: Suppose you have $5,000 to invest and are considering the purchase

of 100 shares of stock (at $50 per share) because you feel the stock in question will go up in price. If you do not margin, you can buy outright (ignoring brokerage commissions) 100 shares of the stock. However, if you margin the transaction—for example, at 50 percent—you could acquire the same $5,000 position with only $2,500 of your own money. This would leave you with $2,500 to use for other investments, or to buy another 100 shares of the same stock. Either way, you will reap greater benefits from the stock's price appreciation by margining.

The concept of margin trading is more fully illustrated in Table 2.3. An unmargined (100 percent equity) transaction is depicted along with the same transaction using various margins. Remember that the margin rates (such as 65 percent) indicate the equity in the investment, or the amount of capital the investor must put up. When the investment is unmargined and the price of the stock goes up by $30 per share, the investor enjoys a very respectable 60 percent rate of return. However, observe what happens when margin is used: The rate of return shoots up to as high as 120 percent, depending on the amount of equity in the investment. This is so because the gain is the same ($3,000) *regardless of how the transaction is financed.* Clearly, as the investor's equity in the investment *declines* (with lower margins), rate of return *increases* accordingly.

TABLE 2.3 The Effect of Margin Trading on Security Returns

	Without Margin (100% Equity)	With Margins of		
		80%	65%	50%
Number of $50 shares purchased	100	100	100	100
Cost of investment	$5,000	$5,000	$5,000	$5,000
Less: Borrowed money	0	1,000	1,750	2,500
Equity in investment	$5,000	$4,000	$3,250	$2,500
A. Investor's Position if Price Rises by $30 to $80/Share				
Value of stock	$8,000	$8,000	$8,000	$8,000
Less: Cost of investment	5,000	5,000	5,000	5,000
Capital gain	$3,000	$3,000	$3,000	$3,000
Return on investor's equity (capital gain/equity in investment)	60%	75%	92.3%	120%
B. Investor's Position if Price Falls by $30 to $20/Share				
Value of stock	$2,000	$2,000	$2,000	$2,000
Less: Cost of investment	5,000	5,000	5,000	5,000
Capital *loss*	$3,000	$3,000	$3,000	$3,000
Return on investor's equity (capital loss/equity in investment)*	(60%)	(75%)	(92.3%)	(120%)

*With a capital loss, return on investor's equity is *negative*.

Three facets of margin trading become obvious from the table: (1) The price of the stock will move in whatever way it is going to regardless of how the position is financed. (2) The lower the amount of the investor's equity in the position, the greater the rate of return the investor will enjoy when the price of the security rises. (3) The risk of loss is also magnified (by the same rate) when the price of the security falls.

Advantages and Disadvantages. As already stated, a magnified return is the major advantage of margin trading. The size of the magnified return will depend on both the price behavior of the security being margined and the amount of margin being used. Another, more modest benefit of margin trading is that it allows for greater diversification of security holdings, since investors can spread their capital over a greater number of investments.

The major disadvantage of margin trading, of course, is that the price of the security may fall rather than rise, resulting in magnified losses rather than gains. Another disadvantage is the cost of the margin loans themselves. A **margin loan** is the official vehicle through which the borrowed funds are made available in a margin transaction. Such loans are used with most types of margin transactions. All margin loans are made at a stated interest rate, which depends on prevailing market rates and the amount of money being borrowed. This cost, which must be absorbed by the investor, will mount daily, reducing the level of profits (or magnifying losses) accordingly.

margin loan
vehicle through which borrowed funds are made available, at a stated interest rate, in a margin transaction.

Making Margin Transactions

To execute a margin transaction, it is necessary to establish a *margin account*. It is opened with a minimum of $2,000 in equity, either in the form of cash or securities. Margin credit can be obtained from a broker or a banker, although nearly all margin trading is done through brokers. The broker will retain any securities purchased on margin as collateral for the loan.

The margin requirement established by the Federal Reserve Board set the minimum amount of equity for margin transactions. This does not mean, of course, that investors must execute all margin transactions by using exactly the minimum amount of margin; they can use more than the minimum if they wish. Moreover, it is not unusual for *brokerage houses* and the major exchanges to establish their own margin requirements, which are more restrictive than those of the Federal Reserve. There are basically two types of margin requirements: initial margin and maintenance margin.

Initial Margin. **Initial margin** stipulates the minimum amount of equity that must be provided by the investor *at the time of purchase*. It is used to prevent overtrading and excessive speculation. Generally, it is this margin requirement that investors refer to when discussing margin trading. Any security that can be margined has a specific initial requirement, although these can be changed by the authorities from time to time. As Table 2.4 shows, initial margin requirements vary by type of

initial margin
the minimum amount of money (or equity) that must be provided by a margin investor at the time of purchase.

TABLE 2.4 Initial Margin Requirements for Various Types of Securities (December 1991)

Security	Minimum Initial Margin (Equity) Required
Listed common and preferred stock	50%
OTC stocks traded on Nasdaq/NMS	50
Convertible bonds	50
Corporate bonds	30
U.S. Treasury bills, notes, and bonds	8% of principal
Other federal government issues	10% of principal
Federal government guaranteed issues	15% of principal

security. The more stable investment vehicles, such as Treasury issues, generally enjoy substantially lower margin requirements and therefore offer greater magnification opportunities. Note in Table 2.4 that OTC stocks traded on the Nasdaq/NMS can be margined like listed securities. All other OTC stocks are considered to have *no* collateral value and therefore *cannot* be margined.

As long as the margin in an account remains at a level equal to or greater than prevailing initial requirements, the investor is free to use the account in any way he or she sees fit. If the value of the investor's holdings declines, the margin in his or her account will also drop. This situation can lead to what is known as a **restricted account,** one whose equity is less than the initial margin requirement. It does not mean that the investor must put up additional cash or equity, but it does require the investor to bring the margin back to the initial level when securities are sold while the account is restricted.

restricted account a margin account whose equity is less than the initial margin requirement; the investor must bring the margin back to the initial level when securities are sold while the account is restricted.

Maintenance Margin. **Maintenance margin** is the absolute minimum amount of margin (equity) that an investor must maintain in the margin account at all times. If the margin falls below the maintenance margin, the broker is authorized to sell enough of the securities to bring the account back up to standard. When an insufficient amount of maintenance margin exists, an investor will receive a **margin call** to remedy the situation. This call gives the investor a short period of time (perhaps 72 hours) to find some means of bringing the equity up to the required level. If this is not done, the broker has no alternative but to sell enough of the investor's margined holdings to bring the equity in the account up to this level. The maintenance margin protects both the brokerage house and investors: Brokers avoid having to absorb excessive investor losses, and investors avoid being wiped out. The maintenance margin on equity securities is currently at 25 percent. It rarely changes, although it is often set slightly higher by brokerage houses for the added protection of both brokers and their customers. For straight debt securities like Treasury bonds, there is no official maintenance margin except that set by the brokerage houses themselves.

maintenance margin the minimum amount of margin (equity) that an investor must maintain in the margin account at all times.

margin call notification of the need to bring the equity of an account whose margin is below the maintenance level up to the required level or have margined holdings sold to reach this point.

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The Basic Margin Formula

The amount of margin is always measured in terms of its relative amount of equity, which is considered the investor's collateral. A simple formula can be used with all types of *long purchases* to determine the amount of margin in the transaction (or account) at any given point. Basically, only two pieces of information are required: (1) the prevailing market value of the securities being margined, and (2) the amount of money being borrowed, or the size of the margin loan, which is known as the **debit balance.** Given this information, we can compute margin according to Equation 2.1:

debit balance the amount of money being borrowed; the size of a margin loan.

Equation 2.1

$$\text{Margin} = \frac{\text{value of securities} - \text{debit balance}}{\text{value of securities}}$$

Equation 2.1a

$$= \frac{V - D}{V}$$

To illustrate its use, consider the following example. Assume you want to purchase 100 shares of stock at $40 per share, using a 70 percent initial margin. First we must determine how this $4,000 transaction will be financed. Since we know that 70 percent of it (the stated prevailing initial margin requirement) must be financed with equity, the balance (30 percent) can be financed with a margin loan. Therefore you will borrow $1,200 ($4,000 × .30 = $1,200); this, of course, is the debit balance. The remainder ($2,800) represents your equity in the transaction. This amount is measured as the difference between the value of the securities being margined ($4,000) and the amount being borrowed ($1,200). In other words, *equity* is represented by the numerator ($V - D$) in the margin formula. If over time the price of the stock moves to $65, the margin would then be:

$$\text{Margin} = \frac{V - D}{V} = \frac{\$6{,}500 - \$1{,}200}{\$6{,}500} = .815 = \underline{\underline{81.5\%}}$$

Note that the margin (equity) in this investment position has now risen to 81.5 percent. When the price of the stock goes up, the investor's margin also increases. When the price of the security goes down, so does the amount of margin. For instance, if the price of the stock in our illustration drops to $30 per share, the new margin would equal only 60 percent. In that case we would be dealing with a restricted account, since the margin level has dropped below the prevailing initial margin. Finally, note that although our discussion has been couched mostly in terms of individual *transactions,* the same margin formula is used with margin *accounts.* The only difference is that we would be dealing with input that applies to the account as a whole—the value of all securities held in the account and the total amount of margin loans.

Return on Invested Capital

When assessing the return on margin transactions, we must take into account the fact that the individual puts up only part of the funds, the balance being borrowed. Therefore, we are concerned with the rate of profit earned *on only that portion of the*

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funds provided by the investor. Using both current income received from dividends or interest and total interest paid on the margin loan, we can use Equation 2.2 to determine the *return on invested capital* from margin transaction:

Equation 2.2

$$\text{Return on invested capital from a margin transaction} = \frac{\text{total current income received} - \text{total interest paid on margin loan} + \text{market value of securities at sale} - \text{market value of securities at purchase}}{\text{amount of equity invested}}$$

This equation can be used to compute either the expected or actual return from a margin transaction. To illustrate: consider an investor who wants to buy 100 shares of stock at $50 per share because she feels it will rise to $75 within six months. The stock pays $2 per share in annual dividends (though with the six-month holding period, the investor will receive only half of that amount, or $1 per share. The investor is going to buy the stock with 50 percent margin and pay 10 percent interest on the margin loan. Thus, she is going to put up $2,500 equity to buy $5,000 worth of stock that she hopes will increase to $7,500 in six months. Since the investor will have a $2,500 margin loan outstanding at 10 percent for six months, she will pay $125 in total interest costs ($2,500 × .10 × 6/12 = $125). We can substitute this information into Equation 2.2 to find the expected return on invested capital for this transaction:

$$\text{Return on invested capital from a margin transaction} = \frac{\$100 - \$125 + \$7{,}500 - \$5{,}000}{\$2{,}500} = \frac{\$2{,}475}{\$2{,}500} = .99 = \underline{\underline{99\%}}$$

Keep in mind that the 99 percent figure represents the rate of return earned over a six-month holding period. If we wanted to compare this rate of return to other investment opportunities, we could determine the transaction's *annualized* rate of return by multiplying by 2 (the number of six-month periods in a year). This would amount to 198 percent (99% × 2 = 198%).

Uses of Margin Trading

Margin trading is most often used in one of two ways. As we have seen, one of its uses is to magnify transaction returns. Another major margin tactic is called pyramiding, which takes the concept of magnified returns to its limits. **Pyramiding** uses the paper profits in margin accounts to partly or fully finance the acquisition of additional securities. This allows such transactions to be made at margins below prevailing initial margin levels, and sometimes substantially so. In fact, with this technique, it is even possible to buy securities with no new cash at all; rather, they can all be financed entirely with margin loans. The reason is that the paper profits in the account lead to **excess margin,** more equity in the account than necessary. For instance, if a margin account holds $60,000 worth of securities and has a debit balance of $20,000, it is at a margin level of 66⅔ percent [($60,000 − $20,000) ÷

pyramiding the technique of using paper profits in margin accounts to partly or fully finance the acquisition of additional securities.

excess margin more equity than is required in a margin account.

INVESTOR INSIGHTS

Some Tips for Finding the Right Stockbroker

First-time investors often walk into a brokerage asking for any available stockbroker. They are likely to be introduced to the broker of the day, "the broker who, that day, gets all the walk-ins and phone-ins of new clients," said Bob Edwards, director of education for the American Association of Individual Investors, a non-profit educational group based in Chicago. . . .

If you walk into the brokerage office off the street, you will need to select the brokers in that office you would like to interview. Ask for the office manager, who oversees the brokers in the office, David H. Rambeau, a Florida stockbroker, said. Explain to the manager the types of investments you are interested in and ask to be introduced to a broker with an interest in those securities. If your interests are very broad, ask for a broker who is a generalist, he said.

Of course, you must decide—before interviewing brokers—what kind of investments you want. You may have to do some research beforehand if this is the first time you have opened an account. "You should not, in general, rely on the broker to perform a teaching function. They would rather be dealing with knowledgeable investors they don't have to hand hold through every step," Edwards said.

Once you are sitting across the desk from the candidates you have chosen, you should interview them extensively. Your questions should include:

- How long have you been in the business? Rambeau said investors should look for a broker with at least three years of experience. That is long enough, he said, to winnow out the brokers who find they don't like the job and those who find they can't do the job. . . .

$60,000]. This account would hold a substantial amount of excess margin if the prevailing initial margin requirement were only 50 percent.

The principle of pyramiding is to use the excess margin in the account to purchase additional securities. The only constraint, and the key to pyramiding, is that when the additional securities are purchased, the investor's margin account must be at or above the prevailing required initial margin level. Remember that it is the account, and not the individual transactions, that must meet the minimum standards. If the account has excess margin, the investor can use it to build up security holdings. Pyramiding can continue as long as there are additional paper profits in the margin account and as long as the margin level exceeds the prevailing initial requirement when purchases are made. The tactic is somewhat complex but also profitable, especially because it minimizes the amount of new capital required in the investor's account.

In general, margin trading is simple, but it is also risky. It should therefore be used only by investors who fully understand its operation and appreciate its pitfalls.

- What is your educational background? All stockbrokers must pass the so-called Series 7 exam, administered by the NASD, to earn a broker's license, but Edwards recommended that you look for a broker who has an economic and financial education. The Series 7 classes teach brokers the mechanics of the market, but not the theories behind the valuation of investments, Edwards said.
- What is your investment philosophy? Do you prefer to buy and hold investments or trade quickly as the value rises? What is your opinion about stocks (bonds, options, futures or other investments) as an investment? Why do you like or dislike that type of investment? . . . There are no right or wrong answers to these questions, the experts say, but their answers should agree with yours.
- May I have the names of three to five satisifed customers? Financial professionals differ on whether investors should ask prospective brokers about past performance, because, Edwards pointed out, past performance is no indicator of future performance. On the other hand, it may give you an idea of how that broker performs during bear markets. . . .

All brokers must register with the NASD to trade securities, and the NASD keeps a record of their conduct on the job. To learn if your prospective broker has ever been disciplined by the NASD, the SEC, one of the stock exchanges or a state government, or if he has ever been convicted on criminal charges, write or call the NASD. . . .

Finally, though, "it has to boil down to a gut reaction," Rambeau said. "You know when you sit down with somebody there's that chemistry."

Source: Lisa M. Keefe, of the *Orlando Sentinel,* "Going for Brokers: Check it Out," reprinted in *Dayton, Inc.* of the *Dayton Daily News,* February 9, 1989, p. 12.

Short Selling

Short selling is used when a decline in security prices is anticipated. This technique enables investors to profit from falling security prices. However, as we shall see, it can also be used to *protect* investors from falling security prices. Almost any type of security can be "shorted": Common and preferred stocks, all types of bonds, convertible securities, warrants, options, and listed mutual funds can all be sold short. Although the list is fairly extensive, the short-selling activities of most investors are limited almost exclusively to common stock and to put and call options. Because short sales, like long and margin transactions, require the investor to work through a broker, it is important to consider the tips for finding the right stockbroker given in the nearby Investor Insights box. The text that follows reviews the short-selling tactic and discusses some of the essential ingredients of this trading technique. We will then look at short-sale procedures, and examine some of the popular uses of short selling.

Essentials of Short Selling

short selling the sale of borrowed securities, their eventual repurchase by the short seller at a lower price, and their return to the lender.

Short selling is generally defined as the practice of selling borrowed securities. Short sales start when securities that have been borrowed from a broker are sold in the marketplace. Later, when the price of the issue has declined, the short seller buys back the securities, which are then returned to the lender. The lender's primary concern in a short-sale is that the securities being shorted are provided total and constant protection.

Making Money When Prices Fall. Making money when security prices fall is what short selling is all about. Like their colleagues in the rest of the investment world, short sellers are also trying to make money by buying low and selling high. The only difference is that they reverse the investment process by starting the transaction with a sale and ending it with a purchase. Table 2.5 shows how a short sale works and how investors can profit from such transactions. In the illustration, we assume the investor has found a stock he feels will drop from its present level of $50 per share to about $25. As a result, it has all the ingredients of a profitable short sale. The amount of profit or loss generated in a short sale is dependent on the price at which the short seller can buy back the stock. Short sellers make money only when the proceeds from the sale of the stock are greater than the cost of buying it back.

High Risk, Limited Return. A fact of many short-sale transactions is that the investor must settle for high-risk exposure in the face of limited return opportunities. The price of a security can fall only so far (to a value of or near zero), yet there is really no limit to how far such securities can rise in price. (Remember, when a security goes up in price, a short seller loses.) For example, notice in Table 2.5 that the stock in question cannot possibly fall by more than $50, yet who is to say how high its price can go?

Another less serious disadvantage is that short sellers never earn dividend (or interest) income. In fact, short sellers are responsible for making up the dividends (or interest) that are paid while the transaction is outstanding. That is, if a dividend is paid during the course of a short-sale transaction, the *short seller* must pay an equal amount to the lender of the stock (the mechanics of which are taken care of automatically by the short seller's broker).

The major *advantage* of selling short is, of course, the chance to profit from a price decline. In addition, the technique can be used by investors to protect profits

TABLE 2.5 The Mechanics of a Short Sale

1. 100 shares of stock are *sold* at $50/share:	
Proceeds from sale to investor	$5,000
2. Later, 100 shares of the stock are *purchased* at $25/share:	
Cost to investor	2,500
Net profit	$2,500

that have already been earned and to defer the taxes on such profits. And as we will see, when used in this manner, short selling becomes a highly conservative investment strategy.

Short-Sale Procedures

Short selling is a fairly popular trading technique. It accounted for about 9 percent of the total share value on the NYSE in 1990. In addition to NYSE stock, virtually any type of security (listed or OTC) can be shorted, and such transactions can be executed in both odd and round lots. Moreover, they are subject to the same commissions and transaction costs as any other type of transaction. In fact, about the only difference is that a short-sale transaction must be identified as such on the broker's order-execution form. The reason for this is that these transactions are stringently regulated by the SEC.

The Basic Rules. Extensive regulation of short selling was required in order to curb the many abuses and misuses of this tactic that occurred prior to the great crash of 1929. Today, a short sale can be executed only under the following two circumstances: when the last trade was a price increase, or when the last trade was unchanged and the prior price change was an increase. This is known as an **uptick** and indicates that the price of an issue has gone up since its last transaction. For example, a stock can be sold short if the prior transaction was at 51⅛, which was above the price of 51 for the transaction that immediately preceded it. The stock cannot be shorted if the prior transaction was at 50⅞, since it would be less than the immediately preceding price of 51. The latter situation is known as a **downtick.** It indicates that the price of the security is off from its prior transaction. As an investor, you can place a short-sell order at any time, but your broker will not be able to execute it until the issue undergoes an uptick. (*Note:* A short seller can avoid waiting for an uptick by offering to sell the stock at a price that if accepted is an uptick. If a purchaser accepts the stock at the uptick price, the transaction will comply with the uptick rule.)

uptick
the increase in the price of a stock issue since its last transaction.

downtick
the decrease in the price of a stock issue since its last transaction.

Certain (minimal) amounts of equity capital must be put up by the short seller in order to initiate a short-sale transaction. The investment necessary to execute a short sale is defined by an initial margin requirement, which is currently 50 percent for equity securities like common stock. Thus if an investor wishes to short $5,000 worth of stock at a time when the prevailing short-sale margin requirement is 50 percent, he or she must deposit $2,500 with a broker.

Who Lends the Securities? Acting through their brokers, short sellers obtain securities from brokerage houses or from other investors. Of the two, brokers are the principle source of borrowed securities. As a service to their customers they lend securities held in the brokers' portfolios or in **street name** accounts. Street name securities are those held by brokers for their customers; the stock certificates are issued in the brokerage house's name but held in trust for their clients. This is actually a common way of buying securities, since many investors do not want to be bothered with handling and safeguarding stock certificates. In such cases, the certif-

street name
stock certificates issued in the brokerage house's name but held in trust for their customers who actually own them.

icates are issued in the street name of the broker, who then records the details of the transaction and keeps track of these investments through a series of bookkeeping entries. When dividends, notices, and so on, are received by the broker, they are automatically forwarded to the proper owner of the securities. It is important to recognize that the broker lends the short seller the securities of other investors, and the short seller sells these borrowed securities with the expectation that she can later purchase them at a lower price and return them to the lender.

Uses of Short Selling

Investors short sell for one of two reasons: to seek speculative profits when the price of a security is expected to drop, or to protect a profit and defer taxes by "hedging" their position. The first use is the standard short-sale transaction. The hedge tactic, in contrast, is a conservative use of short selling, employed to lock in a given profit level. *All shorts are executed on margin,* so it seems appropriate to begin our discussion of uses of short selling by looking at how margin fits into a short sale and affects returns.

Shorting on Margin. There are no borrowed funds with margined short sales. With short selling, the term "margin" simply indicates the size of the equity deposit the investor must make in order to initiate the transaction. Margined short sales are executed in the same margin account as margined long transactions. They are subject to initial margin requirements and have maintenance margin levels (currently 30 percent for short sales). In fact, the only thing that we do not have to be concerned about with a margined short sale is the account's debit balance. Margining a short sale, then, is much like margining a long transaction. Many of the investment principles, margin features, and behavioral characteristics we discussed previously apply equally here.

Of course, if the price of the security being shorted goes up, the investor loses money. If the price of the security being shorted goes up too much, the account can become restricted or subject to a margin call. To demonstrate, consider the following situation: Assume an investor wants to short 100 shares of stock at $60 per share by using 70 percent initial margin. In this instance, the value of the securities amounts to $6,000 (100 × $60). The sales proceeds would also be $6,000, as this is the amount of money that would be realized by selling 100 shares of stock at $60 per share. The margin (equity deposit) is $4,200—70 percent of the value of the transaction. Now see what happens when the price of the stock rises $10 to $70 per share: In this case a potential loss of $1,000 (100 × $10) results. The investor will have to pay $10 more per share ($70 rather than $60) to buy back the stock at today's price. This will lower the investor's equity position from $4,200 to $3,200. The investor would now have $3,200 equity on a $7,000 market value—a 46 percent ($3,200 ÷ $7,000) margin percentage. As the price of the stock goes up, the investor loses money and the amount of margin in the position drops. Because (at 46 percent) the amount of margin has dropped below the initial margin requirement (70 percent), the investor would be faced with a *restricted account*. But since it is above the 30 percent maintenance margin for short sales, a margin call would not be issued.

The reverse would happen if, instead of rising, the price of the stock were to fall $10, to $50 per share. In this case, the investor's equity would increase by $1,000 to $5,200, which would then represent 104 percent ($5,200 ÷ $5,000) of the then-prevailing market value. Clearly an excess of equity would exist in this case.

Return on Invested Capital. Because short sales are executed on margin, the amount of invested capital is limited to the investor's equity deposit. This amount therefore is the basis for figuring the rate of return. The only complication in this return measure is that any dividends paid by the short seller to the lender of the securities must be netted out of the profit. Other than that, no dividends are received by the short seller and no interest is paid, so the return formula in Equation 2.3 is fairly straightforward.

Equation 2.3

$$\text{Return on invested capital from short sale} = \frac{\text{proceeds from sale} - \text{purchase cost of securities} - \text{dividends paid by short seller}}{\text{equity deposit}}$$

To illustrate, assume an investor uses 70 percent initial margin to short a stock at $60 per share he feels will drop to $40 within a six-month period. Because the company pays annual dividends of $2 per share, the short seller estimates he will probably be liable for about $1 per share over the expected six-month holding period. Using Equation 2.3 to compute the return on a per-share basis, we see that the expected return on invested capital for this short sale is about 45 percent:

$$\text{Return on invested capital from short sale} = \frac{\$60 - \$40 - \$1}{\$42} = \frac{\$19}{\$42} = .45 = \underline{\underline{45\%}}$$

This figure will be the same regardless of how many shares are actually involved in the transaction. This high rate of return results not only from the profit earned when the price of the stock drops, but also from the limited amount of capital provided by the investor (a margin of only 70 percent).

Speculating with Short Sales. Selling short for speculative purposes is perhaps the most common use of this technique. Because the short seller is betting against the market, this approach is highly speculative and subject to a considerable amount of risk exposure. It works like this: Assume an investor has uncovered a stock that she feels is about to tumble over the next eight months from its present level of $50 per share to somewhere around $30. She therefore decides to short sell 300 shares of the stock at $50 by using 50 percent margin (the prevailing initial margin requirement). Table 2.6 shows the basics of this hypothetical transaction. Note that the transaction generates a profit of $6,000 to the investor (ignoring dividends and brokerage commissions). Since it can be executed with an equity deposit of only $7,500, the transaction should yield a return on invested capital of 80 percent. However, if the market moves against the short seller, all or most of her $7,500 investment could be lost.

TABLE 2.6 Speculating with a Short Sale

Short sale initiated: 300 shares of the stock sold at $50/share	$15,000
Short sale covered: 300 shares of the stock bought back at $30/share	9,000
Net profit	$ 6,000
Equity deposit (.50 × $15,000)	$ 7,500

$$\text{Return on invested capital*} = \frac{\$15{,}000 - \$9{,}000}{\$7{,}500} = \frac{\$6{,}000}{\$7{,}500} = 80\%$$

*Assume the stock pays no dividends and therefore the short seller has no dividend liability.

TABLE 2.7 Shorting-against-the-Box (Hedging with a Short Sale)

Transaction 1: Purchase 100 shares of stock at $20		$2,000
Price of Stock Rises to $50/Share		
Current profit in transaction:		
Current value of stock		$5,000
Cost of transaction		⟨2,000⟩
Net profit		$3,000
Transaction 2: Short sell 100 shares at $50		
A. Now Price of Stock Rises to $80/Share		
Current profit in *both* transactions:		
Value of stocks owned (trans. 1)		$8,000
Cost of transaction		⟨2,000⟩
Profit		$6,000
Less loss on short sale:		
Short sale initiated	$5,000	
Short sale covered	⟨8,000⟩	⟨3,000⟩
Net profit		$3,000
B. Price of Stock Falls to $30/Share		
Current profit in *both* transactions:		
Value of stocks owned (trans. 1)		$3,000
Cost of transaction		⟨2,000⟩
Profit		$1,000
Plus profit from short sale:		
Short sale initiated	$5,000	
Short sale covered	⟨3,000⟩	2,000
Net profit		$3,000

Shorting-against-the-Box. This exotic-sounding term describes a conservative technique used to protect existing security profits. Like insurance, the purpose of this hedge is to minimize or eliminate exposure to loss. **Shorting-against-the-box** is done after an investor has generated a profit through an earlier long transaction by following it with a short sale. An investor who already owns 100 shares of stock (the long transaction) would short an equal number of shares of stock in the same company. By doing this, he or she is able to protect the profit already made in the long transaction, and, as a by-product, can defer the taxes on this profit until the next taxable year.

shorting-against-the-box
a conservative technique used to protect existing security profits by following a profitable long transaction with a short sale.

Here is how it works: Suppose that early last year you bought 100 shares of NuLox, Inc., at $20 per share and have since watched the price of NuLox rise to $50. You presently have a $3,000 net profit. Although you do not want to sell the stock right now, you do not want to lose any of your profit either. In essence, you would like to ride things out for a while and still protect the profit you have earned up to now. A simple short sale against the box will allow you to do this. By shorting 100 shares of NuLox at $50 per share, and you have ''locked in'' your profit of $3,000. No matter what happens to the price of the stock, you are guaranteed a profit of $3,000. You now have two positions—one long and one short—both involving an equal number of shares. Table 2.7 summarizes this tactic and demonstrates how the profit becomes locked in. Note, however, that although this short-sale transaction is executed with borrowed securities, it is not necessary to put up an equity deposit, because your current holdings of the stock serve this purpose. Thus, the cost of shorting-against-the-box is reasonably low and involves only the brokerage commissions associated with initiating and covering the short sale.

SUMMARY

1. Short-term investment vehicles are traded in the money market, whereas longer-term securities, such as stocks and bonds, are traded in the capital market. The organized securities exchanges, which include the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX), regional stock exchanges, foreign stock exchanges, and other specialized exchanges, act as secondary markets. The over-the-counter (OTC) market acts as a primary market and also handles secondary trading in unlisted securities. Today securities market must be viewed globally due to the growing importance of international markets and foreign security transactions.
2. The securities markets are regulated by the federal Securities and Exchange Commission (SEC) and by state commissions. The key federal laws regulating the securities industry are the Securities Act of 1933; Securities Exchange Act of 1934; Maloney Act of 1938; Investment Company Act of 1940; Investment Advisers Act of 1940; and the Securities Acts Amendments of 1975. During the 1980s the blatant violation of these laws, particularly with regard to insider trading, raised important ethical issues.
3. Stockbrokers provide the key link between the individual investor and the markets. A variety of types of brokerage accounts, such as single, joint, custodial, cash margin, and wrap, may be established. An investor can make odd-lot and round-lot transactions

using the market order, the limit order, or the stop-loss order. On small transactions most brokers have fixed-commission schedules; on larger transactions they will negotiate commissions. The Securities Investor Protection Corporation (SIPC) insures customers' accounts against the brokerage firm's failure. Arbitration procedures are frequently employed to resolve disputes between an investor and broker.

4. Most investors make long purchases in expectation of price increases. Many investors establish margin accounts in order to use borrowed funds to enhance their buying power. Short-scale transactions are much less common, although they provide opportunities for financial gain when a decline in share price is anticipated.

5. When stock is bought on margin, the investor puts up cash or securities equal to a portion of the purchase price and borrows the rest from a brokerage house or bank. If a stock purchased on margin increases in price, the investor's rate of return on funds is larger than it would have been on a straight cash purchase, and vice versa. The Fed sets the initial margin (equity) required to purchase securities and the minimum maintenance margin. If the price of the stock declines, the account can become restricted and possibly result in a margin call. Margin is commonly used to increase transaction returns, sometimes by pyramiding profits.

6. Short selling involves selling borrowed securities with the expectation of earning a profit by repurchasing them at a lower price in the future. To execute a short sale, the investor establishes a margin account and borrows the necessary shares through a broker or other investor. A short seller is exposed to potentially unlimited losses, while gains are limited to the amount of the short-sale price. Short selling may be used either to seek speculative profits from an anticipated share price decline or to protect earned profits and defer the associated taxes by shorting-against-the-box.

QUESTIONS

1. Define and differentiate between each of the following pairs of words:

   a. Money market and capital market.
   b. Primary market and secondary market.
   c. Organized securities exchanges and over-the-counter (OTC) market.

2. Briefly describe the following aspects of the New York Stock Exchange (NYSE):

   a. Membership.
   b. Listing policies.
   c. Trading activity.

3. For each of the items in the left-hand column match the most appropriate item in the right-hand column. Explain the relationship between the items matched.

a. AMEX.	1. Unlisted securities are traded.
b. CBT.	2. Futures exchange.
c. Boston Stock Exchange.	3. Options exchange.
d. CBOE.	4. Foreign securities are traded.
e. OTC.	5. Second largest security exchange.
f. ADR.	6. Regional stock exchange.

4. Describe the over-the-counter market, and explain how it works. Be sure to mention dealers, bid and ask prices, Nasdaq, and the Nasdaq/NMS. What role do initial public offerings (IPOs) and secondary distributions play in this market?

5. Why is globalization of securities markets an important issue today? How are foreign security transactions made? How do exchange rate changes affect foreign security prices?

6. Briefly describe the key rules and regulations resulting from each of the following securities acts:

   a. Securities Act of 1933.
   b. Securities Exchange Act of 1934.
   c. Maloney Act of 1938.
   d. Investment Company Act of 1940.
   e. Investment Advisers Act of 1940.
   f. Securities Acts Amendments of 1975.

7. What role does the stockbroker play in the overall investment process? Describe the types of services offered by brokerage firms, and discuss the criteria for selecting a suitable stockbroker.

8. What must one do in order to open a brokerage account? Briefly differentiate among the following types of brokerage accounts:

   a. Single or joint.
   b. Custodial.
   c. Cash.
   d. Margin.
   e. Wrap.

9. Differentiate between a market order, a limit order, and a stop-loss order. What is the rationale for using a stop-loss order rather than a limit order?

10. What protection does the Securities Investor Protection Corporation (SIPC) provide securities investors? How are arbitration procedures used to settle disputes between investors and their brokers?

11. Describe margin trading, and explain how profits (and losses) are magnified with margin trading.

12. What advantages and disadvantages does margin trading hold for the individual investor?

13. Describe the process of short selling; note how profits are made in such transactions. Be sure to explain how margin is used in a short-sale transaction.

14. What are the advantages and disadvantages of short selling? What is shorting-against-the-box, and how does it differ from a regular short sale?

PROBLEMS

1. In each of the following cases, calculate the price of one share of the foreign stock measured in US$.

   a. A Belgian stock priced at 9,000 Belgian francs (Bf) when the exchange rate is 35.3 Bf/US$.
   b. A French stock price at 700 French francs (Ff) when the exchange rate is 5.60 Ff/US$.
   c. A Japanese stock price at 1,350 yen (Y) when the exchange rate is 125 Y/US$.

2. Lola Paretti purchased 50 shares of BMW, a German stock traded on the Frankfurt Exchange, for 500 marks (DM) per share exactly one year ago, when the exchange rate was 1.60 DM/US$. Today the stock is trading at 530 DM per share and the exchange rate is 1.30 DM/US$.

a. Did the DM depreciate or appreciate relative to the US$ during the past year? Explain.
b. How much in US$ did Lola pay for her 50 shares of BMW when she purchased them a year ago?
c. How much in US$ can Lola sell her BMW shares for today?
d. Ignoring brokerage fees and taxes, how much profit (or loss) in US$ would Lola realize on her BMW stock if she sells it today?

3. Albert Cromwell places a market order to buy a round lot of Thomas, Inc., common stock, which is traded on the NYSE and is currently quoted at $50 per share. Ignoring brokerage commissions, how much money would Cromwell likely have to pay? If he had placed a market order to sell, how much money would he receive? Explain.

4. Imagine that you have placed a limit order to buy 100 shares of Sallisaw Tool at a price of $38, though the stock is currently selling for $41. Discuss the consequences, if any, of each of the following:

a. The stock price drops to $39 per share two months prior to cancellation of the limit order.
b. The stock price drops to $38 per share.
c. The minimum stock price achieved prior to cancellation of the limit order was $38.50, and when canceled the stock was selling for $47.50 per share.

5. If you place a stop-loss order to sell at $23 on a stock currently selling for $26.50 per share, what is likely to be the minimum loss you will experience on 50 shares if the stock price rapidly declines to $20.50 per share? Explain. What if you had placed a stop-limit order to sell at $23, and the stock price tumbles to $20.50?

6. Elmo Inc.'s stock is currently selling at $60 per share. For each of the following situations (ignoring brokerage commissions), calculate the gain or loss realized by Maureen Katz if she makes a round-lot transaction.

a. She sells short and repurchases the borrowed shares at $70 per share.
b. She takes a long position and sells the stock at $75 per share.
c. She sells short and repurchases the borrowed shares at $45 per share.
d. She takes a long position and sells the stock at $60 per share.



7. Assume an investor buys 100 shares of stock at $50 per share, putting up a 70 percent margin.

a. What would be the debit balance in this transaction?
b. How much equity capital would the investor have to provide in order to make this margin transaction?
c. If the stock rises to $80 per share, what would be the investor's new margin position?



8. Ms. Jerri Kingston bought 100 shares of stock at $80 per share using an initial margin of 60 percent. Given a maintenance margin of 25 percent, how far does the stock have to drop before Ms. Kingston faces a margin call? (Assume there are no other securities in the margin account.)



9. An investor buys 200 shares of stock selling for $80 per share, using a margin of 60 percent. If the stock pays *annual* dividends of $1 per share and a margin loan can be obtained at an annual interest cost of 8 percent, determine the return on invested capital the investor would realize if the price of the stock increases to $104 within six months. What is the annualized rate of return on this transaction?



10. Marlene Bellamy purchased 300 shares of Writeline Communications stock at $55 per share using the prevailing minimum initial margin requirement of 50 percent. She held the stock for

exactly four months and sold it without any brokerage costs at the end of that period. During the four-month holding period the stock paid $1.50 per share in cash dividends. Marlene was charged 9 percent annual interest on the margin loan. The minimum maintenance margin was 25 percent.

a. Calculate the initial value of the transaction, the debit balance, and the equity position on Marlene's transaction.
b. For each of the following share prices calculate the actual margin percentage and indicate whether Marlene's margin account would have excess equity, be restricted, or be subject to a margin call:
   (1) $45
   (2) $70
   (3) $35
c. Calculate the dollar amount of (1) dividends received and (2) interest paid on the margin loan during the four-month holding period.
d. Use each of the following sale prices at the end of the four-month holding period to calculate Marlene's annualized rate of return on the Writeline Communications stock transaction:
   (1) $50
   (2) $60
   (3) $70

11. Not long ago Dave Edwards bought 200 shares of Almost Anything, Inc., at $45 per share; he bought the stock on margin of 60 percent. The stock is now trading at $60 per share, and the Federal Reserve has recently lowered initial margin requirements to 50 percent. Dave now wants to do a little pyramiding and buy another 300 shares of the stock. What's the minimum amount of equity he'll have to put up in this transaction?



12. Assume an investor short sells 100 shares of stock at $50 per share, putting up a 70 percent margin.

a. How much cash will the investor have to deposit in order to execute this short-sale transaction?
b. What is the new margin for this transaction if the price of the stock falls to $20 per share?



13. Bob Barloe recently short sold 200 shares of stock at $72 per share, using 50 percent margin.

a. Determine the size of the initial margin deposit required to make this transaction.
b. What would the new margin (in percent) be if the stock price drops to $50 a share?
c. What kind of profit (in dollars) and return on invested capital would Bob realize if he covered this short sale at $50 a share?
d. What would the new margin position (in percent) be if, instead of dropping, the price of the stock *rose* to $86.50 a share? Given a 30 percent maintenance margin, would this account be subject to a margin call?



14. Susan Davidson strongly believed that the price of BBP, Inc., stock was about to experience a significant decline. As a result, she decided to short sell 400 shares at the current price of $35 per share. A 60 percent initial margin deposit is required, and the maintenance margin requirement is 30 percent.

a. How large an initial margin deposit must Susan make in order to short sell the BBP, Inc., shares?

b. For each of the following share prices, calculate the actual margin percentage and indicate whether Susan's margin deposit will be in excess, be restricted, or be subject to a margin call:
   (1) $80
   (2) $50
   (3) $30
c. If during the time Susan held this short position the shorted stock paid dividends of $1.15 per share, how much in total dividends would she have paid the owner of the shares that were shorted?
d. Use your findings in **c** and the data presented above to calculate Susan's return on invested capital if she buys back the shares of BBP, Inc., at the following share prices:
   (1) $20
   (2) $40
   (3) $60

15. A well-heeled investor, Mr. Oliver Stanley, recently purchased 1,000 shares of stock at $48 per share. They have since risen to $55 per share. Although Mr. Stanley wants to sell out, he hesitates to do so because it is so near the end of year and he wants to defer the tax liability until next year. As a result, he decides to short-against-the-box, by shorting 1,000 shares of the stock at its current price of $55.

a. What total profit will Mr. Stanley make if the price of the stock continues to rise to $60 per share?
b. How much of this will come from the long transaction and how much from the short sale?

CASE PROBLEMS

2.1 Dara's Dilemma: Hold, Sell, Or?

As a result of her recent divorce, Dara Simmons—a 40-year-old mother of two teenage children—received 400 shares of Casinos International common stock. The stock is currently selling for $54 per share. After a long discussion with a friend who is an economist with a major commercial bank, Dara believes that the economy is turning down and a bear market is likely. She has researched, with the aid of her stockbroker, Casinos International's current financial situation and finds that the future success of the company may hinge on the outcome of pending court proceedings on the firm's application to open a new gambling casino in Pacific City. If the permit is granted, it seems likely that the firm's stock will experience a rapid increase in value, regardless of economic conditions. On the other hand, if the permit is not granted, the stock value is likely to be adversely affected.

Dara felt that, based upon the available information, the price of Casinos was likely to fluctuate a great deal over the near future. Her first reaction was to sell the stock and invest the money in a safer security, such as a high-rated corporate bond. At the same time, she felt that she might be overly pessimistic due to her recent divorce. She realized that if Casinos had their Pacific City application granted, she would make a killing on the stock. As a final check before making any decision, Dara talked with her accountant, who suggested that for tax purposes it would be best to delay the sale of the stock for an additional four months. After making a variety of calculations, the accountant indicated that the consequences of selling the stock now at $54 per share would be approximately equivalent to receiving $48 per share anytime after the four-month period had elapsed.

Dara felt the following four alternatives were open to her:

Alternative 1. Sell now at $54 per share and use the proceeds to buy high-rated corporate bonds.
Alternative 2. Keep the stock and place a limit order to sell the stock at $60 per share.
Alternative 3. Keep the stock and place a stop-loss order to sell at $45 per share.
Alternative 4. Hold the stock for an additional four months prior to making any decision.

Questions

1. Evaluate each of these alternatives. Based on the limited information presented, recommend which you feel is best.
2. If the stock price rises to $60, what will happen under alternatives 2 and 3? Evaluate the pros and cons of these outcomes.
3. If the stock price drops to $45, what will happen under alternatives 2 and 3? Evaluate the pros and cons of these outcomes.
4. In light of the rapid fluctuations anticipated in the price of Casinos' stock, how might a stop-limit order to sell be used by Dara to reduce the risk associated with the stock? What is the cost of such a strategy? Explain.

2.2 Ravi Dumar's High-Flying Margin Account

Ravi Dumar is a stockbroker who lives with his wife Sasha and their five children in Milwaukee, Wisconsin. Ravi firmly believes that the only way to make money in the market is to follow an aggressive investment posture—for example, to use margin trading. In fact, Ravi himself has built a substantial margin account over the years. He presently holds $75,000 worth of stock in his margin account, though the debit balance in the account amounts to only $30,000. Recently Ravi uncovered a stock which, based on extensive analysis, he feels is about to take off. The stock, Running Shoes (RS), currently trades at $20 per share. Ravi feels it should soar to at least $50 within a year. RS pays no dividends, the prevailing initial margin requirement is 50 percent, and margin loans are now carrying an annual interest charge of 10 percent. Because Ravi feels so strongly about RS, he wants to do some pyramiding by using his margin account to purchase 1,000 shares of the stock.

Questions

1. Discuss the concept of pyramiding as it applies to this investment situation.
2. What is the present margin position (in percent) of Ravi's account?
3. Ravi buys the 1,000 shares of RS through his margin account (bear in mind that this is a $20,000 transaction). Now:
   a. What would the margin position of the account be *after* the RS transaction if Ravi followed the prevailing initial margin (50 percent) and used $10,000 of his money to buy the stock?
   b. What if he uses only $2,500 equity and obtains a margin loan for the balance ($17,500)?
   c. How do you explain the fact that the stock can be purchased with only 12.5 percent margin when the prevailing initial margin requirement equals 50 percent?
4. Assume that Ravi buys 1,000 shares of RS stock at $20 per share with a minimum cash investment of $2,500, and that the stock does take off by moving to $40 per share in a year.
   a. What is the return on invested capital for this transaction?
   b. What return would Ravi have earned had he bought the stock without margin—if he had used all of his own money?
5. What do you think of Ravi's idea to pyramid? What are the risks and rewards of this strategy?

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11 Options: Rights, Warrants, Puts and Calls

After studying this chapter, you should be able to:

1. Describe the basic features and fundamental investment attributes of stock rights and stock warrants.
2. Explain the impact that leverage has on the speculative appeal of warrants, and discuss the trading strategies that can be used to gain maximum benefits from this investment vehicle.
3. Discuss the basic nature of puts and calls, how these investment vehicles work, and why they are so popular with individual and institutional investors.
4. Describe the different kinds of listed options, including puts and calls on stocks, stock indexes, and foreign currencies, as well as LEAPS and capped options.
5. Gain an understanding of how put and call options are valued, and the forces that drive options prices in the marketplace.
6. Explain the profit potential of puts and calls, as well as the risk and return behavior of various put and call investment strategies.

When investors buy shares of common or preferred stock, they become the registered owners of the securities and are entitled to all the rights and privileges of ownership. Investors who acquire bonds or convertible issues are also entitled to the benefits of ownership. However, options are another matter: Investors who buy options acquire nothing more than the right to subsequently buy or sell other, related securities. That is, an **option** gives the holder the right to buy or sell a certain amount of an underlying security at a specified price over a specified period of time.

option
a security that gives the holder the right to buy or sell a certain amount of an underlying financial asset at a specified price for a specified period of time.

The three basic kinds of options are: (1) rights, (2) warrants, and (3) puts and calls. The first type has little investment appeal for the average investor, but the latter two—and especially puts and calls—enjoy considerable popularity today as attractive trading vehicles. All of these securities are a bit unusual, and their use requires special investor know-how. The focus of the present chapter, therefore, is to learn what we can about the essential characteristics and investment merits of these securities, and to see how they can be used in various types of investment programs. After briefly looking at stock rights, we'll move on to warrants and examine them in some detail. *Most of the chapter, however, will be devoted to the study of puts and calls,* as these are, by far, the dominant type of options security and certainly the most actively traded.

RIGHTS

right
an option to buy shares of a new issue of common stock at a specified price, over a specified, fairly short, period of time.

A **right** is a special type of option that has a short market life; it usually exists for no more than a few weeks. Essentially, rights originate when corporations raise money by issuing new shares of common stock. From an investor's perspective, a right enables a stockholder to buy shares of the new issue at a specified price, over a specified, fairly short, time period. Although not specifically designed for speculation or for use as trading vehicles, *rights do have value,* and they should never be lightly discarded. Instead, unwanted rights should be sold in the open market.

Characteristics

Let's say a firm has 1 million shares of common stock outstanding and that it has decided to issue another 250,000 shares. This might well be done through a *rights offering:* the firm, rather than directly issuing the new shares of common, would issue stock rights instead. These rights could then be used by their holders to purchase the new issue of stock. Existing stockholders may be given the right to maintain their proportionate share of ownership in a firm, a privilege known as a **preemptive right.** Since each stockholder receives, without charge, one right for each share of stock currently owned, the company in our example would issue one million rights, and it would take *four rights plus the price of the stock,* to buy one new share of common.

preemptive right
the right of existing stockholders to maintain their proportionate share of ownership in a firm.

Rights and Privileges

Because most stock rights allow their holders to purchase only a fractional share of the new common stock, two or more rights are usually needed to buy a single new share. The price of the new stock is spelled out in the right, and is known as the

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exercise price
with options, the price at which a new share of common stock will be sold; also called *subscription price.*

exercise (or **subscription**) **price.** It is always set below the prevailing market price of the stock. For each new share of common stock purchased, the investor has to *redeem a specified number of rights and pay the stipulated subscription price in cash*. Rights not used by their expiration date lose all value and simply cease to exist. Unfortunately, many investors allow their rights to expire and thereby lose money.

The Value of a Right

rights-on
a condition when a firm's common stock is trading with a stock right attached to it.

Technically, the precise measure of a right's value depends on whether the security is trading rights-on or rights-off. **Rights-on** indicates that the common stock is trading with the right attached to it; an investor who buys a share of stock during such a period also receives the attached stock right. When issues are trading **rights-off,** or **ex-rights,** the company's stock and its rights are trading in separate markets and are distinct from one another. Regardless of how these securities are trading, we can use the following approximation formula to measure the value of a right:

Equation 11.1

$$\text{Value of a right} = \frac{\text{market price of old stock} - \text{subscription price of new stock}}{\text{number of rights needed to buy one new share}}$$

rights-off
a condition when a firm's common stock and its rights are trading in separate markets, separate from each other; also called *ex-rights.*

As an example of how Equation 11.1 works, let's continue with the illustration above. Assume the prevailing market price of the old stock is $50 and the new shares carry a subscription price of $40 per share. Remember that it takes four rights and $40 to buy one new share of stock. We thus find the approximate value of a right as follows:

$$\text{Value of a right} = \frac{\$50 - \$40}{4} = \frac{\$10}{4} = \$2.50$$

Each right in our hypothetical example will have a market value of about $2.50 (as long as the price of the stock remains at $50); if the investor is not going to exercise the rights, this is the price at which each right could be sold in the market.

Investment Merits

The major investment attribute of a stock right is that it lets the holder acquire stock at a reduced price. It also enables the holder to acquire additional shares of stock *without paying the customary commission fees*. Although the savings may not be enormous, the opportunity to execute commission-free transactions should not be overlooked. However, except for the commission savings, the cost of buying the stock will be the same whether the shares are bought outright or through the use of rights. That is, the cost of the rights plus the subscription price of the stock should just about equal the market price of the common. Unfortunately, stock rights hold little opportunity for profitable trading. The life of these securities is simply too short and the range of price activity too narrow to allow for any significant trading profits. Thus, the role of stock rights is limited in most individual investor portfolios to selling unwanted rights or to buying or using them to reduce the commissions on subsequent stock transactions.

WARRANTS

A *warrant* is also an option that enables the holder to acquire common stock and, like rights, is found in the corporate sector of the market. Occasionally, warrants can be used to purchase preferred stock or even bonds, but common stock is the leading redemption vehicle.

What Is a Warrant?

warrant
a long-lived option that gives the holder the right to buy stock in a company at a price specified in the warrant itself.

A **warrant** is a long-lived option. In fact, of the various types of options, warrants have the longest lives, with maturities that extend to 5, 10, or even 20 years or more. Indeed, some warrants have no maturity date at all. They have no voting rights, pay no dividends, and have no claim on the assets of the company. All the warrant offers is a chance to participate indirectly in the market behavior of the issuing firm's common stock and in so doing, to generate capital gains. With warrants, *price behavior and capital appreciation are the only dimensions of return.*

General Attributes

Warrants are created as "sweeteners" to bond issues. To make a bond more attractive, the issuing corporation will sometimes attach warrants, which give the holder the right to purchase a stipulated number of stocks at a stipulated price any time within a stipulated period of time. A single warrant usually allows the holder to buy one full share of stock, although some involve more than one share per warrant and a few involve fractional shares. The life of a warrant is specified by its *expiration date,* and the stock purchase price stipulated on the warrant is known as the *exercise price.*

Because warrants are a type of equity issue, they can be margined at the same rate as common stock. They are purchased through brokers and are subject to commission and transaction costs similar to those for common stock. Warrants are usually listed with the common stock of the issuer, but their quotes are easy to pick out, since the letters *wt* appear next to the name of the company. For example, the quote for the Tyco Toys warrant is highlighted in Figure 11.1. Notice that the

52 Weeks Hi	Lo	Stock	Sym	Div	Yld %	PE	Vol 100s	Hi	Lo	Close	Net Chg
9¾	3½	TucsonElec	TEP		...	...	1634	5¾	5½	5¾	+¼
s 25⅞	14⅞	20CentInd	TW	.42	1.9	9	232	22⅜	21¾	22	−⅝
22	13¾	TwinDisc	TDI	.70	3.5	88	1	20¼	20¼	20¼	+¼
52¼	28	TycoLabs	TYC	.36	.9	18	772	38¾	38⅛	38⅜	...
39½	12½	TycoToys	TTI		...	25	1875	38⅝	38½	38½	...
23¼	2⅞	TycoToys wt			...	...	43	22⅝	22½	22½	...
12¾	11⅛	TylerCabot	TMF	1.26	10.2	...	822	12⅜	12¼	12⅜	...
5	2½	TylerCp	TYL		...	71	157	4¼	4	4¼	...

• FIGURE 11.1 Stock Quotations Showing Market Information for a Warrant

Warrants are listed right along with common stocks, but they're easy to pick out—just look for the letters *wt* behind the company's name. *(Source: The Wall Street Journal.)*

market information for warrants is listed just like any other common stock except, of course, there's no dividend, dividend yield, or price/earnings ratio.

Advantages and Disadvantages

Warrants offer several advantages to investors, one of which is their tendency to exhibit price behavior much like the common stock to which they are linked. Warrants thus provide the investor with an alternative way of achieving capital gains from an equity issue; i.e., instead of buying the stock, the investor can purchase warrants on the stock. Indeed, such a tactic may even be more rewarding than investing directly in the stock. Another advantage is the relatively low unit cost of warrants and the attractive leverage potential that accompanies this low unit cost. The concept of **leverage** rests on the principle of reducing the level of required capital in a given investment position, without affecting the payoff or capital appreciation of that investment. Put another way, an investor can use warrants to obtain a given equity position at a substantially reduced capital investment. In so doing the investor can *magnify returns,* since the warrant provides basically the same capital appreciation as the more costly common stock. For example, note in Figure 11.1 that the Tyco warrants are trading at 22½ while Tyco common stocks are trading at a much higher price of 38½. Finally, the low unit cost of warrants also leads to reduced downside risk exposure. In essence, the lower unit cost simply means there is less to lose if the investment goes sour. For example, a $50 stock can drop to $25 if the market becomes depressed, but there is no way the same company's $10 warrants can drop by the same amount.

leverage
the ability to obtain a given equity position at a reduced capital investment, thereby magnifying returns.

However, warrants do have some disadvantages. For one thing, warrants pay no dividends, which means that investors sacrifice current income. Second, because these issues usually carry an expiration date, there is only a certain period of time during which an investor can capture the type of price behavior sought. Although this may not be much of a problem with long-term warrants, it can prove to be a burden for those issues with fairly short lives (of perhaps one to two years, or less).

Characteristics of Warrants

There are three aspects of warrants that are particularly important to investors: (1) the issue's exercise price, (2) the value of a warrant, and (3) the amount of the premium. These features not only affect the price and return behavior of warrants but also have a bearing on choosing an investment strategy.

Exercise Price

The **exercise price** is the stated price the warrant holder will have to pay to acquire a share of the underlying common stock. It is the share price paid to the firm when the warrant is used to buy the stock—that is, when the option is "exercised." Usually, the exercise price remains fixed for the issue's full life, but some warrants may provide for an increase or decrease in exercise price as the security nears its expiration date. In addition, the exercise price will automatically be adjusted for stock splits or major stock dividends. The exercise price on a warrant can range anywhere

exercise price
the price at which a share of stock can be purchased, as specified on a warrant.

from just a few dollars to $50 or more. But as we'll see below, the real significance of exercise price is when it's viewed in relation to the market price of the underlying common stock, for that's what drives value and propels the *market price of the warrant*.



Value

A warrant is a type of **derivative security.** That is, it derives its value from the price behavior of some other real or financial asset. Put and call options, as well as futures contracts (which we'll study in Chapter 12), are also derivative securities, since they too derive their value from underlying securities or assets. For example, the Tyco Toy warrants noted above are directly linked to the price behavior of Tyco common stock. Thus, under the right conditions, when Tyco stock goes up (or down) in price, the warrants will too. Actually, warrants possess value whenever the market price of the underlying common equals or exceeds the exercise price on the warrant. This so-called *fundamental value* is determined as follows:

derivative security a security, such as puts, calls, and other options, whose value is derived from the price behavior of an underlying real or financial asset.

Equation 11.2

$$\text{Fundamental value of a warrant} = (M - E) \times N$$

where

M = prevailing market price of the common stock
E = exercise price
N = number of shares of stock that can be acquired with one warrant (if one warrant entitles the holder to buy one share of stock, $N = 1$; if, however, two warrants are required to buy one share of stock, $N = .5$, etc.)

The formula shows fundamental value, and therefore what the market value of a warrant *should be*, given the respective market and exercise prices of the common and the number of shares of stock that can be acquired with one warrant. As an example, consider a warrant that carries an exercise price of $40 per share and enables the holder to purchase one share of stock per warrant. If the common stock has a current market price of $50 a share, then the warrants would be valued at $10 each:

$$\text{Fundamental value of a warrant} = (\$50 - \$40) \times 1 = (\$10) \times 1 = \$10$$

Obviously the greater the spread between the market and exercise prices, the greater the fundamental value of a warrant. *So long as the market price of the stock equals or exceeds the exercise price of the warrant,* and the redemption provision carries a 1-to-1 ratio (meaning one share of common can be bought with each warrant), the value of a warrant will be directly linked to the price behavior of the common stock.



Premium

Equation 11.2 indicates how warrants should be valued, but they are seldom priced exactly that way in the marketplace. Instead, the market price of a warrant usually *exceeds* its fundamental value. This happens when warrants with negative values trade at prices greater than zero. It also occurs when warrants with positive values

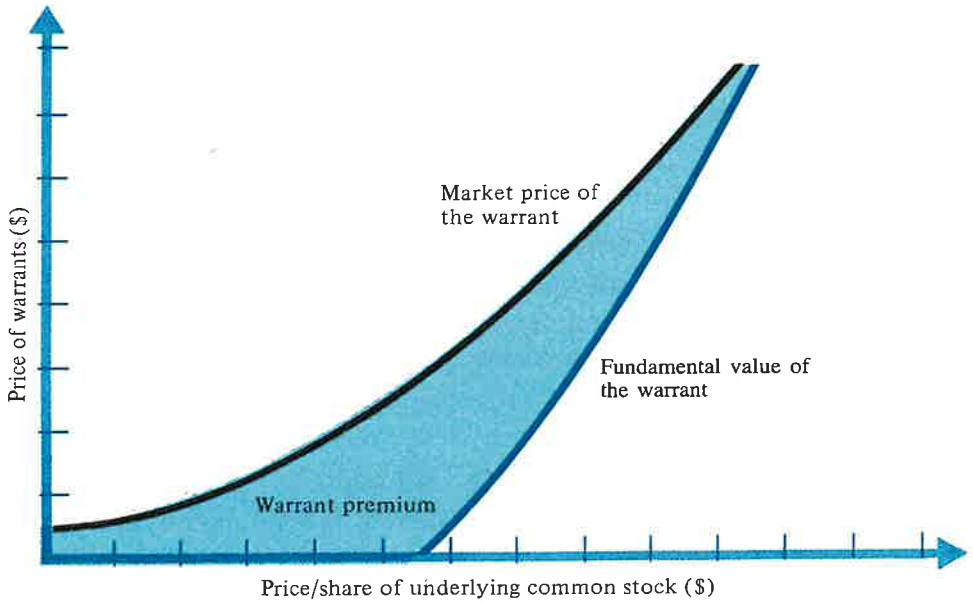
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warrant premium the difference between the true value of a warrant and its market price.

trade at even higher market prices (as, for example, when a warrant that's valued at $10 trades at $15). This discrepancy is known as **warrant premium,** and it exists because warrants possess speculative value. As a rule, the amount of premium embedded in the market price of a warrant is directly related to the option's time to expiration and the volatility of the underlying common stock. That is, the longer the time to expiration and the more volatile the stock, the greater the size of the premium. On the other hand, the amount of premium does tend to diminish as the underlying (fundamental) value of a warrant increases. This can be seen in Figure 11.2, which shows the typical behavior of warrant premiums. Premium is easy to measure: Take the difference between the value of a warrant (as computed according to the formula above) and its market price. For instance, a warrant has $5 in premium if it has a value of $10 but is trading at $15. We can also put the amount of premium on a relative (percentage) basis by dividing the dollar premium by the warrant's fundamental value. For example, there is a 50 percent premium embedded in the price of our $15 warrant above: i.e., the dollar premium ÷ the value of the warrant = $5 ÷ $10 = .50. Premiums on warrants can at times become fairly substantial. Indeed, premiums of 20 to 30 percent, or more, are not all that uncommon.

Trading Strategies

Because their attraction to investors rests primarily with the capital gains opportunities they provide, warrants are used chiefly as alternatives to common stock investments. Let's now look at warrant trading strategies and the basic ways in which these securities can be profitably employed by investors.



• **FIGURE 11.2 The Normal Price Behavior of Warrant Premiums**
Observe that as the price of the underlying common stock increases, the amount of premium in the market price of the warrant tends to decrease—though it never totally disappears.

The Basic Price Behavior of Warrants

Since warrants carry relatively low unit costs, they possess much greater price volatility and the potential for generating substantially higher *rates of return* than a direct investment in the underlying common stock. Consider the following illustration, which involves the common shares and warrants of the same company. Say the price of the common is now $50 per share and the warrant, which carries a one-to-one redemption provision, has a $40 exercise price. (We will ignore premium in this illustration.) Observe below what happens when the price of the stock increases by $10.

	Common Stock	Warrant
Issue price *before* increase	$50	$10
Increase in price of common	$10	—
Issue price *after* increase	$60	$20
Increase in market value	$10	$10
Holding period return (increase in value/beginning issue price)	20%	100%

The fact that the warrants provide a rate of return five times greater than the common is due to the fact that the two issues move parallel to one another, even though the warrant carries a lower unit cost.

As in our illustration above, holding period return would normally be used to assess the payoff when the investment horizon equals one year or less. Approximate yield would be used when the investment horizon amounts to more than a year. More specifically, we would measure holding period return (HPR) for warrants as:

Equation 11.3

$$\text{HPR} = \frac{\text{sale price of warrant} - \text{purchase price of warrant}}{\text{purchase price of warrant}}$$

The holding period return for the warrants in our illustration above, would be:

$$\text{HPR} = \frac{\$20 - \$10}{\$10} = \frac{\$10}{\$10} = 100\%$$

In contrast, if we assume a three-year investment horizon, we could find the return on the investment by using a slightly modified version of the approximate yield formula:

Equation 11.4

$$\text{Approximate yield} = \frac{\dfrac{\text{sale price of warrant} - \text{purchase price of warrant}}{\text{number of years in investment horizon}}}{\dfrac{\text{sale price} + \text{purchase price}}{2}}$$

$$= \frac{\dfrac{\$20 - \$10}{3}}{\dfrac{\$20 + \$10}{2}} = \frac{\$3.33}{\$15} = 22.2\%$$

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Note in this case that we can ignore the dividend component of the standard approximate yield formula, since there are no dividends on warrants. Instead, the return in Equation 11.4 is based solely on the average annual capital gains produced from the investment.

Trading with Warrants

Warrant trading generally follows one of two approaches: (1) The leverage embedded in warrants is used to magnify dollar returns; or (2) their low unit cost is used to reduce the amount of invested capital and limit losses. The first approach is the more aggressive, whereas the second has considerable merit as a conservative strategy.

Our comparative illustration above can be used to demonstrate the first technique, which seeks to magnify returns. If an investor wishes to make a $5,000 equity investment and if price appreciation is the main objective, he or she would be better off by committing such a sum to the warrants. The reason is that a $5,000 investment in the common stock will buy 100 shares of stock ($5,000 ÷ $50 = 100 shares) which will generate only $1,000 in capital gains ($10 profits per share × 100 shares). That same $5,000 invested in the lower-priced warrants will buy 500 of these securities ($5,000 ÷ $10 = 500 warrants) and will result in $5,000 in profits ($10 in profits per warrant × 500 warrants). The common stock thus provides a 20 percent HPR, whereas the warrants yield 100 percent.

The major drawbacks to the aggressive approach are that the investor receives no dividends by buying warrants and that price appreciation has to occur before the warrant expires. The biggest risk in this investment is the potential loss exposure. Observe that if the price of the stock in our example decreases by $10, the warrant holder is virtually wiped out. In contrast, the price of the stock drops to "only" $40, and the stockholder would still have $4,000 in capital left.

One way to limit this exposure to loss is to follow the more conservative investment posture of the second trading approach. This can be done by buying only enough warrants to realize the same level of capital gains as available from the common stock. In our illustration, since we are dealing with options that carry one-to-one redemption provisions, the investor would need to acquire only 100 warrants to obtain the same price behavior as 100 shares of stock. Thus, rather than buying $5,000 worth of stock, the investor need purchase only $1,000 worth of the warrants to realize the same capital gains. If the stock performs as expected, the warrant investor will realize a 100 percent holding period return (as computed above) by generating the same amount of capital gains as the stock—$1,000. But since this will be done with substantially less capital, there will not only be greater yield with the warrants, but also less loss exposure. In this case, if the price of the stock drops by 10 points, the most the warrant holder can lose is $1,000. On the other hand, if the price of the stock drops by *more* than $10 a share, the warrant holder will still lose no more than $1,000, whereas the stockholder can lose a lot more, depending on the extent of the drop in share price.

Leverage and the Importance of Timing

Thus far we have assumed that the price behavior of a warrant is unaffected by outside variables. This assumption, although convenient, is not altogether true, for both leverage and downside risk protection are functions of the market price of the warrant. In particular, to realize maximum price appreciation, it is generally recommended that lower-priced issues be used. Other things being equal, *the lower the price of the warrant, the greater its leverage potential.* Not only does the amount of magnified return potential decrease as the price of the warrant increases, but the risk exposure of a subsequent drop in price also becomes greater. Generally speaking, as the market price of a warrant increases, *it begins to behave more like its underlying common stock.* And in so doing, a warrant's return potential drops off dramatically. Certainly, a low warrant price alone will not guarantee success, but it is obvious that a low warrant price is more desirable than a higher one since the *low unit price allows the investor to capture both increased price volatility and reduced downside risk.*

PUTS AND CALLS

The life span, or maturity, of puts and calls is generally a good deal *longer* than rights, but *shorter* than warrants. For the most part, you'll find put and call maturities typically range from about 30 days to eight months or so in duration.

Put and call options are much like warrants to the extent that they, too, provide attractive opportunities for speculation, offer appealing leverage potential, and can act as an alternative to the direct investment in common stock. Indeed, warrants differ from call options only in an institutional sense and *not* from an economic or market perspective. The fact is, for all practical purposes, the biggest difference in these two securities is that warrants normally last a lot longer than calls.

Definitions and Characteristics

One of the phenomena of the market of the 1970s was the remarkable performance and investment popularity of stock options—puts and calls on common stock. By the early 1980s, the interest in options spilled over to other kinds of financial assets. Thus, today, investors can trade puts and calls on:

- Common stock
- Stock indexes
- Debt instruments
- Foreign currencies
- Commodities and financial futures

As we will see, although the underlying financial assets may vary, the basic features and behavioral characteristics of these securities are much the same. Regardless of the type, much of the popularity of the options market stems from the fact that investors can buy a lot of price action with a limited amount of capital, while nearly always enjoying limited risk exposure.

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A Negotiable Instrument

Puts and calls are negotiable instruments, issued in bearer form, that allow the holder to buy or sell a specified amount of a specified security at a specified price. For example, a put or a call on common stock covers 100 shares of stock in a specific company. A **put** enables the holder to sell the underlying security at a specified price over a set period of time. A **call,** in contrast, gives the holder the right to buy the securities at a stated price within a certain time period. Puts and calls possess value to the extend that they allow the holder to participate in the price behavior of the underlying financial asset. As with any option, there is no interest or dividend income, no voting rights, and no privileges of ownership.

put
a negotiable instrument that enables the holder to sell the underlying security at a specified price over a set period of time.

call
a negotiable instrument that gives the holder the right to buy securities at a stated price within a certain time period.

Puts and calls are traded on listed exchanges and, on a *much smaller* scale, in the over-the-counter market. They provide attractive leverage opportunities because they carry low prices relative to the market price of the underlying financial assets. To illustrate, consider a call on a common stock that gives the holder the right to buy 100 shares of a $50 stock at a price of $45 a share. The stock would be priced at $50, but the call would trade at an effective price of only $5 a share (or the difference between the market price of the common and the price it can be purchased at as specified on the call). However, since a single stock option always involves 100 shares of stock, the actual market price of our $5 call would be $500; i.e., 5×100 shares = $500.

American or European Options

Put and call options can be issued in either *American* or *European* form. Actually, this has absolutely nothing to do with where the options are traded, but rather, with when the options can be exercised. Specifically, an **American option** can be exercised on any business day that the option is traded, on or before the option's expiration date. In contrast, a **European option** can be exercised only on the date of expiration. Put another way, an American option can be exercised prior to expiration, a European option cannot. The vast majority of puts and calls traded in the U.S. are American options. For example, all listed stock options are of the American form; European options, on the other hand, are not as common, and are found mostly on stock index and foreign currency options. While it's true that, other things being equal, American options should be more valuable than European since they give you more exercise dates, the fact is that for all practical purposes, most investors couldn't care less whether an option is American or European. The reasons: First, only a tiny fraction of options are ever exercised, so it doesn't make much difference when they can be cashed in. Second, and more important, just because an option can't be exercised prior to maturity doesn't mean you have to hold it to expiration date. Any option—American or European—can be sold at any time. (For purposes of this and the next chapter, we'll assume that we're dealing with American options throughout.)

American option
an option that can be exercised on any business day that the option is traded, on or before the option's expiration date.

European option
an option that can be exercised only on the date of expiration.

Maker versus Buyer

Puts and calls are a unique type of security since they are *not* issued by the organizations that issue the underlying stocks. Instead, puts and calls *are created by inves-*

tors. It works like this: Suppose one individual wants to sell to another the right to buy 100 shares of common stock. This individual would *write* a call. The individual or institution writing the option is known as the **option maker** or **writer.** The maker who writes and sells an option is entitled to receive the price paid for the put or call (less modest commissions and other transaction costs). The put or call option is now a full-fledged financial asset and trades in the open market much like any other security. Puts and calls are both written (sold) and purchased through security brokers and dealers, and they are actively bought and sold in the secondary market. The writer stands behind the option, as it is the *writer* who must buy or deliver the stocks or other financial assets according to the terms of the option. Puts and calls are written for a variety of reasons, most of which we will explore below. At this point, suffice it to say that writing options can be a viable investment strategy and can be a profitable course of action since, more often than not, *options expire unexercised.*

option maker the individual or institution that writes put and call options; also called *option writer.*

How Puts and Calls Work

Using the buyer's point of view, let us now briefly examine how puts and calls work, and how they derive their value. To understand the mechanics of puts and calls, it is best to look at their profit-making potential. For example, using stock options as a basis of discussion, consider a stock currently priced at $50 a share. Assume we can buy a call on the stock for $500, which enables us to purchase 100 shares of the stock at a fixed price of $50 each. A *rise* in the price of the underlying security (in this case, common stock) is what we, as investors, hope for. With that in mind, what is the profit from this transaction if the price of the stock does indeed move up to, say, $75 by the expiration date on the call? The answer is that we will earn $25 ($75 − $50) on *each* of the 100 shares of stock in the call, or a total gross profit of some $2,500—and all from a $500 investment! This is so since we can buy 100 shares of the stock—from the option writer—at a price of $50 each and immediately turn around and sell them in the market for $75 a share. We could have made the same profit by investing directly in the common stock, but because we would have had to invest $5,000 (100 shares × $50 per share), our rate of return would have been much lower. Obviously, there is considerable difference between the profit potential of common stocks and calls, and it is this differential that attracts investors and speculators to calls whenever the price outlook for the underlying financial asset is *upward*. (Note that although our illustration is couched in terms of common stock, this same valuation principle applies to any of the other financial assets that may underlie call options, such as market indexes, foreign currencies, or futures contracts.)

A similar situation can also be worked out for puts. Assume that for the same $50 stock we could pay $500 and buy a put to sell 100 shares of the stock at $50 each. As the buyer of a put, we want the price of the stock to *drop*. Assume our expectations are correct and the price of the stock does indeed drop, to $25 a share. Here again, we would realize a gross profit of $25 for each of the 100 shares in the put. We can do this by going to the market and buying 100 shares of the stock at a price of $25 a share, and immediately turning around and selling them to the writer of the put at a price of $50 per share.

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Fortunately, put and call investors do *not* have to exercise these options and make simultaneous buy and sell transactions in order to receive their profit, *since options do have value and can be traded in the secondary market*. In fact, the value of both puts and calls is directly linked to the market price of the underlying financial asset. That is, the value of a *call* increases as the market price of the underlying security *rises,* whereas the value of a *put* increases as the price of the security *declines*. Thus, *investors can get their money out of options by selling them in the open market,* just as with any other security.

Advantages and Disadvantages

The major advantage of investing in puts and calls is the leverage they offer. This feature also carries the advantage of limiting the investor's exposure to risk, since there is only a set amount of money (the purchase price of the option) that can be lost. Also appealing is the fact that puts and calls can be used profitably when the price of the underlying security goes up *or* down.

A major disadvantage of puts and calls is that the holder enjoys no interest or dividend income, nor any other ownership benefit. Moreover, because the instruments have limited lives, the investor has a limited time frame in which to capture desired price behavior. Another disadvantage is the fact that puts and calls themselves are a bit unusual, and many of their trading strategies are complex. Thus investors must possess special knowledge and fully understand the subtleties of this trading vehicle.

Options Markets

Although the concept of options can be traced back to the writings of Aristotle, options trading in the United States did not begin until the late 1700s. Until the early 1970s, this market remained fairly small, largely unorganized, and the almost private domain of a handful of specialists and traders. All this changed, however, on April 26, 1973, when a new securities market was created with the launching of the Chicago Board Options Exchange (CBOE).

Conventional Options

Prior to the creation of the CBOE, put and call options trading was conducted in the over-the-counter market through a handful of specialized dealers. Investors who wished to purchase puts and calls dealt with these options dealers via their own brokers, and the dealers would find individuals (or institutions) willing to write the options. If the buyer wished to exercise an option, he or she did so with the writer, and no one else—a system that largely prohibited any secondary trading. On the other hand, there were virtually no limits to what could be written, so long as the buyer was willing to pay the price. Put and call options were written on New York and American stocks as well as on regional and over-the-counter securities, for as short as 30 days and as long as a year. Over-the-counter options, known today as **conventional options,** were hard hit by the CBOE and other options exchanges. The conventional market still exists, although on a greatly reduced scale.

conventional options
put and call options sold over the counter.

Listed Options

listed options put and call options listed and traded on organized securities exchanges, such as the CBOE.

The creation of the CBOE signaled the birth of so-called **listed options,** a term used to denote put and call options traded on organized exchanges, rather than over-the-counter. The CBOE launched trading in calls on just 16 firms. From these rather humble beginnings, there evolved in a relatively short period of time a large and very active market for listed options. Today, trading in listed options is done in both puts and calls and takes place on five exchanges, the largest of which is the CBOE. Options are also traded on the AMEX, the NYSE, the Philadelphia Exchange, and the Pacific Stock Exchange. In total, *put and call options are now traded on over 700 different stocks*. Although most of these are NYSE issues, the list does include several dozen OTC stocks, such as Apple Computer, Intel, Liz Claiborne, and MCI. In addition to stocks, listed options are also available on stock indexes, debt securities, foreign currencies, and even commodities and financial futures.

Listed options provided not only a convenient market for the trading of puts and calls, but also standardized the expiration dates and the prices specified on the options. The listed options exchanges created a clearinghouse organization that eliminated direct ties between buyers and writers of options and reduced the cost of executing put and call transactions. They also developed an active secondary market, with wide distribution of price information. As a result, it is now as easy to trade a listed option as a listed stock. And like stocks, listed put and call options are not just an American phenomenon, as various types of puts and calls are actively traded on just about every major securities market in the world.

Stock Options

The advent of the CBOE and other listed option exchanges had a quick and dramatic impact on the trading volume of puts and calls. Indeed, the level of activity in listed stock options grew rapidly—so much so, in fact, that it took only eight years for the annual volume of contracts traded to pass the 100 million mark. And although contract volume has been off since 1987, it's still holding at over 100 million contracts a year. Normally, there's far more interest in calls than in puts—in fact, more than 70 percent of all stock option trading volume is in calls.

The creation and continued expansion of listed options exchanges has unquestionably given the field of investments a whole new dimension. However, in order to use these securities properly and avoid serious (and possibly expensive) mistakes, the investor must fully understand their basic features. In the sections that follow, we will look closely at the investment attributes and trading strategies that can be used with stock options. Later we'll explore stock index options and then briefly look at other types of puts and calls, including interest rate and currency options, long-term options, and capped options. (Futures options will be taken up in Chapter 12, after we study futures contracts.)

Stock Option Provisions

Because of their low unit cost, stock options (or *equity options* as they're also called) are very popular with individual investors. Except for the underlying finan-

cial asset, they are like any other type of put or call, subject to the same kinds of contract provisions and market forces. As far as options contracts are concerned, there are two provisions that are especially important and to which investors should pay particular attention: (1) the price, as specified on the option, at which the stock can be bought or sold—this is known as the *strike price;* and (2) the amount of time remaining until expiration. As we'll see below, both the strike price and the time remaining to expiration have a significant bearing on the valuation and pricing of options.

strike price
the price contract between the buyer of an option and the writer; it's the stated price at which you can buy a security with a call, or sell a security with a put.

Strike Price. The **strike price** represents the price contract between the buyer of the option and the writer. For a call, the strike price specifies the price at which each of the 100 shares of stock can be bought. For a put, it represents the price at which the stock can be sold to the writer. (The strike price is also known as the exercise price.) With conventional (OTC) options, there are no constraints on strike price, although it is usually specified at or near the prevailing market price of the stock at the time the option is written. With listed options, however, strike prices are *standardized* such that stocks selling for less than $25 per share carry strike prices that are set in 2½ dollar increments (that is, $7½, $10, $12½, $15, and so on). The increment then jumps to $5 for stocks selling between $25 and $200 per share. Finally, for stocks that trade at prices in excess of $200 a share, the strike price is set in $10 increments. And of course, the strike price of both conventional and listed options is adjusted for substantial stock dividends and stock splits.

expiration date
the date at which the life of an option expires.

Expiration Date. The **expiration date** is also an important provision because it specifies the life of the option in much the same way that the maturity date indicates the life of a bond. Expiration dates for options in the conventional market can fall on any working day of the month. In contrast, expiration dates are standardized in the listed options market. The exchanges initially created three expiration cycles for all listed options, and each issue was (and still is) assigned to one of these three cycles. One cycle is January, April, July, and October; another is February, May, August, and November; and the third is March, June, September, and December. This system has been modified a bit to include *both* the current month and the following month, *plus* the next two months in the regular expiration cycle. The exchanges still use *the same three expiration cycles,* but they've been altered so investors are always able to trade in the two near-term months plus the next two closest months in the option's regular expiration cycle. For reasons that are pretty obvious, this is sometimes referred to as a *''two-plus-two''* schedule. Take, for example, the January cycle—you'd find the following options available in January: January, February, April, and July. Thus, we'd have the two current months (January, February), plus the next two months in the cycle (April and July)—though prices are usually reported in the financial media for only the first *three* maturities. Then, in February, the available contracts would be: February, March, April, and July. Finally, come March, there would be across-the-board changes as follows: March, April, July, and October. And so on, as the expiration dates continue rolling-over like this during the course of the year. Given the month of expiration, the actual day of

expiration is always the same: the Saturday following the third Friday of each expiration month. Thus, for all practical purposes, listed options always expire on the third Friday of the month of expiration.

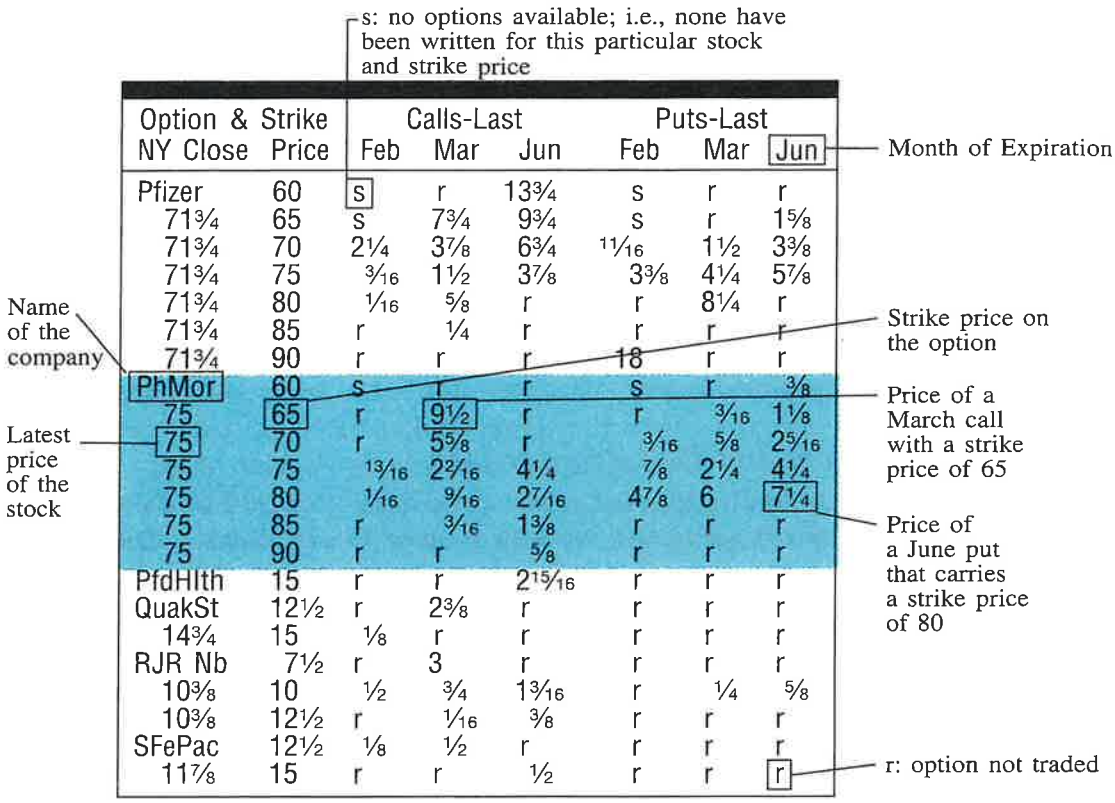
The expiration date, in effect, specifies the length of the contract between the holder and the writer of the option. Thus, if you hold a six-month call on Sears, that option would give you the right to buy 100 shares of Sears common stock at a strike price of, say, $40 per share at any time over the next six months. Now, *no matter what happens to the market price of the stock,* you can use your call option to buy 100 shares of Sears at $40 a share for the next six months. If the price of the stock moves up, you stand to make money; if it goes down, you'll be out the cost of the option.

Put and Call Transactions

Option traders are subject to commission and transaction costs whenever they buy or sell an option, or when an option is written. The writing of puts and calls is subject to normal transaction costs, since it effectively represents remuneration to the broker or dealer for *selling* the option. In relation to the number of shares of common stock controlled (100 shares per option), the transaction costs for executing put and call trades are relatively low. However, that's not the case when costs are compared to the size of the transaction itself, particularly if there are only a few options involved in the trade. To see how expensive options transactions can get, consider the purchase of one $5 call: you can expect to pay a commission of $30, or more, on this (relatively small) $500 transaction. Although this may be low compared to what it would take to buy 100 shares of the underlying stock, simple arithmetic indicates that it involves a 6 percent sales charge ($30/$500 = .06). That's pretty steep, especially when you consider that this commission might have to be paid again if the option is sold prior to its expiration date. Fortunately, relative transaction costs *decline* fairly quickly as the number of contracts traded increases. For example, the cost to buy 10 $5 calls (in a single transaction) is around $150, which translates into a commission of only 3 percent. The same can be said of higher priced options: other things being equal, the higher the price of the option, the lower the relative (percentage) commission.

Listed options also have their own marketplace and quotation system. Finding the price (or premium, as it's called) of a listed stock option is fairly easy, as the options quotations in Figure 11.3 indicate. Note that quotes are provided for calls and puts separately, and for each option, there are three expiration dates (in this case, February, March, and June). Along with the striking price, such information is the basis for differentiating among various options. For example, there are numerous puts and calls outstanding on the Philip Morris stock, each with its own expiration date and striking price. The quotes are standardized and are read as follows: The name of the company and the closing price of the underlying stocks are listed first (note Philip Morris's stock closed at 75); the strike price is listed next; then closing prices are quoted relative to their expiration dates, with the three calls listed first followed by the three puts. Thus, we can see that a Philip Morris *call* with a $65 strike price and a March expiration date is quoted at 9½ (which translates

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Option & NY Close	Strike Price	Calls-Last Feb	Calls-Last Mar	Calls-Last Jun	Puts-Last Feb	Puts-Last Mar	Puts-Last Jun
Pfizer	60	s	r	13¾	s	r	r
71¾	65	s	7¾	9¾	s	r	1⅝
71¾	70	2¼	3⅞	6¾	11/16	1½	3⅜
71¾	75	3/16	1½	3⅞	3⅜	4¼	5⅞
71¾	80	1/16	⅝	r	r	8¼	r
71¾	85	r	¼	r	r	r	r
71¾	90	r	r	r	18	r	r
PhMor	60	s	r	r	s	r	⅜
75	65	r	9½	r	r	3/16	1⅛
75	70	r	5⅝	r	3/16	⅝	2 5/16
75	75	13/16	2 5/16	4¼	⅞	2¼	4¼
75	80	1/16	9/16	2 7/16	4⅞	6	7¼
75	85	r	3/16	1⅜	r	r	r
75	90	r	r	⅝	r	r	r
PfdHlth	15	r	r	2 15/16	r	r	r
QuakSt	12½	r	2⅜	r	r	r	r
14¾	15	⅛	r	r	r	r	r
RJR Nb	7½	r	3	r	r	r	r
10⅜	10	½	¾	1 3/16	r	¼	⅝
10⅜	12½	r	1/16	⅜	r	r	r
SFePac	12½	⅛	½	r	r	r	r
11⅞	15	r	r	½	r	r	r

• FIGURE 11.3 Listed Options Quotations
As seen here, the quotes for puts and calls are listed side-by-side. In addition to the closing price of the option, the latest price of the underlying security is also shown along with the strike price on the option. *(Source: The Wall Street Journal.)*

into a dollar price of $950, because stock options trade in 100 share lots). In contrast, a Philip Morris *put* with an $80 strike price and June expiration date is trading at 7¼ (or $725).

Options Valuation and Pricing

The value of a put or call depends to a large extent on the market behavior of the common stock (or other financial asset) that underlies the option. Getting a firm grip on the current and expected future value of a put or call is extremely important to options traders and investors. Similarly, to get the most from any options trading program, it's imperative that investors have an understanding of how options are priced in the market. Continuing to use stock options as a basis of discussion, let's look now at the basic principles of options valuation and pricing, starting with a brief review of how profits are derived from puts and calls.

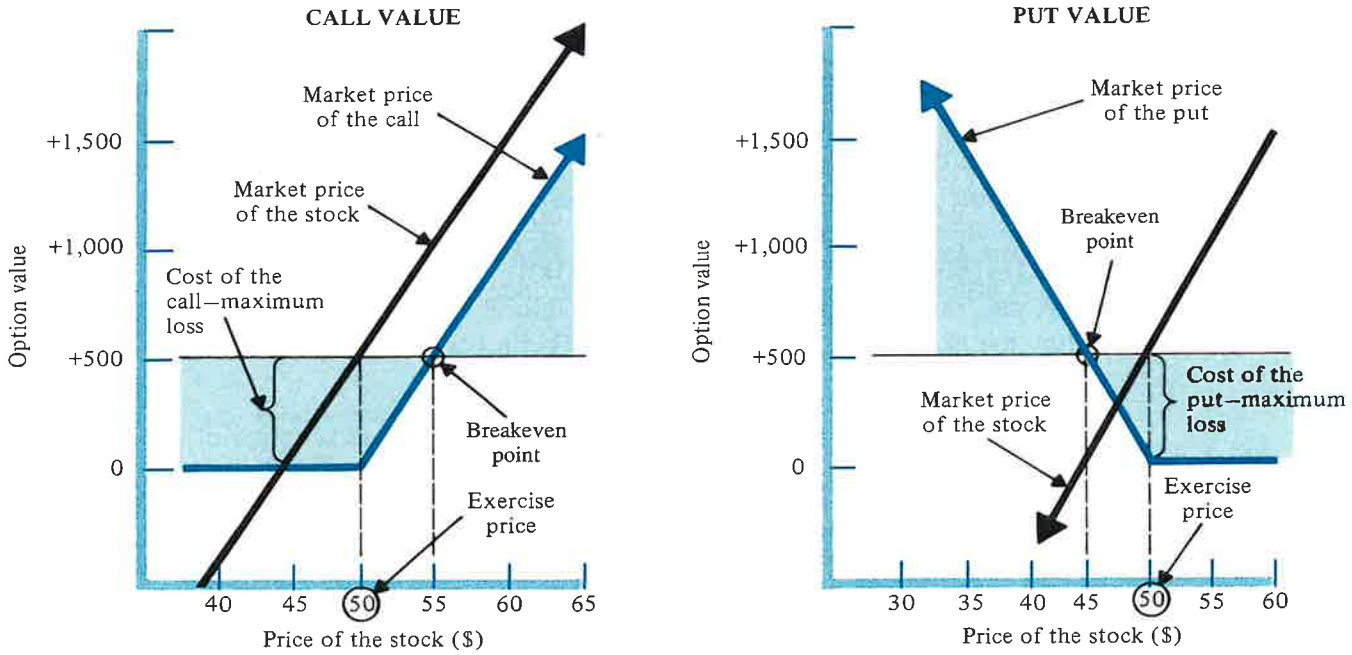
The Profit Potential of Puts and Calls

Although the quoted market price of a put or call is affected by such factors as time to expiration, stock volatility, market interest rates, and supply and demand condi-

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tions, by far the most important variable is *the market price behavior of the underlying common stock*. This is the variable that drives any significant moves in the price of the option and which in turn determines the option's profit (return) potential. Thus, when the underlying stock moves up in price, *calls do well;* when the price of the underlying stock drops, *puts do well*. Such performance also explains why it's so important to get a good handle on the expected future price behavior of a stock *before* an option is bought or sold (written).

The typical price behavior of an option is illustrated graphically in Figure 11.4. The diagram on the left depicts a call, and the one on the right shows a put. The *call* diagram is constructed assuming you pay $500 for a call that carries an exercise price of $50; likewise, the *put* diagram assumes you can buy a put for $500 and obtain the right to sell the underlying stock at $50 a share. With the call, the diagram shows what happens to the value of the option when the price of the stock increases; with the put, it shows what happens when the price of the stock falls. Observe that a call doesn't gain in value until the price of the stock advances past the stated *exercise price* ($50). Also, since it costs $500 to buy the call, the stock has to move up another 5 points (from $50 to $55) in order for the option investor to recover the premium and thereby reach a break-even situation. So long as the stock continues to rise in price, everything from there on out is profit. Once the premium



• FIGURE 11.4 The Valuation Properties of Put and Call Options

The value of a put or call is a reflection of the price behavior of its underlying common stock. As such, once the cost of the option has been recovered (which occurs when the option passes its breakeven point), the profit potential of a put or call is limited only by the price behavior of its underlying stock.

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is recouped, the profit from the call position is limited only by the extent to which the stock price increases over the remaining life of the contract!

In a similar fashion, the value of a *put* is also derived from the price of the underlying stock, except their respective market prices move in opposite directions. We can see that the value of the put remains constant until the market price of the corresponding stock drops to the exercise price ($50) on the put. Then, as the price of the stock continues to fall, the value of the option increases accordingly. And again, note that since the put cost $500, you don't start making money on the investment until the price of the stock drops below the breakeven point of $45 a share. Beyond that point, the profit from the put is defined by the extent to which the price of the underlying stock continues to fall over the remaining life of the option.

Fundamental Value

As we saw above, the fundamental value of a put or call depends ultimately on the exercise price stated on the option, as well as on the prevailing market price of the underlying common stock. More specifically, *the value of a call* is determined according to the following simple formula:

Equation 11.5

$$\text{Fundamental value of a call} = \left(\begin{array}{c}\text{market price of}\\ \text{underlying}\\ \text{common stock}\end{array} - \begin{array}{c}\text{strike price}\\ \text{on}\\ \text{the call}\end{array}\right) \times 100$$

$$V = (MP - SPC) \times 100$$

In other words, the fundamental or underlying value of a call is nothing more than the difference between market price and strike price. As implied in Equation 11.5, a call has value whenever the market price of the underlying stock (or financial asset) *exceeds* the strike price stipulated on the call. A simple illustration will show that a call carrying a striking price of $50 on a stock presently trading at $60 has a value of $1,000 [($60 − $50) × 100 = $10 × 100].

A put, on the other hand, cannot be valued in the same way, since puts and calls allow the holder to do different things. To find *the value of a put,* simply reverse the order of the equation a bit, so that we have:

Equation 11.6

$$\text{Fundamental value of a put} = \left(\begin{array}{c}\text{strike price}\\ \text{on the}\\ \text{put}\end{array} - \begin{array}{c}\text{market price of}\\ \text{underlying}\\ \text{common stock}\end{array}\right) \times 100$$

$$V = (SPP - MP) \times 100$$

In this case, you can see that a put has value so long as the market price of the underlying stock (or financial asset) *is less than* the strike price stipulated on the put.

In-the-Money/Out-of-the-Money

When written, options do not necessarily have to carry strike prices at the prevailing market prices of the underlying common stocks. And as an option subsequently trades on the listed exchanges, the price of the option will move in response to

moves in the price of the underlying common stock. When a call has a strike price that is less than the market price of the underlying common stock, it has a positive value and is known as an **in-the-money** option. A major portion of the option price in this case is based on (or derived from) the fundamental or intrinsic value of the call. When the strike price exceeds the market price of the stock, the call has no "real" value and is known as an **out-of-the-money** option. Since the option has no intrinsic value, its price is made up solely of investment premium. These terms are much more than convenient, exotic names given to options. As we will see below, they characterize the investment behavior of options and can affect return and risk. A put option, by the way, is in-the-money when its strike price is greater than the market price of the stock; it is out-of-the-money when the market price of the stock exceeds the strike price.

in-the-money
a call option with a strike price less than the market price of the underlying security; a put option with strike price greater than the market price of the underlying security.

out-of-the-money
a call option with no real value because the strike price exceeds the market price of the stock; a put option whose market price exceeds the strike price.

Option Prices and Premiums

Put and call values, as found according to Equations 11.5 and 11.6, denote what the options *should* be valued and trading at. This rarely occurs, however, as these securities almost always trade at prices that exceed their intrinsic or fundamental values, especially for options that still have a long time to run. That is to say, puts and calls nearly always trade at premium prices, which may explain why the term **option premium** is used to describe the market price of listed put and call options. Technically, option premium is the (quoted) price the buyer pays for the *right* to buy or sell a certain amount of the underlying common stock (or other financial asset) at a specified price for a specified period of time. The option seller, on the other hand, receives the premium and gets to keep it whether the option is exercised or not. To the option seller, it represents compensation for agreeing to fulfill certain *obligations* of the contract. As we'll see below, the term *premium* is also used to denote the extent to which the market price of an option exceeds its fundamental/intrinsic value. Thus, to avoid confusion and keep matters as simple as possible, we'll use the word *price* in the usual way: to describe the amount it takes to buy an option in the market.

option premium
the quoted price the investor pays to buy a listed put or call option.

What Drives Options Prices?

Option prices can be reduced to two separate components. The first is the *fundamental (or intrinsic) value* of the option, which is driven by the current market price of the underlying common stock. That is, as we saw in Equations 11.5 and 11.6, the greater the difference between the market price of the stock and the strike price on the option, the greater the value of the put or call. The second component of an option price is customarily referred to as the **time premium** and represents, in effect, the excess value imbedded in the option price. That is, time premium is the amount by which the option price exceeds the option's fundamental value. Table 11.1 lists some of the prices for Pfizer *calls* from the quotes shown in Figure 11.3. These quoted prices (Panel A) are then separated into fundamental value (Panel B) and time premium (Panel C). Note that there are three strike prices used—$65, $70, and $75. Relative to the market price of the stock ($71.75), one strike price ($65) is

time premium
the amount by which the option price exceeds the option's fundamental value.

TABLE 11.1 Option Price Components: Pfizer Calls

Stock Price	Strike Price	Expiration Months		
		Feb.	Mar.	June
Panel A: Quoted Options Prices				
71¾	65	s	7¾	9¾
71¾	70	2¼	3⅞	6¾
71¾	75	3/16	1½	3⅞
Panel B: Underlying Fundamental Values				
71¾	65	—	6¾	6¾
71¾	70	1¾	1¾	1¾
71¾	75	neg.	neg.	neg.
Panel C: Time Premiums				
71¾	65	—	1	3
71¾	70	½	2⅛	5
71¾	75	3/16	1½	3⅞

s: No option available at that strike price and expiration date.

neg.: Options have negative intrinsic/fundamental values.

well below market—this is an in-the-money call. One ($70) is fairly near the market. The third ($75) is well above the market—this is an out-of-the-money call. As such, you'll notice a considerable difference in the make-up of the options prices as we move from an in-the-money call to an out-of-the-money call.

Panel B in the table lists the fundamental values of the call options, as determined by Equation 11.5. For example, note that while the March 65 call (the call with the March expiration date and $65 strike price) is trading at 7¾, its intrinsic value is only 6¾. The difference, essentially, is how much the option is trading in-the-money. Thus, while most of the price of the March 65 call is made up of fundamental value, certainly not all of it is. Even better, look at the calls with the $75 strike price: None of these has any fundamental value; they're all out-of-the-money, as their prices are made up solely of time premium. Basically, the value of these options is determined entirely by the *belief* that the price of Pfizer stock could rise to over $75 a share before the options expire. Panel C shows the amount of premium imbedded in the call prices, which represents the difference in the quoted call prices (Panel A) and the call's fundamental value (Panel B). It shows that the price of every traded option contains at least some premium. Indeed, unless the options are about to expire, you'd expect them to be trading at a premium. And note with all three strike prices, the longer the time to expiration, the greater the size of the premium.

As you might expect, *time to expiration* is an important element in explaining the size of the price premium in Panel C. But there are a couple of other variables that also have a bearing on the behavior of this premium. One is *the price volatility of*

the underlying common stock. Other things being equal, the more volatile the stock, the more it enhances the speculative appeal of the option—and, therefore, the bigger the time premium. In addition, the size of the premium is directly related to *the level of interest rates*. That is, the amount of premium imbedded in a call option will generally increase along with interest rates. In addition, other, less important variables include the dividend yield on the underlying common stock, the trading volume of the option, and the exchange on which the option is listed. For the most part, however, it should be clear that four major forces drive the price of an option. They are, in descending order of importance: (1) the price behavior of the underlying common stock (or other financial asset); (2) the amount of time remaining to expiration; (3) the amount of price volatility in the underlying common stock (or financial asset); and (4) the general level of interest rates.

Option Pricing Models

Financial economists, notably Professors Fisher Black and Myron Scholes, have developed option pricing formulas that are capable of valuing call options (and with minor modifications, put options) within a few cents of their fair values. Many active market traders use these formulas, which are most suitable for use with pre-programmed personal computers (or even some hand-held calculators), to identify and trade over- and undervalued options. It is not surprising that the parameter values required to implement these models follow directly from those variables identified above. For example, the five parameters used by the Black–Scholes Option Pricing Model are: (1) the risk-free rate of interest, (2) the price volatility of the underlying stock, (3) the current price of the underlying stock, (4) the strike price of the option, and (5) the option's time prior to expiration. After inputting these variables to a computer or pre-programmed calculator, fair market values for the options in question are produced within seconds. Options with market prices above those produced by the formula are considered overvalued and vice versa.

Trading Strategies

For the most part, stock options can be used in three types of trading strategies: (1) buying puts and calls for speculation; (2) hedging with puts and calls; and (3) option writing and spreading.

Buying for Speculation

Buying for speculation is the simplest and most straightforward use of puts and calls. Basically, it is just like buying stock (''buy low, sell high'') and in fact represents an alternative to investing in stock. For example, if an investor feels the market price of a particular stock is going to move up, one way of capturing that price appreciation is to buy a call on the stock. In contrast, if an investor feels the stock is about to drop in price, a put could convert the price decline into a profitable situation. In essence, investors buy options rather than stock whenever the options

are likely to yield a greater return. The principle here, of course, is to get the biggest return from one's investment dollar—something that can often be done with puts and calls, due to the added leverage they offer. Plus, as we saw in Figure 11.4 (page 459), options offer downside protection—the most you can lose is the cost of the option, which is less than the cost of the underlying stock. Thus, by using options as a vehicle for speculation, the investor can put a cap on losses and still get basically the same profit potential as the underlying common stock.

To illustrate the essentials of speculating with options, consider a situation in which you have uncovered a stock you feel will move up in price over the next six months. What you would like to find out at this point is what would happen if you were to buy a call on this stock rather than investing directly in the firm's common. To find out, let's see what the numbers show. Assume the price of the stock is now \$49, and you anticipate that within six months it will rise to about \$65. In order to determine the relative merits of your investment alternatives, you need to determine the expected return associated with each course of action. Because call options have short lives, holding period return can be used to measure yield. (Here we can measure HPR by using a formula similar to Equation 11.3, shown earlier in this chapter.) Thus, if your expectations about the *stock* are correct, it should go up by \$16 and in so doing provide stockholders with a 33 percent holding period return [(\$65 − \$49) ÷ \$49 = \$16 ÷ \$49 = .33]. But there are also some listed options available on this stock, so let's see how they would do. We will use for illustrative purposes two six-month calls that carry \$40 and \$50 striking prices, respectively. A recap of these two call alternatives, relative to the behavior of the underlying common stock, is summarized in Table 11.2. Clearly either call option represents a superior investment to buying the stock itself. The dollar amount of profit may be a

TABLE 11.2 Speculating with Call Options

	100 Shares of Underlying Common Stock	Six-Month Call Options on the Stock	
		\$40 Striking Price	\$50 Striking Price
TODAY			
Market value of stock (at \$49/sh.)	\$4,900		
Market price of calls*		\$1,100	\$ 400
SIX MONTHS LATER			
Expected value of stock (at \$65/sh.)	\$6,500		
Expected price of calls*		\$2,500	\$1,500
Profit	\$1,600	\$1,400	\$1,100
Holding period return	33%	127%	275%

*The price of the calls was computed according to Equation 11.5 and includes some investment premium in the purchase price of the calls, but *none* in the expected sales price.

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bit more with the stock, but notice that the size of the required investment ($4,900) is *a lot* more, too.

Observe that one of the calls is an in-the-money option (the one with the $40 striking price) and the other is out-of-the-money. The difference in returns generated by these calls is rather typical: that is, investors are usually able to generate better rates of return with lower-priced (out-of-the-money) options and also enjoy less exposure to loss. Of course, the major drawback of out-of-the-money options is that their price is made up solely of investment premium—a sunk cost that will be lost if the stock does not move in price.

To see how investors can speculate in puts, consider the following situation: Assume that the price of your stock is now $51, but now you anticipate a drop in price to about $35 within the next six months. If that occurs, you could short sell the stock and make a profit of $16 per share. (See Chapter 2 for a discussion of short selling.) Alternatively, an out-of-the-money put (with a striking price of $50) can be purchased for, say, $300. Again, if the price of the underlying stock does indeed drop, investors will make money with the put. The profit and rate of return on the put are summarized below, along with the comparative returns from short selling the stock:

	Buy 1 Put	Short Sell 100 Shares of Stock
Purchase price (today)	$ 300	
Selling price (6 months later)	1,500	
Short sell (today)		$5,100
Cover (6 months later)		3,500
Profit	$1,200	$1,600
Holding period return	400%	63%*

*Assumes the short sale was made with a required margin deposit of 50 percent.

Once again, in terms of holding period return, the stock option is the superior investment vehicle by a wide margin. Of course, not all option investments perform as well as the ones in our examples; success in this strategy rests on picking the right underlying common stock. Thus, *security analysis and proper stock selection are critical dimensions of this technique*. It is a highly risky investment strategy, but it may be well suited for the more speculatively inclined investor.

Hedging

hedge
a combination of two or more securities into a single investment position for the purpose of reducing or eliminating risk.

A **hedge** is really nothing more than a combination of two or more securities into a single investment position for the purpose of reducing risk. This strategy might involve, for example, buying stock and simultaneously buying a put on that same stock; or it might consist of short selling some stock and then buying a call. There are many types of hedges, some of which are very sophisticated and others very simple. They are all used for the same basic reason: to earn or protect a profit without exposing the investor to excessive loss. For example, an options hedge may

be appropriate if you have generated a profit from an earlier common stock investment and wish to protect that profit, or if you are about to enter into a common stock investment and wish to protect your money by limiting potential capital loss. If you hold a stock that has gone up in price, the purchase of a put would provide the type of downside protection you need; the purchase of a call, in contrast, would provide protection to a short seller of common stock. Thus, option hedging always involves two transactions—one, the initial common stock position (long or short), and the other, the simultaneous or subsequent purchase of the option.

Let's examine a simple options hedge in which a put is used to limit capital loss or protect profit. Consider an investor, Keith Gibson, who wants to buy 100 shares of stock. Being a bit apprehensive about the stock's outlook, Keith decides to use an option hedge to protect his capital against loss. He simultaneously buys the stock and a put on the stock (which fully covers the 100 shares owned); this type of hedge is known as a *protective put*. Preferably, the put would be a low-priced option with a striking price at or near the current market price of the stock. Suppose Keith purchases the common at $25 and pays $150 for a put with a $25 striking price. Now, no matter what happens to the price of the stock over the life of the put, Keith can lose no more than $150; at the same time, there's no limit on the gains. If the stock does not move, he will be out the cost of a put. If it drops in price, then whatever is lost on the stock will be made up with the put. However, if the price of the stock goes up (as hoped), the put becomes useless, but Keith has earned capital gains on the stock. The essentials of this option hedge are shown in Table 11.3. The

TABLE 11.3 Limiting Capital Loss with a Put Hedge

		Stock	Put*
TODAY			
Purchase price of the stock		$25	
Purchase price of the put			$1½
SOMETIME LATER			
A. Price of common goes *up* to:		$50	
Value of put			$0
Profit:			
100 shares of stock ($50 − $25)	$2,500		
Less: Cost of put	−150		
Profit:	$2,350		
B. Price of common goes *down* to:		$10	
Value of put (See Equation 11.6)			$15
Profit:			
100 shares of stock (loss: $10 − $25)	−$1,500		
Value of put (profit)	+ 1,500		
Less: Cost of put	− 500		
Loss:	$ 150		

*Put is purchased simultaneously and carries a striking price of $25

$150 paid for the put is sunk cost, and that's lost no matter what happens to the price of the stock; in effect, it is the price paid for the hedge. Moreover, this hedge is good only for the life of the put. When this put expires, Keith will have to replace it with another put or forget about hedging his capital.

The other basic use of an option hedge involves entering into the options position *after* a profit has already been made on the underlying stock. This could be done because of investment uncertainty, or for tax purposes (to carry over a profit to the next taxable year). For example, if Wendy Willson bought 100 shares of stock at $35 and it moved to $75, there would be a profit of $40 per share to protect. The profit could be protected with an option hedge by buying a put. Assume Wendy buys a three-month put with a $75 striking price at a cost of $250. Now, regardless of what happens to the stock over the life of the put, Ms. Willson is guaranteed a minimum profit of $3,750 (the $4,000 profit in the stock made so far, less the $250 cost of the put). This can be seen in Table 11.4. Notice that if the price of the stock should fall, the worst that can happen is a guaranteed minimum profit of $3,750. And there is still *no limit on how much profit can be made:* as long as the stock continues to go up, the investor will reap the benefits. (Note that although this

TABLE 11.4 Protecting Profits with a Put Hedge

		Stock	Three-Month Put with a $75 Striking Price
Purchase price of the stock (some time ago)		$35	
TODAY			
Market price of the stock		$75	
Market price of the put			$2½
THREE MONTHS LATER			
A. Price of common goes *up* to:		$100	
Value of put			$0
Profit:			
100 shares of stock ($100 − $35)	$6,500		
Less: Cost of put	−250		
Profit:	$6,250		
B. Price of common goes *down* to:		$50	
Value of put (See Equation 11.6)			$25
Profit:			
100 shares of stock ($50 − $35)	$1,500		
Value of put (profit)	2,500		
Less: Cost of put	− 250		
Profit:	$3,750		

INVESTOR INSIGHTS

Covered Strangles: A Way to Put Market Volatility to Work for You

Who says stock-market volatility is bad? Wild gyrations in stock prices often spark a rising chorus of complaints from individual investors, many market professionals and some members of Congress. But for shrewd investors, there's a way to make money on just about anything—and volatile stock prices are no exception. While all that jumping around may unnerve stock-market investors, it means fatter premiums and bigger potential profits for investors who dabble in the options market.

Investors who *buy* options pay a premium to the investors who *sell* options. And in times of stock-market volatility, options sellers demand higher premiums to compensate for the increased risk of being forced to sell their stock or compelled to purchase additional shares. Those bigger premiums can mean extra income for investors who follow a cautious approach. One strategy suggested by options-market professionals: a "covered strangle sale," sometimes referred to as a "combination write."

While it sounds arcane, *a covered strangle is simply the sale of both call and put options on a stock you already own*. Sellers of call options must be prepared to deliver the stock at the agreed strike price if the stock rises to that level and the owner of the call exercises the option. The premium paid for the option increases the effective price received for the shares. If the stock's price never exceeds the strike price of the option, the stock won't be called away. In that event, the call will expire worthless, and the premium is simply additional income.

Sellers of puts, on the other hand, must be prepared to buy additional stock at the strike price if the stock declines sufficiently in price and the put owner exercises the option. In this case, the premium income effectively reduces the cost of the additional shares the put seller must buy. If the stock doesn't drop below the put's strike price, the put won't be exercised. Again, the put will expire worthless, and the premium is simply additional income.

discussion pertains to put hedges, it should be clear that call hedges can also be set up to limit the loss or protect a profit on a short sale. For example, when a stock is sold short, a call can be purchased to protect the short seller against a rise in the price of the stock—with the same basic results as outlined above.)

Option Writing and Spreading

The advent of listed options has led to many intriguing options trading strategies. Yet, in spite of the apparent appeal of these exotic techniques, there is one important point that all the experts agree on: *Such specialized trading strategies should be left to experienced investors who fully understand their subtleties*. Our goal at this point is not to master these specialized strategies, but to learn in general terms what they are and how they operate. There are two types of specialized options strategies: (1) writing options and (2) spreading options.

A covered strangle is a particularly appealing strategy for investors who are interested in takeover stocks. For example, suppose an investor had bought NCR Corp. stock at $53 a share as an attractive investment and as a stock that has been mentioned in takeover rumors. Assume the stock is now selling for around $60. A covered strangle could be written on this stock by selling a March 65 call option for $238 per 100 shares, while simultaneously selling a March 55 put option for $125 per 100 shares. The total premium taken in would be $363. (Note that in this case the investor is writing/selling *both* a put and a call on the stock, whereas in a covered call, the investor writes/sells only a call on the stock.) With the covered strangle in place, if the stock rallies above the call option's $65 strike price, and stays there between now and the options' expiration in March, the stock will be called away from the investor. The effective price the investor receives will be $68.63 a share ($65 plus premium income of $3.63 a share). If the stock drops below the put option's $55 strike price, and remains there, the investor will be asked to purchase an additional 100 shares for each put sold. The effective purchase price would be the $55 strike price less the $3.63-a-share premium, or $51.37. Since the investor thought the stock a good buy at $53, he or she is likely to think it an even better investment at $51.37.

A danger with using a covered strangle is that investors who sell call options may not enjoy the full run-up in the price of a hot stock. That's because the shares will be called away before the stock's market price peaks, leaving call-option sellers with only part of the gain they would have realized if they hadn't been forced to sell. Another risk is that investors who sell puts have to purchase the additional shares at the agreed price, even if the stock's market price keeps falling after it declines below the strike price. Thus, investors could end up paying more for the shares than if they had waited and simply bought them in the market.

Source: Adopted from Stanley W. Angrist, "Undaunted by the Wild Market? Try a Covered Strangle," *The Wall Street Journal,* November 6, 1989, p. C1.

Writing Options. Generally, investors write options because they feel the price of the underlying stock is going to move in their favor. That is, it is not going to rise as much as the buyer of a call expects, or fall as much as the buyer of a put hopes. *And more often than not, the option writer is right;* that is, he or she is going to make money far more often than the buyer of the put or call. Such favorable odds explain, in part, the underlying economic motivation for writing put and call options. Options writing represents an investment transaction to the writers, since they receive the full option premium (less normal transaction costs, of course) in exchange for agreeing to live up to the terms of the option.

naked options
options written on securities not owned by the writer.

Investors can write options in one of two ways. One is to write **naked options,** which are options on stock not owned by the writer. The investor simply writes the put or call, collects the option premium, and hopes that the price of the underlying stock does not move against him or her. If successful, naked writing can be highly

profitable due to the very modest amount of capital required. One thing that should be kept in mind, however, is that *the amount of return to the writer is always limited to the amount of option premium received*. On the other hand, there is really no limit to loss exposure. And that's the catch: The price of the underlying stock can rise or fall by just about any amount over the life of the option, and in so doing deal a real blow to the naked put or call writer.

covered options options written against stock owned (or short sold) by the writer.

Such risk exposure can be partially offset by writing **covered options,** which involves writing options against stocks which the investor (writer) already owns or has a position in. For example, an investor could write a call against stock she owns, or a put against stock she has short sold. In this way she can use the long or short position to meet the terms of the option. Such a strategy represents a fairly conservative way to generate attractive rates of return. The object is to write a slightly out-of-the-money option, pocket the option premium, and hope that the price of the underlying stock will move up or down to (but not exceed) the option's striking price. In effect, what an investor is doing is adding option premium to the other usual sources of return that accompany stock ownership or short sales (dividends and/or capital gains). But there's more: While the option premium adds to the return, it also reduces risk, since it can be used to cushion a loss if the price of the stock move against the investor. There is a hitch to all this, of course, and that is the amount of return the covered option investor can realize is limited. For once the price of the underlying common stock begins to exceed the striking price on the option, the option becomes valuable. And once that happens, the investor starts *losing* money on the options; from this point on, for every dollar the investor makes on the stock position, she loses an equal amount on the option position. That's a major risk of writing covered call options—if the price of the underlying stock takes off, you'll miss out on the added profits.

To illustrate the ins and outs of covered call writing, let's assume you own 100 shares of P/F/P, Inc.—an actively traded, high-yielding common stock. The stock is currently trading at 73½ and pays *quarterly* dividends of $1 a share. You decide to write a 3-month call on P/F/P giving the buyer the right to take the stock off your hands at $80 a share (i.e., the call carries a strike price of 80). Such options are trading in the market at 2½, so you receive $250 for writing the call. Now if you're like most covered call writers, you fully intend to hold on to the stock, so you'd like to see the price of P/F/P stock rise to no more than 80 by the expiration date on the call. If that happens, not only do you earn the dividends and capital gains on the stock, you also get to pocket the $250 you received when you wrote the call, since it (the call option) will expire worthless. Basically, you've just *added* $250 to the quarterly return on your stock.

Table 11.5 summarizes the profit and loss characteristics of this covered call position. Notice that the maximum profit on this transaction occurs *when the market price of the stock equals the strike price on the call*. That means if the price of the stock keeps going up, you miss out on the added profits. Even so, the $1,000 profit that's earned at a stock price of 80 or above translates into a (3-month) holding period return of a very respectable 13.6 percent (i.e., $1,000/$7,350)—which represents an *annualized* return of nearly 55 percent. With this kind of return potential,

TABLE 11.5 Covered Call Writing

		Stock	Three-Month Call with an $80 Strike Price
Current market price of the stock		$73½	
Current market price of the call			$2½
THREE MONTHS LATER			
A. Price of the stock is *unchanged:*		$73½	
Value of the call			$0
Profit:			
Quarterly dividends received	$100		
Proceeds from sale of call	$250		
Total profit:	$350		
B. Price of the stock goes *up* to:		$80 ← PRICE WHERE MAXIMUM PROFIT OCCURS	
Value of the call			$0
Profit:			
Quarterly dividends	$100		
Proceeds from sale of call	$250		
Capt. Gains on stock ($80 − 73½)	$650		
Total profit:	$1,000		
C. Price of the stock goes *up* to:		$90	
Value of the call (See Equation 11.5)			$10
Profit:			
Quarterly dividends	$100		
Proceeds from sale of call	$250		
Capt. Gains on stock ($90 − 73½)	$1,650		
Less: Loss on call	⟨$1,000⟩		
Net profit:	$1,000		
D. Price of the stock *drops* to:		$71 ← BREAKEVEN PRICE	
Value of the call			$0
Profit:			
Capital loss on stock (71 − 73½)	⟨$250⟩	} $0 profit or loss . . .	
Proceeds from sale of call	$250		
Quarterly dividends	$100		
Net profit:	$100		

it's not difficult to see why covered call writing is so popular. Plus, as we see in situation D in the table, covered call writing also adds a little cushion to losses, as the price of the stock has to drop more than 2½ points (which is what you received when you wrote/sold the call) before you start losing money. There are a number of variations on the covered call theme; one of them is something called a *covered strangle,* and it's explained in the accompanying *Investor Insights* box.

option spreading combining two or more options with different strike prices and/or expiration dates into a single transaction.

Spreading Options. **Option spreading** is nothing more than combining two or more options into a single transaction. We could create an options spread, for example, by simultaneously buying and writing options on the same underlying stock. These cannot be identical options, however; they must differ with respect to striking price and/or expiration date. Spreads are a very popular use of listed options, and they account for a substantial amount of the trading activity on the listed options exchanges. These spreads go by a variety of exotic names, such as "bull spreads," "bear spreads," "money spreads," "vertical spreads," and "butterfly spreads." Each is different and is constructed to meet a certain type of investment goal. Consider, for example, a vertical spread; this particular type of spread would be set up by *buying* a call at one strike price and then *writing* a call (on the same stock and for the same expiration date) at a different—higher—strike price. A case in point: buy a February call on XYZ at a strike price of, say, 30 *and* simultaneously sell (write) a February call on XYZ at a strike price of 35. As bizarre as it may sound, such a position would generate a hefty return if the price of the underlying stock goes up by just a few points. Other spreads are used to profit from a falling market, and still others try to make money when the price of the underlying stock goes up *or* down. Whatever the objective, most spreads are created to take advantage of differences in prevailing option prices and premiums. The payoff from spreading is usually substantial, but so is the risk. In fact, some spreads that seem to involve almost no risk may end up with devastating results if the market and the "spread" (or difference) between option premiums move against the investor.

option straddle the simultaneous purchase (or sale) of a put and a call on the same underlying common stock.

A variation of this theme involves an **option straddle,** the simultaneous purchase (or sale) of *both* a put *and* a call on the same underlying common stock. Unlike spreads, straddles will normally involve the same strike price and expiration date. Here, the object is to earn a profit from *either* an increase or decrease in the price of the underlying stock. Otherwise, the principles of straddles are much like those for spreads: to build an investment position with combinations of options that will enable an investor to capture the benefits of certain types of stock price behavior. But keep in mind that if the prices of the underlying stock and/or the option premiums do not behave in the anticipated manner, the investor loses. *Spreads and straddles are extremely tricky and should be used only by knowledgeable investors.*

Stock-Index Options

Imagine being able to buy or sell a major stock market index like the S&P 500—and at a reasonable cost. Think of what you could do: If you felt the market was heading up, you could invest in a security that tracks the price behavior of the S&P 500 index and make money when the market goes up. No longer would you have to go through the often haphazard process of selecting specific stocks that you *hope* will capture the market's performance. Rather, you could *play the market as a whole.* Well, that's exactly what investors can do with *stock-index options*—puts and calls that are written on major stock market indexes. Index options have been around for about ten years (since 1983) and have become immensely popular with both individual and institutional investors. In fact, the volume of trading in index options is

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equal to about 70 percent of all the trading done in stock options. That's quite a feat when you consider that nearly all of the trading in index options is confined to just *six* different contracts, compared to the more than *700* different stock option contracts. Let's now take a closer look at these popular and often highly profitable investment vehicles.

Contract Provisions

stock-index option a put or call option written on a specific stock market index, such as the S&P 500.

Basically, a **stock-index option** is nothing more than a put or a call written on a specific stock market index, like the S&P 500. The underlying security in this case is the specific market index. Thus, when the market index moves in one direction or another, the value of the index option moves accordingly. Since there are no stocks or other financial assets backing these options, settlement is defined in terms of cash. Specifically the cash value of an *index option* is equal to 100 times the published market index that underlies the option. For example, if the S&P 500 is at 410, the cash value of an S&P 500 index option is: $100 \times 410 = \$41{,}000$; if the underlying index moves up or down in the market, so will the cash value of the option.

In early 1992, there were some 15 stock market index options available. Many of these, however, are very thinly traded and don't have much of a following. There are six indexes that dominate the market and account for the vast majority of trading activity. Those six are:

- S&P 500 Index (traded on the CBOE)
- S&P 100 Index (CBOE)
- Value Line Index (Philadelphia Exchange)
- Major Market Index (AMEX)
- Institutional Index (AMEX)
- S&P MidCap Index (AMEX)

The S&P 100 and S&P 500 are, by far, the most popular index options. In fact, these two are *the most actively traded of all listed options*. As the above list reveals, stock-index options are available not only on the popular S&P indexes (including its newest, the S&P MidCap, which tracks the market behavior of 400 mid-size companies), but also on the Value Line index (of the roughly 1,700 companies tracked by Value Line) and an index of the 75 stocks that are most favored by big institutional investors. And although the most popular index of them all—the Dow Jones Industrial Average—has refused to let itself be the basis of an index option, the AMEX has come up with an index (the Major Market index) designed to imitate the Dow; this index is made up of 20 stocks, 17 of which are part of the DJIA.

There are both puts and calls available on index options. They are valued and have issue characteristics like any other put or call. That is, a *put* lets a holder profit from a *drop* in the market (when the underlying market index goes down, the value of a put goes up); a *call* enables the holder to profit from a market that's going *up*. As seen in Figure 11.5, these options even have a quotation system that is virtually identical to puts and calls on stocks.

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Chicago Board

S&P 100 INDEX-$100 times Index

Strike Price	Calls–Last Feb	Mar	Apr	Puts–Last Feb	Mar	Apr
330	...	...	...	1/16	...	...
335	...	...	...	...	1/4	...
340	...	46 1/2	...	...	5/16	1
345	...	...	...	...	7/16	...
350	36	...	...	...	5/8	1 13/16
355	32	32 1/2	...	1/16	13/16	2 1/8
360	27	27 1/4	...	1/16	1 1/16	2 5/8
365	21	22 7/8	24 1/2	1/16	1 7/16	3 1/4
370	16 7/8	18	21 1/8	1/8	1 15/16	4 1/4
375	11 7/8	14 3/8	14 1/2	1/8	2 3/4	5 3/8
380	7 1/8	10 3/4	14	5/16	3 7/8	7 1/8
385	2 5/8	7 1/2	10 3/8	15/16	5 3/4	8 1/2
390	1/2	4 3/4	7 3/4	3 5/8	8 1/8	10 3/4
395	1/16	2 3/4	5	8 3/8	11 1/2	14 7/8
400	1/16	1 9/16	3 3/8	...	15 1/2	17 1/4
405	1/16	13/16	2 5/16	19 1/2	19 1/4	22 1/2
410	...	7/16	1 1/2	...	24 1/2	...

Total call volume 224,406 Total call open int. 420,423
Total put volume 203,680 Total put open int. 528,844
The index; High 386.90; Low 381.12; Close 386.78, +5.66

American Exchange

MAJOR MARKET INDEX

Strike Price	Calls–Last Feb	Mar	Apr	Puts–Last Feb	Mar	Apr
270	...	...	1 3/16	...	1/8	...
275	...	1/4	...	...	...	25 1/4
300	...	...	...	...	1/4	...
305	...	...	...	...	3/8	...
310	...	...	...	...	3/8	...
315	...	...	...	...	9/16	...
320	...	...	...	...	5/8	...
325	...	24 7/8	...	...	1	2 1/4
330	20 3/4	20 1/2	...	1/16	1 3/16	2 11/16
335	15 1/4	16 3/8	...	1/16	1 13/16	...
340	10 1/4	12 1/2	15	3/16	2 9/16	4 3/4
345	5 7/8	9 3/8	...	1/4	1	6 1/4
350	1 3/4	6	...	1 3/8	5 5/8	7 3/4
355	3/8	3 5/8	...	4 5/8	7 7/8	...
360	1/16	2 1/16	3 3/4	9 3/4	14 1/4	13 1/2
365	1/16	1 1/8	2 1/16	...	...	...

Total call volume 8.283 Total call open int. 40,818
Total put volume 8.635 Total put open int. 57,117
The Index: High 350.79; Low 343.90; Close 350.36, +6.46

• FIGURE 11.5 Quotations on Index Options

The quotation system used with index options is similar to that used with stock options. That is, the prices for puts and calls are listed relative to their expiration dates (February, March, or April), and to their strike prices; even the latest market value of the index itself is shown—see "index close." *(Source: The Wall Street Journal.)*

Putting a Value on Stock-Index Options

Like equity options, the market price of index options is a function of the difference in the strike price on the option (which is stated in terms of the underlying index) and the latest published stock market index. To illustrate, consider the highly popular S&P 100 Index, traded on the CBOE. As the index option quotes in Figure 11.5 reveal, this index recently closed at 386.78; at the same time, there was an April *call* on this index that carried striking price of 380. Given that a stock-index *call* will have a value so long as the underlying index exceeds the index striking price (just the opposite for *puts*), the intrinsic value of this call is 386.78 − 380 = 6.78. Now, as we can see in the quotes, this call was trading at 14, some 7.22 points above the call's underlying fundamental value; this difference, of course, was the *time premium*. Just like stock options, the amount of premium in an index option tends to *increase* with *longer* options (note the difference between February and April options) and with *more volatile* market conditions. Returning to our example, if the S&P 100 Index were to go up to 410 by late April (the expiration date on the call), this option would be quoted at 410 − 380 = 30; since all index options are valued in multiples of $100, this option would be worth $3,000. If an investor had purchased the option when it was trading at 14, it would have cost $1,400 and in a little over two months would have generated a profit of $3,000 − $1,400 = $1,600. From this example, it should be clear that because they're a form of derivative security, *index options are valued according to how the market (i.e., market index) performs*. Thus, calls should be more highly valued if the market is expected to go up in the future, whereas puts should be more highly valued in falling markets.

Investment Uses

Although they can be used in spreads and straddles, index options are used most often for speculating or for hedging. As a speculative vehicle, they provide investors with the opportunity to play the market with a relatively small amount of capital. Like any other put or call, *index options provide attractive leverage opportunities and at the same time, limit exposure to loss to the price paid for the option.*

Index options are equally effective as *hedging vehicles*. In fact, hedging is a *major use* of index options and accounts for a good deal of the trading in these securities. To see how these options can be used for hedging, consider an investor who holds a diversified portfolio of common stocks. One way to protect the whole portfolio against an adverse market is to buy *puts* on one of the market indexes. If you think the market's heading down and you hold a portfolio of, say, a dozen different stocks, you can protect your capital by selling all your stocks. However, that could become very expensive, especially if you plan to get back into the market after it drops. One way to "have your cake and eat it, too" is to hedge your stock portfolio with a stock index put. In this way, if the market does go down you'll make money on your puts, which can then be used to buy more stocks at the lower, "bargain" prices. On the other hand, if the market doesn't retreat but continues to go up, *you'll be out only the cost of the puts*—which could well be recovered from the increased value of your stock holdings. The principles of hedging with index

INVESTOR INSIGHTS

Using Index Options to Protect a Whole Portfolio of Stocks

When the stock market starts heading down, investors begin to worry about protecting the value of their portfolios. But simply liquidating their stock holdings and putting the proceeds into a money market fund is too drastic a step for most people. Not only would they incur substantial brokerage commissions and capital gains taxes; they also would risk being caught on the sidelines if the market rally regains its breath. There is, however, a far less drastic—and less costly—way for investors to shield their portfolios from the possibility of a sustained sell-off. Many market specialists say investors should consider buying "insurance" in the form of put options.

Put options based on a stock index offer a simple method of insuring the value of an entire portfolio with a single trade. That can be especially helpful because many issues in an investor's portfolio may not have individual put options traded on them. Such portfolio protection is in many ways no different from any other kind of insurance. The more protection investors want, and the less risk they are willing to bear, the more the insurance costs. For example, suppose an investor wants to hedge a $100,000 stock portfolio. Also suppose that after examining the characteristics of the major stock indexes, the investor concludes that the S&P 100 comes closest to matching the portfolio. With the S&P 100 index standing at, say, 372, the market value of the S&P 100 index would be $37,200. So the investor would have to buy three puts to approximate the total value of the $100,000 portfolio.

The investor might decide to buy three "May 360" puts, which are puts that expire in 3 months (i.e., in May) and have a strike price of 360. The price of these puts is about 4. To turn that into dollars, an investor multiplies by 100; the puts would cost about $400 each. That would mean $1,200 for all three—or 1.2% of the value of the $100,000 portfolio. Now suppose the market retreats about 15% from current levels, which would bring the S&P 100 down to about 318. Each of the May 360 puts would be worth a

options are exactly the same as those for hedging with stock options; the only difference is that with index options, your're trying to protect a *whole portfolio* of stocks rather than *individual* stocks.

There is one important consideration to keep in mind, however: The amount of profit you make, or protection you obtain, depends in large part on how closely the behavior of your stock portfolio is matched by the behavior of the index option you employ in the hedge. There is *no guarantee* that the two will behave in the same way. You should, therefore, select an index option that closely reflects the nature of the stocks in your portfolio. If, for example, you hold a number of OTC stocks, you might be well advised to select something like the National OTC Index as the hedging vehicle. If you hold mostly blue chips, you might choose the Major Market Index. While you probably can't get dollar-for-dollar portfolio protection, at least you should try to get as close a match as possible. After all, the closer the match, the

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minimum of 42 points (360 minus 318), or $4,200. After paying their cost, the investor would have a profit on the puts of: $11,400 (i.e., $4,200 − $400 = $3,800 × 3), which in turn would offset a substantial portion of the $15,000 the portfolio would have lost in a 15% decline.

By purchasing puts with strike prices that are 12 points below the current level of the S&P index, the investor is effectively insuring the portfolio against any losses that occur *after* the market has fallen 12 points, or 3.2%. In other words, the portfolio protection doesn't kick in until the index falls to 360. Had the investor been willing to bear more of the market risk, the cost of the insurance could have been reduced even more by purchasing puts with even lower strike prices. On the other hand, an investor who wanted to be fully insured might have bought puts with a higher strike price, but this would have raised the cost of the insurance. May 370 puts, for instance, would have cost 7¼, or $725 each. Harrison Roth, an options strategist, says the basic question for investors is: "Do you want to hedge against any and all declines, or do you simply want protection against catastrophic moves?" He believes that "most investors are in the second camp."

Even with relatively low-cost puts such as the May 360s, the cost of hedging with put options can add up if the insurance goes unused. Buying puts such as these with a three-month lifetime four times a year, for instance, would cost the investor the equivalent of 4.8% of a $100,000 portfolio. One way to reduce the cost is to sell the put options before they expire. Put options lose most of their value in the final six weeks before their expiration if they have strike prices below the current price of the underlying securities. For this reason, some market advisors recommend that investors hold their options only for a month before selling them and then buying the next month out. In that way they would recover most of the options' value, significantly reducing the cost of the hedge even after considering the higher commissions they would incur.

Source: Adapted from Stanley W. Angrist, "Put Options Can Help Protect Portfolios," *The Wall Street Journal,* February 28, 1989, p. C1.

greater your chances of offsetting any portfolio losses with gains from the index options. Another factor that's important in portfolio hedging is the cost of the underlying hedge vehicle itself. This and other considerations are discussed in the accompanying *Investor Insights* box, which deals with the use of index options in portfolio hedging.

Given their effectiveness for either speculating or hedging the entire market, it's little wonder that index options have become so popular with investors. But a word of caution is in order: Although trading index options appears simple and seems to provide high rates of return, they are in reality *high-risk* trading vehicles that are subject to considerable price volatility and should *not* be used by amateurs. True, there's only so much you can lose with these options; the trouble is, it's very easy to lose that amount. Attractive profits are indeed available from these securities, but they're not investments you can buy and then "forget about" until they expire.

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With the wide market swings we're experiencing these days, *these securities must be closely monitored on a daily basis.*

Other Types of Options

Although options on stocks and stock indexes account for most of the market activity in listed options, put and call options can also be obtained on debt instruments and foreign currencies. In addition to these securities, puts and calls are now being sold with extended expiration dates (these options are known as *LEAPS*) and with ceilings on how high they can go up in value (these are known as *Caps*). Let's now take a brief look at these other kinds of options, starting with interest rate options.

Interest Rate Options

interest rate options
put and call options written on fixed-income (debt) securities.

Puts and calls on fixed-income (debt) securities are known as **interest rate options.** Specific Treasury securities (Treasury notes and bonds) underlie these options, and as their prices go up or down in the market, the puts and calls respond accordingly. A call, for example, enables the holder to buy a certain amount (usually $100,000) of a specific Treasury bond or note at a stipulated (striking) price for a specified period of time (as defined by the option's expiration date). A put, in contrast, gives the holder the right to sell the underlying financial assets under comparable provisions. One noteworthy feature of these options is that as a rule the securities will exist for *only one cycle*. That is, unless the debt security is considered to be a bellwether issue (one that's closely followed in the marketplace), once the initial three- and six-month options have expired, *there'll be no more puts and calls written on those Treasury securities*. The reason for this is that after the initial life of a T-bond or note, there's just not enough secondary trading in the securities to support an active options market. Thus, new options are constantly coming out on new government security issues. Unfortunately, the market for interest rate options never took hold and to this day remains very small. In an effort to beef up volume, the CBOE in mid-1989 introduced two new trading vehicles: an *option on short-term interest rates* and an *option on long-term rates*. But that didn't seem to help much, as trading volume continued to slide. Trading in interest rate options has all but dried up (and could well disappear altogether in the very near future) since most professional investors don't bother with these securities. Instead, they use interest rate futures contracts or options on these futures contracts (both of which will be examined in Chapter 12) for hedging or other investment purposes.

Currency Options

currency options
put and call options written on foreign currencies.

Foreign exchange options, or **currency options** as they're more commonly called, provide investors with a way to speculate on foreign exchange rates or to hedge foreign currency or foreign security holdings. Currency options are available on most of the countries we have strong trading ties with. These options are traded on the Philadelphia Exchange and include the following currencies:

- British pound
- Swiss franc

- German mark
- Canadian dollar
- Japanese yen
- Australian dollar

In essence, puts and calls on these currencies give the holders the right to sell or buy large amounts of the specified foreign currency. However, in contrast to the standardized contracts used with stock and stock index options, the specific unit of trading in this market varies with the particular underlying currency, the details of which are spelled out in Table 11.6. Currency options are traded in full or fractional cents per unit of the underlying currency, relative to the amount of foreign currency involved. Thus, if a put or call on the British pound were quoted at, say, 6.40 (which is read as "6.4 cents"), it would be valued at $2,000, since there are 31,250 British pounds that underlie this option—that is, 31,250 × .064 = $2,000.

The value of a currency option is linked to the exchange rate between the American dollar and the underlying foreign currency. For example, if the Canadian dollar becomes stronger *relative to the American dollar,* causing the exchange rates to go up, the price of a *call* option on the Canadian dollar will increase, and the price of a *put* will decline.

To understand how you can make money with currency options, consider a situation where an investor wants to *speculate* on exchange rates. The strike price of a currency option is stated in terms of *exchange rates*. Thus, a strike price of 150, for example, implies each unit of the foreign currency (such as one British pound) is worth 150 cents, or $1.50, in American money. If an investor held a (150) call on this foreign currency, he would make money if the foreign currency strengthened relative to the U.S. dollar so that the exchange rate rose (to, say, 155). In contrast, if he held a (150) put, he would profit from a decline in the exchange rate (to, say, 145). Success in forecasting movements in foreign exchange rates is obviously essential to a profitable foreign currency options program.

TABLE 11.6 Foreign Currency Option Contracts on the Philadelphia Exchange

Underlying Currency*	Size of Contracts
British pound	31,250 pounds
Swiss franc	62,500 francs
German mark	62,500 marks
Canadian dollar	50,000 dollars
Japanese yen	6,250,000 yen
Australian dollar	50,000 dollars

*The British pound, Swiss franc, German mark, Canadian dollar, and Australian dollar are all quoted in full cents; the Japanese yen is quoted in one-hundredths of a cent.

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LEAPS and Caps

LEAPS
long-term options.

Although they may look like regular puts and calls, LEAPS and Caps each offer an important feature or characteristic that differentiates them from the pack. **LEAPS** are long-term options. Whereas standard options have maturities of eight months or less, LEAPS have expiration dates that extend out as far as two years. Known formally as *Long-term Equity AnticiPation Securities*, they are listed on all five of the major options exchanges. In early 1992, there were LEAPS available on some 100 different stocks and several stock indexes, including the S&P 100, S&P 500, and Major Market Index. Aside from the time frame, LEAPS work like any other equity or index option. For example, a single (equity) LEAPS contract gives the holder the right to buy or sell 100 shares of stock at a predetermined price on or before the specified expiration date. LEAPS give investors more time to be right about their bets on the direction of a stock or stock index, or hedgers more time to protect their positions. But there's a price for all this: You can expect to pay a lot more for a LEAPS than you would for a regular (short-term) option. For example, in early 1992, a 3-month call on IBM (with a strike price of 85) was trading at 7½; the same call with a 2-year expiration date was trading at 15¼. The difference should come as no surprise, since LEAPS, being nothing more than long-term options, are loaded with time premium. As we saw earlier in this chapter, other things being equal, *the more time an option has to go to expiration, the higher the quoted price*. That behavioral characteristic certainly applies to LEAPS.

capped options (Caps)
index options, with cap prices that set a maximum value for the option, at which point the option is automatically exercised.

Capped options (known as **Caps,** for short) are also relatively new to the listed options market (they were first introduced in November 1991), and they, too, come with their own unique twist. At the present time, Caps are written only on *index options* (so far only on the S&P 100 and S&P 500) traded on the CBOE. Caps are so named because there's a cap, or ceiling, on the amount of profit an option holder can make. That is, in addition to strike prices, these options also have *cap prices,* which set the maximum value these options can attain. Cap prices are set 30 points above the strike prices on calls, and 30 points below for puts. For example, the cap price for the S&P 100 *call* option with a strike price of 360 is 390; a comparable 360 *put* option has a cap price of 330. So long as the underlying market index stays below the cap price on calls (or above it on puts), the value of the capped option will move like any other index option. The only time you'll notice a difference is when the index hits the cap price. Then, the capped options are automatically exercised, or closed out. That is, once the underlying market index closes at or above the cap price for calls (at or below for puts), the capped options automatically expire, and holders are paid the stipulated cap value two days later. As you might expect, because there's a cap on the capital gains potential of these securities, caps trade at slight discounts to regular (uncapped) index options. So far, caps haven't really caught on with investors; in early 1992, they had nowhere near the trading volume of LEAPS.

SUMMARY

1. A right is a short-lived financial instrument that enables the holder to purchase a new issue of common stock at a subscription price that's set below the prevailing market

price of existing stock. A warrant is similar to a right but its maturity is much longer. Attached to bond issues as "sweeteners," warrants allow the holder to purchase common stock at a set exercise price on or before a stipulated expiration date.

2. Trading in warrants is done primarily as a substitute for common stock investing and is based on the magnified capital gains they offer. The value of a warrant changes directly with and by approximately the same amount as the underlying common stock; but since a warrant's unit cost is often much lower than that of the common stock, the same dollar change in price represents a considerably larger percentage yield.

3. Puts and calls are by far the most popular and widely used type of option; these derivative securities offer attractive value and considerable leverage potential. They can be used for speculation, as a way to hedge a position, or in option writing and spreading programs.

   A put enables the holder to sell a certain amount of a specified security at a specified price over a specified time period. A call, in contrast, gives the holder the right to buy the same securities at a specified price over a specified period of time. The three basic features of puts and calls are (1) striking price, (2) the expiration date, and (3) the purchase price of the option itself.

4. Standardized listed put and call options are presently available on over 700 (mostly NYSE) common stocks (equity options); a dozen or so stock market indexes, like the S&P 500 (index options); and a number of debt securities and foreign currencies (interest rate and currency options). In addition, there are listed options that carry lengthy expiration dates (LEAPS) and options that set ceilings on the amount of capital appreciation that can be made (Caps).

5. The value of a call is measured by the market price of the underlying security less the strike price designated on the call; the value of a put is its strike price less the market price of the security. While the value of an option is driven by the current market price of the underlying asset, most puts and calls sell at premium prices, the amount of which depends on the length of the option contract (the so-called time premium), the speculative appeal and amount of price volatility in the underlying financial asset, and the general level of interest rates.

6. Aggressive investors will use puts and calls either for speculation or in highly specialized writing and spreading programs. Conservative investors, on the other hand, are attracted to puts and calls because of their low unit cost and the limited risk they offer in absolute dollar terms. Often, conservative investors will use options in covered call writing programs, or to form hedge positions in combination with other securities.

QUESTIONS

1. Describe a stock right and note how such rights are tied to the preemptive rights of investors. How would a stock right be used by an investor? Why does it have such limited investment appeal?

2. What is a warrant? What is the chief attraction of a warrant? Describe the leverage feature of a warrant and note why leverage is so attractive to investors.

3. What factors are important in determining the investment appeal of warrants? Why is the price of the warrant itself so important in the investment decision?

4. Describe put and call options. Are they issued like other corporate securities? Explain.

5. What are listed options, and how do they differ from conventional options? What's the difference between an American option and a European option? What's a derivative security? Give an example of one.

6. What are the main investment attractions of put and call options? What are the risks?

7. Briefly discuss the differences and similarities in stock index options and stock options; do the same for foreign currency options relative to stock options.

8. Using the stock or index option quotations in Figures 11.3 and 11.5, respectively, find the option premium, time premium, and the stock/index breakeven point for the following puts and calls:

   a. The June Pfizer *put*, with the $75 strike price.
   b. The March Quaker State *call*, with the $12½ strike price.
   c. The April S&P 100 *call*, with the strike price of 365.
   d. The March Major Market *put*, with the strike price of 360.

9. Name at least four variables that have an impact on the price behavior of listed options, and briefly explain how each affects prices. How important are fundamental (intrinsic) value and time value to in-the-money options? To out-of-the-money options?

10. Prepare a schedule similar to the one in Table 11.1 for the February, March, and April S&P 100 *calls* (use the ones with strike prices of 380, 385, and 390). Do the same for the February, March, and April Major Market *puts* (use strike prices of 350, 355, and 360). Briefly explain your findings.

11. Note the various ways stock options can be used by investors; do the same for index options and foreign currency options.

12. Assume an investor holds a well-balanced portfolio of common stocks. Under what conditions might he want to use a stock-index option to hedge his portfolio?

    a. Briefly explain how such options could be used to hedge a portfolio against a drop in the market.
    b. Discuss what would happen if the market does in fact go down.
    c. What happens if the market goes up instead?

13. Describe how writing a covered call option reduces the risk on the underlying common stock.

14. What are LEAPS and Caps? Why would an investor want to use a LEAPS option rather than a regular listed option? Give an example of how a LEAPS option might be used.

PROBLEMS



1. Assume a company has 1 million shares of common stock outstanding and intends to issue another 200,000 shares via a rights offering; the rights will carry a subscription price of $48. If the current market price of the stock is $53, what is the value of one right?

2. Assume that one warrant gives the holder the right to buy one share of stock at an exercise price of $40. What is the value of this warrant if the current market price of the stock is $44? At what premium ($ and %) would the warrants be trading if they were quoted in the market at a price of $5?

3. A warrant carries an exercise price of $20; assume it takes three warrants to buy one share of stock. At what price would the warrant be trading if it sold at a 20 percent premium, while the market price of the stock was $35 per share? What holding period return would an investor make if she buys these warrants (at a 20% peremium) when the stock is trading at $35, and sells them some time later when the stock is at $48½ and the premium on the warrants has dropped to 15%?

4. A six-month call on a certain common stock carries a striking price of $60; it can be purchased at a cost of $600. Assume that the underlying stock rises to $75 per share by the expiration date of the option. How much profit would this option generate over the six-month holding period, and what is its rate of return?

5. Dorothy Cappel does a lot of investing in the stock market and is a frequent user of stock index options. She is convinced that the market is about to undergo a broad retreat and has decided to buy a put on the S&P 100 Index. The put carries a striking price of 390 and is quoted in the financial press at 4½. Although the S&P Index of 100 stocks is presently at 386.45, Dorothy thinks it will drop to 365 by the expiration date on the option. How much profit will she make, *and* what will her holding period return be if she is right? How much will she lose if the S&P 100 goes up (rather than down) by 25 points, and reaches 415 by the date of expiration?

6. Bill Brickshooter holds 600 shares of Lubbock Gas and Light. He bought the stock several years ago at 48½, and shares are now trading at 75. Bill's a little concerned that the market's beginning to soften and while he doesn't want to sell the stock, he would like to be able to protect the profit that he's made. He decides to hedge his position by buying 6 puts on Lubbock G & L; the 3-month puts carry a strike price of 75 and are currently trading at 2½.

   a. How much profit or loss will Bill make on this deal if the price of Lubbock G & L does, indeed, drop—to $60 a share—by the expiration date on the puts?
   b. How would he do if the stock kept going up in price and reached $90 a share by the expiration date?
   c. What do you see as the major advantages to using puts as hedge vehicles?
   d. Would the investor have been better off using in-the-money puts—i.e., puts with an $85 strike price that are trading at 10½? How about using out-of-the-money puts—say, those with a $70 strike price, trading at 1? Explain.

7. Dave Benley just purchased 500 shares of AT&E at 61½ and he's decided to write covered calls against these stocks. Accordingly, he sells 5 AT&E calls at their current market price of 5¾; the calls have 3 months to expiration and carry a strike price of 65. Given the stock pays a quarterly dividend of 80 cents a share:

   a. Determine the total profit and holding period return Benley will generate if the stock rises to $65 a share by the expiration date on the calls.
   b. What happens to Benley's profit (and return) if the price of the stock rises to more than $65 a share?
   c. Does this covered call position offer any protection (or cushion) against a drop in the price of the stock? Explain.

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CFA QUESTION (This question is from the 1992 Level II Exam.)

CFA

It has been decided to buy (stock-index) put options in order to protect one of your client's stock holdings from a potential price decline over the next 3 months. The following information has been assembled about three index options currently available in the market:

Index Option	Current Index Value	Underlining Value of One Put	Strike Price of Put	Put Premium	Average Daily Trading Volume of Puts
S&P 100	364.58	$100 times index	365	12.75	10,000
S&P 500	388.89	$100 times index	390	11.00	4,000
NYSE	214.73	$100 times index	215	6.25	1,000

Index	Amt. of Correlation With Client's Portfolio
S&P 100	0.86
S&P 500	0.95
NYSE	0.91

a. For each index option, determine the number of puts required to protect a $3,500,000 portfolio (hint: it'll take 96 of the S&P 100 puts . . .), and calculate the cost to set up each hedge.
b. Recommend and justify which index option to use in order to hedge the portfolio; include reference to factors other than cost in your answer.

(See Appendix C for Guideline Answer to this question.)

CASE PROBLEMS

11.1 The Slaters' Investment Options

Phil Slater is a highly successful businessman in Atlanta. The box manufacturing firm he and his wife Judy founded several years ago has prospered. Because he is self-employed, he is building his own retirement fund. So far he has accumulated a substantial sum in his investment account, mostly by following an aggressive investment posture; he does this because, as he puts it, "you never know when the bottom's gonna fall out in this business." Phil has been following the stock of Rembrandt Paper Products (RPP) and after conducting extensive analysis, feels the stock is about ready to move. Specifically, he believes that within the next six months, RPP could go to about $80 per share, from its current level of $57.50. The stock pays annual dividends of $2.40 per share, and Phil figures he would receive two quarterly dividend payments over his six-month investment horizon. In studying the company, Phil has learned that it has some warrants outstanding (they mature in eight years and carry an exercise price of $45); also, it has six-month call options (with $50 and $60 striking prices) listed on the CBOE. Each warrant is good for one share of stock, and they are currently trading at $15; the CBOE calls are quoted at $8 for the options with $50 striking prices, and $5 for the $60 options.

Questions

1. How many alternative investment vehicles does Phil have if he wants to invest in RPP for no more than six months? What if he has a two-year investment horizon?
2. Using a six-month holding period and assuming the stock does indeed rise to $80 over this time frame:
   a. Find the market price of the warrants at the end of the holding period, given that they then trade at a premium of 10 percent.
   b. Find the value of both calls, given that at the end of the holding period neither contains any investment premium.
   c. Determine the holding period return for each of the four investment alternatives open to Mr. Slater.
3. Which course of action would you recommend if Phil simply wants to maximize profit? Would your answer change if other factors (like comparative risk exposure) were considered along with return? Explain.

11.2 Fred's Quandary—To Hedge or Not to Hedge

A little more than ten months ago, Fred Weaver, a mortgage banker in Phoenix, bought 300 shares of stock at $40 per share. Since then, the price of the stock has risen to $75 per share. It is now near the end of the year, and the market is starting to weaken; Fred feels there is still plenty of play left in the stock but is afraid the tone of the market will be detrimental to his position. His wife Denise is taking an extension course on the stock market and has just learned about put and call hedges. She suggests that he use puts to hedge his position. Fred is intrigued with the idea, which he discusses with his broker—who advises him that, indeed, the needed puts are available on his stock. Specifically, he can buy three-month puts, with $75 striking prices, at a cost of $550 each (quoted at 5½).

Questions

1. Given the circumstances surrounding Fred's current investment position, what benefits could be derived from using the puts as a hedge device? What would be the major drawback?
2. What would Fred's minimum profit be if he buys three puts at the indicated option price? How much would he make if he did not hedge but instead sold his stock immediately at a price of $75 per share?
3. Assuming Fred uses three puts to hedge his position, indicate the amount of profit he would generate if the stock moves to $100 by the expiration date of the puts. What if the stock drops to $50 per share?
4. Should he use the puts as a hedge? Explain. Under what conditions would you urge him *not* to use the puts as a hedge?

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12 Commodities, Financial Futures, and Tangible Investments

After studying this chapter, you should be able to:

1. Describe the essential features of a futures contract, as well as the basic operating characteristics of the futures market.
2. Explain the role that hedgers and speculators play in the futures market, including how profits are made and lost.
3. Distinguish between a physical commodity and a financial future, and between a futures contract and an option on a futures contract.
4. Discuss the various investment strategies and trading techniques that investors can use with commodities and financial futures, and explain how investment returns can be measured.
5. Gain an appreciation of the growing role that financial futures play in the futures market today, and note how these securities can be used in conjunction with other investment vehicles, like stocks, bonds, and foreign securities.
6. Develop a basic understanding of the investment characteristics and suitability of gold and other tangible investments.

Psst, wanna buy some copper? How about some gold, or pork bellies, or plywood? Maybe the Japanese yen or Swiss franc strikes your fancy. Sound a bit unusual? Perhaps, but all these items have one thing in common: They represent investment vehicles that are popular with millions of investors. This is the more exotic side of investing—the market for commodities and financial futures—and it often involves a considerable amount of speculation. In fact, the risks are enormous, but the payoffs in these markets can at times be nothing short of phenomenal. For example, the purchase of a *single* S&P 500 futures contract in January 1991 would have produced an incredible $34,000 in profits by the end of May—a period of less than 5 months! A little bit of luck is obviously helpful in such situations, but equally important is the need for patience and know-how. *These are specialized investment vehicles that require specialized investor skills*. We will now look at these investment outlets to see not only what they are, but how they can be used in various types of investment programs. First, we will examine the futures market itself; then we will look at investing in commodities. After that, we'll focus on financial futures and how they can be used by investors. The chapter concludes with a brief look at still another type of specialized investment vehicle: so-called *tangible investments*, such as gold, precious metals and gemstones, stamps, coins, and other collectibles.

THE FUTURES MARKET

The amount of futures trading in the United States has mushroomed over the past two decades as an increasing number of investors have turned to futures trading as a way to earn attractive, highly competitive rates of return. But it's *not* the traditional commodities contracts that have drawn many of these investors; rather, it's the new investment vehicles being offered. Indeed, a major reason behind the growth in the volume of futures trading has been *the big jump in the number and variety of contracts available for trading*. Thus, today we find that in addition to the traditional primary commodities, such as grains and metals, markets also exist for live animals, processed commodities, crude oil and gasoline, foreign currencies, money market securities, U.S. Treasury notes and bonds, Eurodollar securities, and common stocks (via stock market indexes). In fact, you can even buy listed put and call *options* on just about any actively traded futures contract. All these commodities and financial assets are traded in what is known as the *futures market*.

Market Structure

cash market
a market where a product or commodity changes hands in exchange for a cash price paid at the time the transaction is completed.

futures market
the organized market for the trading of futures contracts.

When a bushel of wheat is sold, the transaction takes place in the **cash market;** in other words, the bushel changes hands in exchange for a cash price paid to the seller. The transaction occurs at that point in time and for all practical purposes is completed then and there. Most traditional securities are traded in this type of market. However, a bushel of wheat could also be sold in the **futures market,** the organized market for the trading of futures contracts. In this market, the seller would not actually deliver the wheat until some mutually agreed-upon date in the future. As a result, the transaction would not be completed for some time; the seller would receive partial payment for the bushel of wheat at the time the agreement was

entered into, and the balance on delivery. The buyer, in turn, would own a highly liquid futures contract that could be held (and presented for delivery of the bushel of wheat) or traded in the futures market. No matter what the buyer does with the contract, as long as it is outstanding, the seller has a legally binding *obligation to make delivery* of the stated quantity of wheat on a specified date in the future, and the buyer/holder has a similar *obligation to take delivery* of the underlying commodity.

Futures Contracts

futures contract a commitment to deliver a certain amount of some specified item at some specified date in the future.

delivery month the time when a commodity must be delivered; defines the life of a futures contract.

A **futures contract** is a commitment to deliver a certain amount of a specified item at a specified date at a price agreed upon at the time the contract is sold. The seller of the contract agrees to make the specified future delivery, and the buyer agrees to accept it. Each exchange establishes its own contract specifications, which include not only the quantity and quality of the item, but the delivery procedure and delivery month as well. The **delivery month** for a futures contract is much like the expiration date used on put and call options; it specifies when the commodity or item must be delivered and thus defines the life of the contract. For example, the Chicago Board of Trade specifies that each of its soybean contracts will involve 5,000 bushels of USDA grade No. 2 yellow soybeans; delivery months are January, March, May, July, August, September, and November. In addition, *futures contracts have their own trading hours*. Unlike listed stocks and bonds, which begin and end trading at the same time, normal trading hours for commodities and financial futures vary widely. For example, oats trade from 9:30 A.M. to 1:15 P.M. (Central), silver from 7:25 A.M. to 1:40 P.M., live cattle from 9:05 A.M. to 1:15 P.M., U.S. Treasury bills from 7:20 A.M. to 2:15 P.M., S&P 500 stock index contracts from 8:30 A.M. to 3:15 P.M., and so forth. It may sound a bit confusing, but it seems to work.

The maximum life of a futures contract is about one year or less, although some (like silver and Treasury bonds) have lives as long as 2½ to 3 years. Table 12.1 lists a cross-section of 12 different commodities and financial futures and shows that the typical futures contract covers a large quantity of the underlying product or financial instrument. However, although the value of a single contract is normally quite large, the actual amount of investor capital required to deal in these vehicles is relatively small, because *all trading in this market is done on a margin basis.*

Options versus Futures Contracts. In many respects futures contracts are closely related to the call options we studied in Chapter 11. Both involve the future delivery of an item at an agreed-upon price. But there is *a significant difference* between a futures contract and an options contract: A futures contract *obligates* a person to buy or sell a specified amount of a given commodity on or before a stated date, unless the contract is cancelled or liquidated before it expires; in contrast, an option gives the holder the *right* to buy or sell a specific amount of a real or financial asset at a specific price over a specified period of time. In addition, whereas *price* is one of the specified variables on a call option (i.e., strike price), it is *not* stated anywhere on a futures contract. Instead, the price on a futures contract is established through

TABLE 12.1 Futures Contract Dimensions

Contract	Size of a Contract*	Recent** Market Value of a Single Contract
Corn	5,000 bu	$ 13,750
Wheat	5,000 bu	21,500
Live cattle	40,000 lb	30,000
Pork bellies	40,000 lb	13,200
Coffee	37,500 lb	28,125
Cotton	50,000 lb	27,500
Gold	100 troy oz	36,000
Copper	25,000 lb	24,750
Japanese yen	12.5 million yen	98,750
Treasury bills	$1 million	960,000
Treasury bonds	$100,000	101,000
S&P 500 Stock Index	500 times the index	206,250

*The size of some contracts may vary by exchange.

**Contract values are representative of those that existed in early 1992.

trading on the floor of a commodities exchange—meaning the delivery price is set by supply and demand at whatever price the contract sells for. Equally important, the risk of loss with an option is limited to the price paid for it, whereas a futures contract has *no such limit on exposure to loss*.

forward contract agreement whereby a seller agrees to deliver a specific commodity or product to a buyer sometime in the future, *at a price specified in the contract itself.*

Futures Contracts versus Forward Contracts. In addition to futures contracts, there are also **forward contracts.** Basically, a forward contract is an agreement whereby a seller agrees to deliver a specific commodity or product to a buyer sometime in the future, *at a price as specified in the contract itself.* Actually, forward contracts are widely used in practice and are common in real estate leases, fixed-rate loans, credit cards, mortgage loans, even magazine subscriptions. In all these cases, there's an agreement that a product or service will be delivered sometime in the future at some set price. For example, when home buyers apply for a mortgage, they can ''lock in'' an interest rate at the time they start the loan application process, rather than having to wait until the deal closes—which could be two or three months later. When they lock in the rate, they are effectively entering into a forward contract with the mortgage lender, with regard to the rate of interest that will be charged on the mortgage (assuming, of course, that the buyers qualify for the loan). Without forward contracts, it would be impossible for buyers and sellers to agree on anything, and prices would have to be constantly renegotiated.

Although they may appear to be the same, there are some real differences between futures and forward contracts. The most obvious, perhaps, has to do with price: Whereas price is specified on a forward contract, it is set through trading on a futures contract. Moreover, in contrast to futures contracts, prices and contract terms on forward contracts are *not standardized*. As a result, forward contracts are not actively traded on organized exchanges; there is a forward market for some

types of contracts, but there are no organized exchanges. Since there are no exchanges, there are no central clearing houses in the forward market and as such, there is a risk that one, or both, of the parties won't be able to hold up their end of the bargain. In sharp contrast, there are certain financial constraints to prevent this type of thing from happening in the futures market.

Major Exchanges

Although futures contracts can be traced back to biblical times, their use on an organized basis in this country did not occur until the mid-1800s. They originated in the agricultural segment of the economy, where individuals who produced, owned, and/or processed foodstuffs sought a way to protect themselves against adverse price movements. Subsequently, futures contracts came to be traded by individuals who wanted to make money with commodities by speculating on their price swings. The first organized commodity exchange in the United States, the Chicago Board of Trade, opened in 1848. Over time additional exchanges came into existence, so that today futures trading is conducted on 12 U.S. exchanges:

- Chicago Board of Trade (CBOT)
- Chicago Mercantile Exchange (CME)
- Chicago Rice & Cotton Exchange (CRCE)
- Commodity Exchange of New York (COMEX)
- Kansas City Board of Trade (KCBT)
- MidAmerica Commodity Exchange (MidAm)
- Minneapolis Grain Exchange (MGE)
- New York Coffee, Sugar, and Cocoa Exchange (CSCE)
- New York Cotton Exchange (NYCE)
- New York Futures Exchange (NYFE)
- New York Mercantile Exchange (NYMEX)
- Philadelphia Board of Trade (PBOT)

The Chicago Board of Trade is the biggest exchange—in fact, it's the largest commodities exchange in the world—followed by the Chicago Mercantile Exchange, the NY Merc, and the Commodity Exchange of New York. These four exchanges account for more than 80 percent of all the trading volume conducted on American futures exchanges. All totalled, trading activity on the 12 major exchanges has reached the point where the futures market today is a *trillion-dollar* institution that, in many respects, rivals the stock market. In addition to these American exchanges, there's a growing number of futures markets found all over the globe. There are active commodities and financial futures exchanges in Canada, Great Britain, Germany, Japan, Australia, France, and Switzerland, among others. The United States is still the leading market, but its share of the world market is falling each year as these other markets become more active.

Returning to the American exchanges, each one deals in a variety of futures contracts, although some are more limited in their activities than others. For exam-

ple, in contrast to the Minneapolis Grain Exchange, which deals in just three or four contracts, the CBOT lists corn, oats, soybeans, wheat, gold, and silver, as well as a variety of debt instruments and stock market indexes. In fact, most exchanges deal in a number of different commodities and/or financial assets, and many commodities and financial futures are traded on more than one exchange. Although the exchanges are highly efficient and annual volume has surpassed the trillion-dollar mark, futures trading is still conducted by **open outcry auction:** as shown in Figure 12.1, actual trading on the floors of these exchanges is conducted through a series of shouts, body motions, and hand signals.

open outcry auction
in futures trading, auction in which trading is done through a series of shouts, body motions, and hand signals.

Trading in the Futures Market

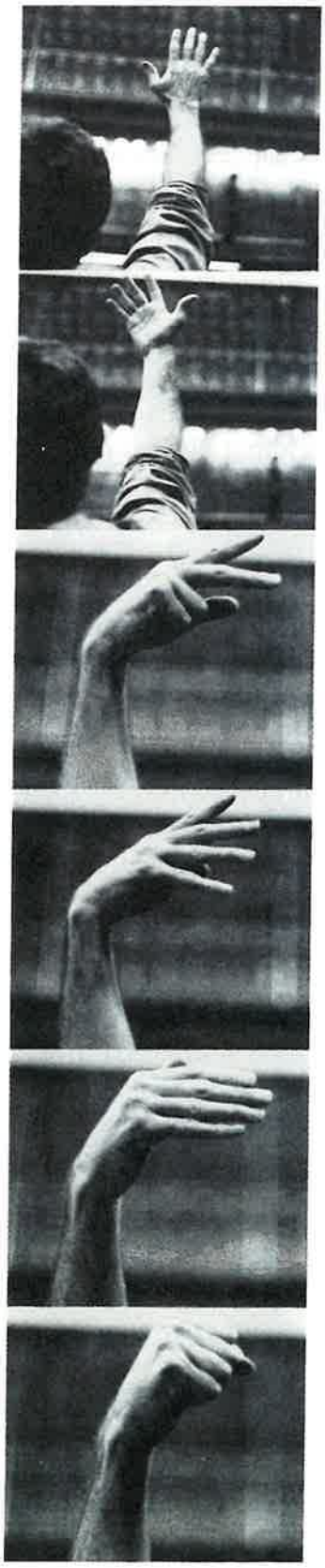
Basically, the futures market contains two types of traders: hedgers and speculators. The market simply could not exist and operate efficiently without either one. The **hedgers** are commodities producers and processors (which today include financial institutions and corporate money managers) who use futures contracts as a way to protect their interest in the underlying commodity or financial instrument. For example, if a rancher thinks the price of cattle will drop in the near future, he will hedge his position by selling a futures contract on cattle in the hope of locking in as high a price as possible for his herd. In effect, the hedgers provide the underlying strength of the futures market and represent the very reason for its existence. *Speculators,* in contrast, give the market liquidity; they are the ones who trade futures contracts not because of a need to protect a position in the underlying commodity, but simply to earn a profit on expected swings in the price of a futures contract. They are the risk takers, the investors who have no inherent interest in the commodity or financial future other than the price action and potential capital gains it can produce.

hedgers
producers and processors who use futures contracts as a way to protect their interest in an underlying commodity or financial instrument.

Trading Mechanics

Once the futures contracts are created by the hedgers and speculators, they can readily be traded in the market. Like common stocks and other traditional investment vehicles, futures contracts are bought and sold through local brokerage offices. Most firms have at least one or two people in each office (more in some cases) who specialize in futures contracts. In addition, a number of commodity firms that deal only in futures contracts stand ready to help individuals with their investment needs. Except for setting up a special commodity trading account, there is really no difference between trading futures and dealing in stocks or bonds. The same types of orders are used, and the use of margin is a standard way of trading futures. Any investor can buy or sell any contract, with any delivery month, at any time, so long as it is currently being traded on one of the exchanges.

Buying a contract is referred to as taking a *long position,* whereas selling one is termed taking a *short position.* It is exactly like going long or short with stocks and has the same connotation: The investor who is long wants the price to rise, and the short seller wants it to drop. Both long and short positions can be liquidated simply







• FIGURE 12.1 The Auction Market at Work on the Floor of the Chicago Board of Trade

Traders employ a system of open outcry and hand signals to indicate whether they wish to buy or sell and the price at which they wish to do so. Fingers held vertically indicate the number of contracts a trader wants to buy or sell. Fingers held horizontally indicate the fraction of a cent above or below the last traded full-cent price at which the trader will buy or sell. (*Source:* Chicago Board of Trade, *Action in the Marketplace: Commodity Futures Trading,* 1978.)

by executing an offsetting transaction. The short seller, for example, would cover his or her position by buying an equal amount of the contract. In general, less than 1 percent of all futures contracts are settled by delivery; the rest are offset prior to the delivery month. All trades are subject to normal transaction costs, which include **round trip commissions** of about $60 to $90 for each contract traded. (A round trip commission includes the commission costs on both ends of the transaction—to buy and sell a contract.) The exact size of the commission depends on the number and type of contracts being traded.

round trip commissions the commission costs on both ends (buying and selling) of a securities transaction.

Margin Trading

Buying on margin means putting up only a fraction of the total price in cash; margin, in effect, is the amount of equity that goes into the deal. Margin trading plays a crucial role in futures transactions because *all futures contracts are traded on a margin basis*. The margin required usually ranges from about 2 to 10 percent of the value of the contract which, when compared to the margin required for stocks and most other types of securities, is very low. Furthermore, there is *no borrowing* required on the part of the investor to finance the balance of the contract; the margin, or **margin deposit** as it is called with futures, exists simply as a way to guarantee fulfillment of the contract. The margin deposit is not a partial payment for the commodity or financial instrument, nor is it in any way related to the value of the product or item underlying the contract. Rather, it represents security to cover any loss in the market value of the contract that may result from adverse price movements.

margin deposit amount deposited with a broker to cover any loss in the market value of a futures contract that may result from adverse price movements.

The size of the required margin deposit is specified as a dollar amount and varies according to the type of contract (i.e., the amount of price volatility in the underlying commodity or financial asset) and, in some cases, the exchange. Table 12.2 gives the margin requirements for the same 12 commodities and financial instruments listed in Table 12.1, above. In sharp contrast to the size and value of futures contracts, margin requirements are kept very low. The **initial deposit** noted in Table 12.2 is the amount of investor capital that must be deposited with the broker at the time the transaction is initiated and represents the amount of money required to make a given investment.

initial deposit the amount of investor capital that must be deposited with a broker at the time of a commodity transaction.

After the investment is made, the market value of a contract will, of course, rise and fall as the quoted price of the underlying commodity or financial instrument goes up or down. Such market behavior will cause the amount of margin on deposit to change. To be sure that an adequate margin is always on hand, investors are required to meet a second type of margin requirement, the **maintenance deposit.** This deposit is slightly less than the initial deposit and establishes the minimum amount of margin that must be kept in the account at all times. For instance, if the initial deposit on a commodity is $1,000 per contract, its maintenance margin might be $750. So long as the market value of the contract does not fall by more than $250 (the difference between the contract's initial and maintenance margins), the investor has no problem. But if the market moves against the investor and the value of the

maintenance deposit the minimum amount of margin that must be kept in a margin account at all times.

TABLE 12.2 Margin Requirements for a Sample of Commodities and Financial Futures*

	Initial Margin Deposit	Maintenance Margin Deposit
Corn	$1,000	$ 750
Wheat	1,000	750
Live cattle	1,000	750
Pork bellies	1,000	750
Coffee	2,000	1,500
Cotton	1,000	750
Gold	1,300	1,000
Copper	1,000	800
Japanese yen	2,000	1,500
Treasury bills	1,000	750
Treasury bonds	2,700	2,000
S&P 500 Stock Index	9,000	6,000

*These margin requirements were specified by a major full-service brokerage firm in early 1992, and may exceed the minimums established by the various exchanges. They are meant to be typical of the on-going requirements that customers are expected to live up to. Depending upon the volatility of the market, exchange-minimum margin requirements are changed frequently, and thus the requirements in this table are also subject to change on short notice.

contract drops by more than the allowed amount, the investor will receive a *margin call*. He or she must then immediately deposit enough cash to bring the position back to the initial margin level. An investor's margin position is checked daily via a procedure known as **mark-to-the-market.** That is, the gain or loss in a contract's value is determined at the end of each session, at which time the broker debits or credits the trader's account accordingly. In a falling market, an investor may receive a number of margin calls and be required to make additional margin payments (perhaps on a daily basis) in order to keep the position above the maintenance margin level. Failure to do so will mean that the broker has no choice but to close out the position.

mark-to-the-market a daily check of an investor's margin position; the gain or loss in a contract's value is determined at the end of each session, at which time the broker debits or credits the account as needed.

COMMODITIES

Physical commodities like grains, metals, wood, and meat make up a major portion of the futures market. They have been actively traded in this country for well over a century, and still account for a good deal of the trading activity. The material that follows focuses on *commodities trading* and begins with a review of the basic characteristics and investment merits of these vehicles.

Basic Characteristics

Various types of physical commodities are found on nearly all of the 12 U.S. futures exchanges (in fact, three of them deal only in commodities). The market for com-

modity contracts is divided into five major segments: grains and oilseeds, livestock and meat, food and fiber, metals and petroleum, and wood. Such segmentation does not affect trading mechanics and procedures but provides a convenient way of categorizing commodities into groups based on similar underlying characteristics. Table 12.3 shows the diversity of the commodities market and the variety of contracts available. While the list changes yearly, we can see from the table that investors had nearly 40 different commodities to choose from in 1992, and a number of these (like soybeans and wheat) are available in several different forms or grades.

A Commodities Contract

Every commodity has its own specifications regarding the amounts and quality of the product being traded. Figure 12.2 is an excerpt from the "Futures Prices" section of *The Wall Street Journal* and shows the contract and quotation system used with commodities. Each commodity quote is made up of the same five parts, and all prices are quoted in an identical fashion. In particular, every commodities contract (and quote) specifies: (1) the product, (2) the exchange on which the contract is traded, (3) the size of the contract (in bushels, pounds, tons, or whatever), (4) the

TABLE 12.3 Major Classes of Commodities

Grains and Oilseeds	**Metals and Petroleum**
Corn	Aluminum
Oats	Copper
Soybeans	Gold
Wheat	Platinum
Barley	Silver
Canola	Palladium
Flaxseed	Gasoline
Rapeseed	Heating oil
Sorghum	Crude oil
Rye	Gas oil
Rice	Propane
	Natural gas
Livestock and Meat	
Cattle	**Food and Fiber**
Hogs and pork bellies	Cocoa
Broilers	Coffee
	Cotton
Wood	Orange juice
Lumber	Sugar
Plywood	Potatoes
Stud lumber	Butter

FUTURES PRICES

Wednesday, January 29, 1992

Open Interest Reflects Previous Trading Day.

GRAINS AND OILSEEDS

CORN (CBT) 5,000 bu.; cents per bu.

	Open	High	Low	Settle	Change	Lifetime High	Lifetime Low	Open Interest
Mar	264¾	265	263	263¼	– 1	277¼	228½	107,240
May	271	271¼	269¼	269½	– 1	279½	234¾	72,934
July	275½	276	274	274½	– ¾	282	239½	66,529
Sept	271½	272½	270¾	271¼	– ¼	272½	236½	7,793
Dec	268½	269¾	267½	268½	....	270	236½	26,153
Mr93	274¼	275¾	273½	274½	– ¼	275¾	258	1,810

Est vol 35,000; vol Tues 38,413; open int 282,545, +3,791.

OATS (CBT) 5,000 bu.; cents per bu.

Mar	142¾	145	142¼	144	+ 2	157	126½	5,853
May	147	149	146¾	148¼	+ 1¾	159½	132	2,752
July	151	153¼	151	152¼	+ 2¼	161½	138	1,079
Sept	153½	156	153½	155	+ 2¼	156	141½	145

Est vol 1,750; vol Tues 961; open int 9,903, +277.

SOYBEANS (CBT) 5,000 bu.; cents per bu.

Mar	583½	585¾	575	576¼	– 5¼	666	538	44,327
May	589	592¼	580½	582¼	– 6	668	547	26,005
July	597½	601	592½	593	– 3½	668	554	28,057
Aug	601½	604	595	596	– 4	660	565	3,352
Sept	604	605½	600	600	– 2½	628	557	1,955
Nov	612	614¾	607	607¾	– 3¼	620¾	552	15,299
Ja93	620	622½	618½	616½	– 2½	622½	578½	693
Mar	629	629	629	626½	– 2	629	590½	143

Est vol 43,000; vol Tues 26,869; open int 119,832, –690.

SOYBEAN MEAL (CBT) 100 tons; $ per ton.

Mar	179.10	180.30	176.70	176.80	– 2.30	197.00	163.50	28,815
May	180.50	181.50	178.00	178.10	– 2.10	194.00	164.50	14,115
July	181.00	183.30	180.10	180.30	– .80	196.00	166.00	12,742
Aug	181.20	183.80	180.50	180.70	– 1.10	188.50	170.90	2,577
Sept	182.50	184.60	182.00	182.00	– .50	186.00	171.30	3,123
Oct	196.50	198.00	196.50	196.60	+ .10	198.00	182.30	1,754
Dec	199.00	200.50	198.50	198.50	– .50	200.50	183.50	2,532

Est vol 19,000; vol Tues 12,445; open int 65,658, –851.

SOYBEAN OIL (CBT) 60,000 lbs.; cents per lb.

Mar	19.46	19.59	19.35	19.36	– .10	24.10	18.60	27,592
May	19.77	19.88	19.67	19.67	– .08	24.00	18.93	21,968
July	20.07	20.16	19.97	19.96	– .08	24.30	19.25	10,467
Aug	20.23	20.30	20.15	20.15	– .04	22.35	19.42	3,072
Sept	20.42	20.42	20.32	20.28	– .04	22.35	19.57	3,390
Oct	20.42	20.42	20.35	20.35	– .03	22.30	19.66	1,675
Dec	20.85	20.87	20.65	20.65	– .09	22.60	19.93	1,921

Est vol 13,000; vol Tues 7,463; open int 70,172, +200.

WHEAT (CBT) 5,000 bu.; cents per bu.

Mar	437¾	442	434½	441½	+ 4	442¾	279	24,071
May	421	422	418	421¼	+ 1¾	424	280½	14,19
July	388	388½	386¾	387½	– ½	388½	279	23,914
Sept	391	391½	390¼	391½	– ¼	391¾	292	2,823
Dec	400	400	398½	399¾	+ ¼	400	329½	3,073
Mr93	437¾	400	399	401	+ 1	400½	354	134

Est vol 16,000; vol Tues 14,182; open int 68,208, +154.

WHEAT (KC) 5,000 bu.; cents per bu.

Mar	438	439	436¼	437¾	+ ¼	439½	275½	17,442
May	418	419¼	416½	418½	+ 1	419¼	273	9,887
July	393	393½	391½	392¼	– 1	393½	272	7,077
Sept	395	395½	394	394¼	– ¾	395½	314	1,977
Dec	402	402	401	401¼	– ¾	403	354	856

Est vol 5,124; vol Tues 5,684; open int 37,239, +445.

WHEAT (MPLS) 5,000 bu.; cents per bu.

Mar	427	428¼	426	426¾	....	429	279½	7,274
May	415	417	415	416	+ 1¼	417	284	5,164
July	401½	402¾	401½	401½	....	402¾	308	891
Sept	390	390	388¼	389	– 1	391½	315	906
Dec	398	398	398	398	– 2	398	349	128

Est vol 1,788; vol Tues 2,398; open int 14,363, –4.

BARLEY (WPG) 20 metric tons; Can. $ per ton

Mar	88.70	89.00	88.30	88.50	+ .20	97.50	81.00	2,948
May	90.50	90.50	90.20	90.20	+ .10	96.00	85.70	1,469
July	92.00	92.50	92.00	92.30	+ .40	96.00	90.10	360
Oct	93.70	94.00	93.50	93.50	+ .60	94.80	74.70	407

Est vol 400; vol Tues 222; open int 5,184, –66.

FLAXSEED (WPG) 20 metric tons; Can. $ per ton

Mar	195.80	197.30	195.70	196.80	+ 1.20	234.50	186.40	1,726
May	200.00	202.00	200.00	201.00	+ 1.10	232.00	189.70	1,853
July	204.50	205.20	204.40	204.40	+ .90	221.50	194.80	1,239
Oct	211.50	212.10	211.40	211.40	+ .90	216.50	202.20	1,204

Est vol 1,175; vol Tues 1,236; open int 6,022, –378.

	Open	High	Low	Settle	Change	Lifetime High	Lifetime Low	Open Interest
Sept	83.10	83.20	82.25	82.45	– .05	108.00	82.25	1,515
Dec	86.50	86.50	85.65	86.10	....	107.25	85.65	1,471
Mr93	89.50	89.50	89.50	89.20	+ .05	94.75	89.50	340
May	....	....	....	92.00	– .75	96.00	93.75	147

Est vol 9,003; vol Tues 11,100; open int 49,680, +954.

SUGAR–WORLD (CSCE)–112,000 lbs.; cents per lb.

Mar	8.33	8.39	8.26	8.34	– .01	10.14	7.56	36,024
May	8.41	8.45	8.34	8.44	+ .03	9.77	7.65	27,558
July	8.44	8.47	8.36	8.46	+ .02	9.16	7.80	14,196
Oct	8.49	8.50	8.39	8.48	– .01	9.06	7.93	17,345
Mr93	8.53	8.53	8.45	8.53	....	9.04	8.20	2,401
May	....	....	....	8.50	– .02	8.90	8.30	107

Est vol 15,320; vol Tues 17,747; open int 97,631, –463.

SUGAR–DOMESTIC (CSCE)–112,000 lbs.; cents per lb.

Mar	21.33	21.33	21.19	21.20	– .15	22.80	21.19	1,402
May	21.52	21.52	21.47	21.47	– .06	22.30	21.47	2,342
July	21.69	21.69	21.64	21.64	– .05	22.39	21.63	2,050
Sept	21.69	21.69	21.64	21.64	– .05	22.30	21.64	836
Nov	21.80	21.80	21.78	21.83	– .02	22.10	21.78	1,046
Ja93	....	....	....	21.78	– .07	22.00	21.80	168

Est vol 986; vol Tues 773; open int 7,881, +321.

COTTON (CTN)–50,000 lbs.; cents per lb.

Mar	53.75	54.05	53.36	53.95	+ .57	77.15	53.25	14,604
May	55.80	55.98	55.32	55.88	+ .51	77.30	55.20	9,821
July	57.10	57.40	56.81	57.30	+ .40	77.70	56.70	8,797
Oct	59.45	59.70	59.31	59.40	– .01	70.60	59.31	1,911
Dec	60.25	60.50	60.00	60.20	+ .03	69.00	60.00	5,155
Mr93	....	....	....	61.75	+ .05	67.30	62.00	1,187

Est vol 6,000; vol Tues 6,789; open int 41,564, –745.

ORANGE JUICE (CTN)–15,000 lbs.; cents per lb.

Mar	143.45	144.70	143.20	144.70	+ 1.25	178.40	113.60	4,893
May	144.00	145.30	143.85	145.30	+ 1.35	177.95	115.00	2,660
July	145.00	145.80	144.60	145.35	+ 1.35	175.50	115.25	813
Nov	....	....	....	133.60	+ 1.05	175.00	118.00	453
Ja93	132.90	133.85	132.90	133.50	+ 1.10	178.00	112.65	384
Mar	....	....	....	133.50	+ 1.10	164.00	126.00	268

Est vol 750; vol Tues 677; open int 9,482, +10.

METALS AND PETROLEUM

COPPER-HIGH (CMX)–25,000 lbs.; cents per lb.

Jan	99.30	99.70	98.70	98.80	– .10	106.60	93.30	245
Feb	99.45	99.50	98.70	98.90	+ .10	105.70	93.60	894
Mar	99.65	99.95	98.55	99.10	+ .10	106.80	93.70	22,940
Apr	98.60	98.60	98.60	98.95	+ .05	103.00	93.50	606
May	99.25	99.70	98.40	98.85	....	106.20	93.30	8,262
June	98.50	98.50	98.50	98.85	....	102.00	94.80	425
July	99.30	99.40	98.50	98.80	....	103.80	92.80	4,262
Aug	....	....	....	98.85	– .05	101.00	95.70	278
Sept	98.80	98.90	98.50	98.90	– .05	103.45	92.80	2,709
Oct	....	....	....	98.90	– .05	99.80	95.90	247
Nov	....	....	....	99.00	– .05	99.30	96.00	232
Dec	99.70	99.70	99.00	99.10	– .05	101.10	91.60	2,858
Mr93	99.40	99.40	99.00	98.80	– .30	100.50	92.80	827
May	98.95	98.95	98.95	98.70	– .40	99.30	93.70	211
July	....	....	....	98.60	– .50	98.80	95.80	137
Sept	....	....	....	98.60	– .50	96.65	95.80	140

Est vol 11,000; vol Tues 7,337; open int 45,356, –326.

GOLD (CMX)–100 troy oz.; $ per troy oz.

Jan	....	....	....	356.10	+ .30	363.00	351.00	0
Feb	355.30	357.00	354.70	356.10	+ .20	456.50	348.50	19,030
Apr	357.30	359.10	356.80	358.20	+ .30	446.00	350.70	39,518
June	359.70	360.90	359.00	360.30	+ .30	467.00	353.80	14,895
Aug	363.00	363.00	363.00	362.50	+ .30	426.50	355.00	6,179
Oct	....	....	....	364.50	+ .20	410.80	358.50	2,279
Dec	....	....	....	366.70	+ .20	431.00	359.40	3,606
Fb93	....	....	....	369.00	+ .20	404.20	368.00	6,327
Apr	....	....	....	371.30	+ .10	410.00	368.50	5,372
June	....	....	....	373.80	+ .10	418.50	366.00	2,908
Aug	....	....	....	376.60	+ .10	395.50	374.50	1,134
Oct	....	....	....	379.50	+ .10	395.00	378.70	181
Dec	....	....	....	382.40	+ .10	402.80	374.50	926
Ju95	....	....	....	392.10	+ .10	....	....	100
Dec	....	....	....	402.30	+ .10	....	....	100

Est vol 42,000; vol Tues 27,567; open int 102,575, –1,893.

PLATINUM (NYM)–50 troy oz.; $ per troy oz.

Apr	346.50	352.50	346.50	349.40	– 2.00	438.50	329.50	10,477
July	346.50	350.50	346.50	349.40	– 2.00	427.50	331.00	1,762
Oct	353.00	353.00	353.00	352.40	– 1.50	404.00	336.00	1,529
Ja93	....	....	....	352.40	– 2.00	357.50	339.00	548

Est vol 2,679; vol Tues 919; open int 14,323, –227.

• FIGURE 12.2 Quotations on Actively Traded Commodity Futures Contracts

These quotes reveal at a glance key information about the various commodities, including the latest high, low, and closing ("settle") prices, as well as the lifetime high and low prices for each contract. (*Source: The Wall Street Journal,* January 31, 1992.)

method of valuing the contract, or pricing unit (like cents per pound, or dollars per ton), and (5) the delivery month. Using a corn contract as an illustration, we can see each of these parts in the illustration below:

KEY	
①	the *product*
②	the exchange
③	the *size* of the contract
④	the *pricing unit*
⑤	the *delivery* months

		Open	High	Low	Settle	Change	Lifetime High	Lifetime Low	Open Interest
	① ② ③ ④								
	Corn (CBT)—5,000 bu.; cents per bu.								
	May	253½	253¾	252¼	252½	−1¾	286½	230½	42,796
	July	258	258	256½	256¾	−1¾	288	233	60,477
⑤	Sept.	260	260½	259	259	−1½	263	236	7,760
	Dec.	263½	264	262½	263	−1¼	267¼	244	41,638
	Mar. 94	271¾	272	270¼	271	−1¼	276	254¾	11,098
	May	277¼	278	276¼	277	−1	281	273¼	1,326

settle price the closing price (last price of the day) for commodities and financial futures.

open interest the number of contracts presently outstanding on a commodity or financial future.

The quotation system used for commodities is based on the size of the contract and the pricing unit. The financial media generally report the open, high, low, and closing prices for each delivery month. With commodities, the last price of the day, or the closing price, is known as the **settle price.** Also reported, at least by *The Wall Street Journal,* is the amount of **open interest** in each contract—that is, the number of contracts presently outstanding. Note in the above illustration that the settle price for May corn was quoted at 252½. Since the pricing system is cents per bushel, this means that the contract was being traded at $2.52½ per bushel, and that the market value of the contract was $12,625 (each contract involves 5,000 bushels and each bushel is worth $2.52½; thus, 5,000 × $2.525 = $12,625).

Price Behavior

Commodity prices react to a unique set of economic, political, and international pressures—as well as the weather. Although the explanation of why commodity prices change is beyond the scope of this book, it should be clear that they do move up and down just like any other investment vehicle—which is precisely what speculators want. However, because we are dealing in such large trading units (5,000 bushels of this or 40,000 pounds of that), even a rather modest price change can have an enormous impact on the market value of a contract, and therefore on investor returns or losses. For example, if the price of corn goes up or down by just 20 cents per bushel, the value of a *single contract* will change by $1,000. Since a corn contract can be bought with a $750 initial margin deposit, it is easy to see the effect this kind of price behavior can have on investor return.

Do commodity prices really move all that much? Judge for yourself. If we examine the price change columns in Figure 12.2, we can uncover some excellent examples of sizable price changes that occur from one day to the next. Note, for example,

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that May soybeans fell $300, March wheat rose $200, and July orange juice contracts increased $202.50. Now, keep in mind that these are *daily* price swings that occurred on *single* contracts. These are sizable changes, even by themselves; but when you look at them relative to the (very small) original investment required, they add up to serious returns (or losses) in a hurry! And they occur not because the underlying prices are so volatile, but because of the sheer magnitude of the commodities contracts themselves.

Clearly, this kind of price behavior is one of the magnets that draws investors to commodities. The exchanges recognize the volatile nature of commodities contracts and try to put lids on price fluctuations by imposing daily price limits and maximum daily price ranges (similar limits are also put on financial futures). The **daily price limit** restricts the interday change in the price of the underlying commodity. For example, the price of corn can change by no more than 10 cents per bushel from one day to the next, and the daily limit on copper is 3 cents per pound. Such limits, however, still leave plenty of room to turn a quick profit. For example, the daily limits on corn and copper translate into per day changes of $500 for one corn contract and $750 for a copper contract. The **maximum daily price range,** in contrast, limits the amount the price can change *during* the day and is usually equal to twice the daily limit restrictions. Thus, the daily price limit on corn is 10 cents per bushel and its maximum daily range 20 cents per bushel.

daily price limit restriction on the day-to-day change in the price of an underlying commodity.

maximum daily price range the amount a commodity price can change during a day; usually equal to twice the daily price limit.



Return on Invested Capital

Futures contracts have only one source of return: the capital gains that can be earned when prices move in a favorable direction. There is no current income of any kind. The volatile price behavior of futures contracts is one reason high returns are possible; the other is leverage. That is, because all futures trading is done on margin, it takes only a small amount of money to control a large investment position and to participate in the large price swings that accompany many futures contracts. Of course, the use of leverage also means that it is possible for an investment to be wiped out with just one or two bad days.

Investment return can be measured by calculating **return on invested capital.** This is simply a variation of the standard holding period return formula that bases return on *the amount of money actually invested in the contract,* rather than on the value of the contract itself. It is used because of the generous amount of leverage (margin) used in commodities trading. The return on invested capital for a commodities position can be determined according to the following simple formula:

return on invested capital return to investors based on the amount of money actually invested in a security, rather than the value of the contract itself.

Equation 12.1

$$\text{Return on invested capital} = \frac{\begin{array}{c}\text{selling price of} \\ \text{commodity contract}\end{array} - \begin{array}{c}\text{purchase price of} \\ \text{commodity contract}\end{array}}{\text{amount of margin deposit}}$$

Equation 12.1 can be used for both long and short transactions. To see how it works, assume you bought two September corn contracts at 245 ($2.45 per bushel) by depositing the required initial margin of $2,000 ($1,000 for each contract). Your

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investment amounts to only $2,000, but you control 10,000 bushels of corn worth $24,500 at the time they were purchased. Now assume September corn has just closed at 259, so you decide to sell out and take your profit. Your return on invested capital would be as follows:

$$\text{Return on invested capital} = \frac{\$25{,}900 - \$24{,}500}{\$2{,}000}$$

$$= \frac{\$1{,}400}{\$2{,}000} = \underline{\underline{70.0\%}}$$

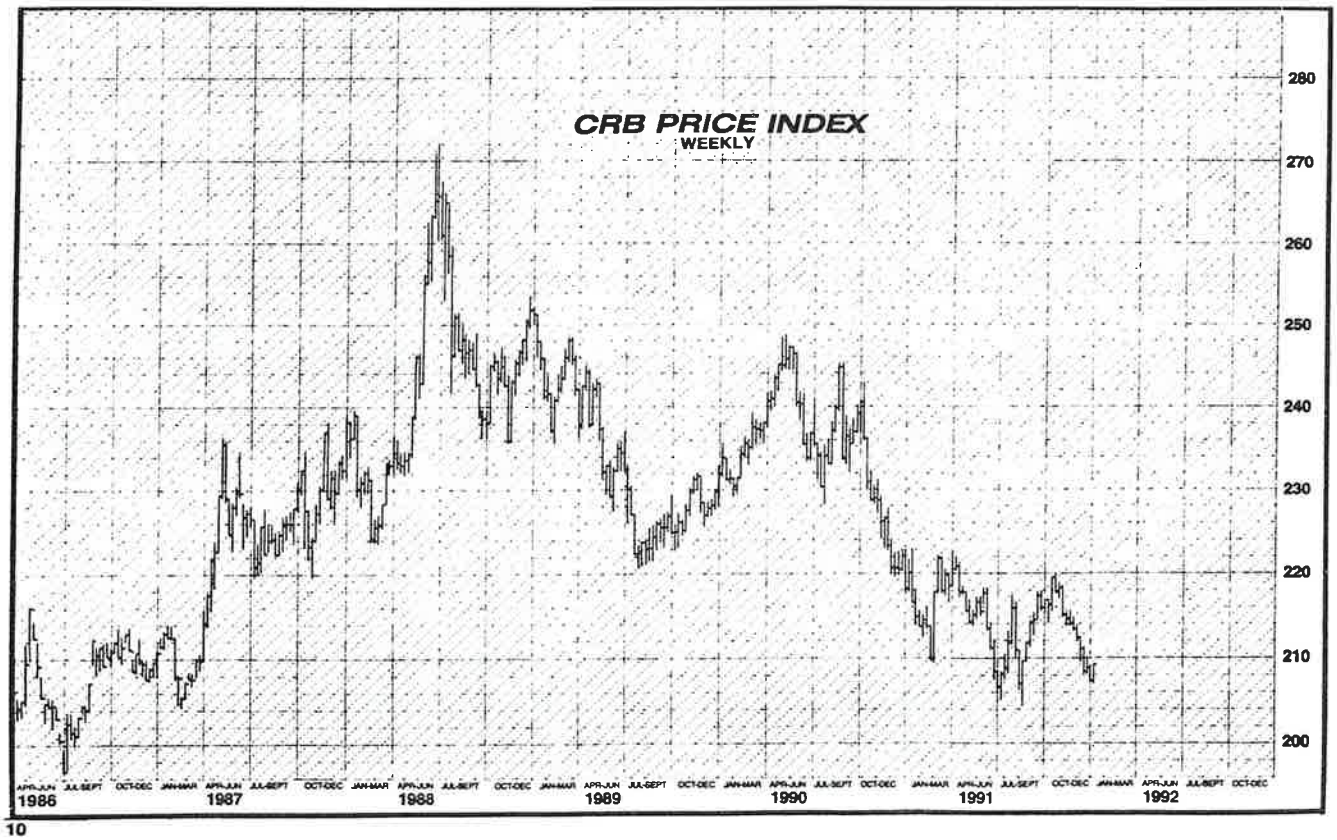
Clearly this high rate of return was due not only to an increase in the price of the commodity, but also—and perhaps more important—to the fact that you were using very low margin. (The initial margin in this particular transaction equaled just 6 percent of the underlying value of the contract.)

Trading Commodities

Investing in commodities takes one of three forms. The first is *speculating,* which is popular with investors who use commodities as a way to generate capital gains. In essence, they try to capitalize on the wide price swings that are characteristic of so many commodities. Figure 12.3 provides the composite index of futures prices over the six-year period from 1986 through 1991, as compiled by the Commodity Research Bureau (CRB). It graphically illustrates the volatile behavior of commodity prices. Although such price movements may be appealing to speculators, they can frighten a lot of other investors. Some of these more cautious investors turn to *spreading,* the second form of commodities investing; they use sophisticated trading techniques intended to capture the benefits of volatile prices but at the same time limit their exposure to loss. Finally, producers and processors use various *hedging* strategies as a way to protect their interests in the underlying commodities. We will briefly examine each of these trading tactics not only to see what they are, but also to gain a better understanding of how commodities can be used as investment vehicles.

Speculating

Speculators are in the market for one reason: They expect the price of a commodity to go up or down, and they hope to capitalize on it by going long or short. To see why a speculator would go long when prices are expected to rise, consider an individual who buys a March silver contract at 533½ (i.e., $5.33½ an ounce) by depositing the required initial margin of $1,300. Since one silver contract involves 5,000 troy ounces, it has a market value of $26,675. If silver goes up, the investor makes money. Assume it does, and that by February (one month before the contract expires) the price of the contract rises to 552. The speculator then liquidates and makes a profit of 18½ cents per ounce (552 − 533½). That means $925 profit from an investment of just $1,300—which translates into a return on invested capital of 71.2 percent. Of course, instead of rising, the price of silver could have dropped by 18½ cents per ounce. In this case, our investor would have lost most of his original



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• FIGURE 12.3 The Behavior of Commodity Prices over Time (1986–1991)

This graph shows the volatile nature of commodity prices and underscores the need for investor know-how when dealing in commodities. (*Source:* Courtesy of *Commodity Price Charts*.)

investment ($1,300 − $925 leaves only $375, out of which would have to come a round trip commission of $60 or $70). But to a short seller, the drop in price would be just what she was after, for she could profit from such a turn of events. Here's how: She sells (shorts) the March silver at 533½ and buys it back sometime later at 515. Clearly, the difference between her selling price and purchase price is the same 18½ cents, but in this case it is *profit,* since the selling price exceeds the purchase price (see Chapter 2 for a review of short selling).

Spreading

Instead of attempting to speculate on the price behavior of a futures contract, an investor might choose to follow the more conservative tactic of spreading. (The principles of spreading futures contracts are much the same as those we discussed with put and call options.) The idea is to combine two or more different contracts into one investment position that offers the potential for generating a modest amount of profit while restricting exposure to loss. One very important reason for spreading

in the commodities market is that unlike stock options, *there is no limit to the amount of loss that can occur with a futures contract.* An investor will set up a spread by buying one contract and simultaneously selling another. Although one side of the transaction will lead to a loss, the investor obviously hopes that the profit earned from the other side will be more than enough compensation and that the net result will be at least a modest amount of profit. If the investor is wrong, the spread will serve to limit (but not eliminate) any losses.

Here is a simple version of how a spread might work: Suppose we buy contract A at 533½ and at the same time short sell contract B for 575½. Sometime later we close out our interest in contract A by selling it at 542 and simultaneously cover our short position in B by purchasing a contract at 579. Although we made a profit of 8½ points on the long position, contract A (542 − 533½), we lost 3½ points on the contract that we shorted, B (575½ − 579). The net effect, however, is a profit of 5 points, which, if we were dealing in cents per pound, would mean a profit of $250 on a 5,000-pound contract. All sorts of commodity spreads can be set up for almost any type of investment situation. Most are highly sophisticated and require specialized skills.

Hedging

A hedge is a "technical" approach to commodity trading used by producers and processors to protect a position in a product or commodity. For example, a producer or grower would use a commodity hedge to obtain as *high* a price for the goods he sells as possible; the processor or manufacturer who uses the commodity, however, would employ a hedge to obtain the goods at as *low* a price as possible. A successful hedge, in effect, means added income to producers and lower costs to processors. An example will show how hedging works and why it is done: Suppose a manufacturer uses platinum as a basic raw material in the production of catalytic converters. It is early in the year and platinum is selling for $380 per ounce, but it is expected to shoot up in price and be much more expensive by year-end. To protect against future price increases, our manufacturer decides to buy a platinum futures contract, now trading at $405 an ounce. Assume that eight months later, the price of platinum has indeed gone up (to $480 per ounce) but so has the price of the futures contract, which is now trading at, say, $525 an ounce. The manufacturer has made $120 per ounce on the 50-ounce futures contract and is $6,000 ahead on the transaction—a gain that will be used to offset the increase in the cost of platinum. As it turns out, the gain on the futures contract is $1,000 more than the increased cost of 50 ounces of platinum on the open market, since the cost of platinum rose by only $100 per ounce and the cost of 50 ounces of platinum in the cash market went up by only $5,000. This was a successful hedge for the manufacturer because it kept the cost of this raw material in check, at least for the time being. (Technically, the manufacturer could take delivery of the contracted platinum—at an *effective* cost of $405 per ounce, the price at which the futures contract was purchased—but that is unlikely in this case, since the manufacturer would have to forgo the $1,000 profit in order to do so.)

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Commodities and the Individual Investor

For the most part, individuals use commodities in one of two ways: for speculation and/or spreading. Commodities appeal to investors because of the high rates of return they offer and their ability to act as inflation hedges during periods of rapidly rising consumer prices. When sustained high rates of inflation become a problem, traditional investment outlets just do not seem to be able to provide the type of return necessary to keep investors ahead of the game. That is, it seems that more often than not, in periods of high inflation, investors lose more in purchasing power than they gain from after-tax returns. Under such circumstances, investors can be expected to seek outlets that provide better protection against inflation, all of which explains why the interest in commodities tends to pick up with inflation.

Commodities can play an important role in a portfolio so long as *the investor understands the risks involved and is well versed in the principles and mechanics of commodities trading*. The quickest way to lose money in commodities is to jump in without knowing what you are doing. The fact is that over the long run the average return to commodities investors is *negative*. Because there is the potential for a lot of price volatility and because commodity trading is done on a very low margin, the potential for loss is enormous. Accordingly, most experts recommend that only a portion of an individual's investment capital be committed to commodities. The specific amount would, of course, be a function of investor aversion to risk and the amount of resources available. An investor has to be prepared mentally and should be in a position financially to absorb losses—perhaps a number of them. Not only should an adequate cash reserve be kept on hand (to absorb losses and/or meet margin calls), but it is also a good idea to maintain a diversified holding of commodities in order to spread your risks.

Individuals can invest directly in the commodities market, or they can buy put and call *options* on a number of the actively traded futures contracts. Alternatively, they can invest in limited-partnership *commodity pools*. These pools are a lot like mutual funds, and they might be used by individuals who wish to invest in the commodities market but who lack the time and/or expertise to manage their own investments. But remember that although these pools offer professional management, they by no means guarantee a profit. Instead, they only reduce some of the more obvious risks of commodity investing.

FINANCIAL FUTURES

Another dimension of the futures market is **financial futures,** a segment of the market where futures contracts are traded on a variety of financial instruments. Actually, financial futures are little more than an extension of the commodities concept. They were created for much the same reason as commodity futures; they are traded in the same market; their prices behave much like commodities; and they have similar investment merits. Yet, in spite of all these similarities, financial futures are a unique type of investment vehicle. Let's now look more closely at these instruments and how they can be used by investors.

The Financial Futures Market

financial futures a type of futures contract where the underlying "commodity" consists of a certain amount of some type of financial asset, such as debt securities, foreign currencies, or market baskets of common stocks.

Even though the financial futures market has been around for only 20 years, it is today a dominant force in the whole futures market, and has reached a level of trading that far surpasses the traditional commodities market. The best-selling futures contracts today are, in fact, financial futures—like U.S. Treasury bonds, S&P 500, and Eurodollar contracts. Much of this interest in financial futures is due, of course, to hedgers and big institutional investors who use these futures contracts as portfolio- and debt-management tools. But there are still plenty of opportunities here for individual investors. For example, financial futures offer still another way to speculate on the behavior of interest rates. Or they can be used by investors who wish to speculate in the stock market. They even offer a convenient way to speculate in the highly specialized, and often highly profitable, foreign currency markets.

The financial futures market was established in response to the economic turmoil the United States had been experiencing during the 1970s. The dollar had become unstable on the world market and was causing serious problems for multinational firms. Closer to home, interest rates had begun to behave in a volatile manner, which caused severe difficulties for corporate treasurers, financial institutions, and money managers in general. All these parties needed a way to protect themselves from the ravages of wide fluctuations in the value of the dollar and interest rates, and so a market for financial futures was born. Hedging provided the economic rationale for the market in financial futures, but speculators were quick to respond as they found the price volatility of these instruments attractive and, at times, highly profitable. At present, financial futures are traded on seven exchanges: the New York Futures Exchange (NYFE), the Kansas City Board of Trade, the MidAmerica Commodity Exchange, the New York Cotton Exchange (through its FINEX subsidiary), the Chicago Board of Trade, the Chicago Merchantile Exchange (including a subsidiary of the CME set up to trade foreign currencies, the International Monetary Market), and the Philadelphia Board of Trade. The three basic types of financial futures include foreign currencies, debt securities, and stock indexes.

Foreign Currencies, Interest Rates, and Stock Indexes

currency futures futures contracts on foreign currencies, traded much like commodities.

The financial futures market started rather inconspicuously in May 1972 with the listing of a handful of foreign currency contracts. Known as **currency futures,** they have become a major hedging vehicle as international trade (to and from this country) has mushroomed. Most of the currency trading today is conducted in the following six foreign currencies:

- British pound
- German mark
- Swiss franc
- Canadian dollar
- Japanese yen
- Australian dollar

All these currencies involve countries with which the United States has strong international trade and exchange ties. In October 1975, the first futures contract on debt securities, or **interest rate futures** as they are more commonly known, was established when trading started in GNMA pass-through certificates (a special type of mortgage-backed bond issued by an agency of the U.S. government). In time, other issues were added, so that today trading is carried out in the following kinds of debt securities and interest rates:

interest rate futures futures contracts on debt securities, traded much like commodities.

- U.S. Treasury bills
- 30-day interest rates
- 90-day Eurodollar deposits
- U.S. Treasury notes
- U.S. Treasury bonds

All of these futures contracts, except the Eurodollar deposits, are based on *domestic* securities. Eurodollar deposits are dollars deposited in interest-bearing accounts in banks outside the United States. Interest rate futures were immediately successful, and their popularity has grown rapidly.

In February 1982, a new trading vehicle was introduced: the stock-index futures contract. **Stock-index futures,** as they are called, are contracts pegged to broad-based measures of stock market performance. At the present time, trading is done in four U.S. stock-index futures:

stock-index futures futures contracts written on broad based measures of stock market performance like the S&P 500 Stock Index; traded much like commodities, allowing investors to participate in the general movements of the stock market.

- S&P 500 Stock Index
- NYSE Composite Stock Index
- Value Line Composite Stock Index
- Major Market Index (which is intended to track the DJIA)

(In addition to these U.S. stock indexes, there's also a Japanese index—the NIKKEI 225 Stock index contract, traded on the Chicago Mercantile Exchange.) Stock-index futures—which are similar to the index options discussed in Chapter 11—allow investors to participate in the general movements of the entire stock market. These index futures (and other futures contracts) represent a type of *derivative security,* to the extent that they, like options, derive their value from the price behavior of the assets that underlie them. In the case of stock index futures, they are supposed to reflect the general performance of the stock market as a whole, as measured by a particular index like the S&P 500. Thus, when the market, as measured by the S&P 500 goes up, the value of an S&P 500 futures contract should go up as well. Such behavior enables investors to use stock-index futures as a way to buy the market—or a reasonable proxy thereof—and thereby participate in broad market moves. (Note that in addition to stock market indexes, there are several other types of index-based futures contracts available. For example, there's a futures contract available on an index of *municipal bonds;* another on an index that measures the value of the *U.S. dollar* against eight key foreign currencies; and even one based on an index of 21 *commodities* futures contracts.)

Program Trading

program trading a type of computer-assisted trading whereby brokerage houses and other institutional investors simultaneously buy and sell large quantities of common stocks and stock-index futures contracts; also known as *index arbitrage.*

Stock-index futures contracts are widely used in **program trading**—a type of computer-assisted trading whereby brokerage houses and other institutional investors simultaneously buy and sell *large* quantities of common stocks and stock-index futures contracts. This particular type of program trading, known as an *index arbitrage,* has come under fire because it's felt that such trading leads to wide (and largely unjustified) swings in stock prices. Indeed, some argue that, on far too many occasions, it's the futures contracts that are driving stock prices, rather than the other way around. (*Index options* are also used in program trading, in much the same way as stock-index futures, but we'll confine our discussion here to the use of futures contracts.)

Program trading originated as a means for brokerage firms to buy or sell large baskets of stock for institutions without drastically disturbing share prices. But in April 1982, the introduction of a futures contract linked to the S&P 500 stock index created the opportunity for index arbitrage, the exploitation of minute differences between the price of the futures contract and the prices of the underlying stocks. Normally, the value of the stock-index futures closely tracks changes in the prices of the underlying shares, but sometimes, differences do occur. When that happens, the program trades kick in. That is, if the price difference widens enough, the programs call for automatic placement of orders to sell the more expensive item and buy the cheaper one. For example, if stock-index futures contracts were *purchased,* a corresponding amount of stocks (those that underlie the stock index) would be *sold,* and both of these transactions would occur simultaneously. Although this may not sound like a big deal, the problem is the stock side of the transaction generally involves huge amounts of stock—literally tens of thousands or even hundreds of thousands of shares. Why is this done? Because by buying or selling *thousands* of shares of stock simultaneously, index arbitrage can wring a substantial profit from even the smallest price difference. When those buy or sell levels are reached and program trading begins, the huge order flows that follow can heavily influence the stock market's direction, at least temporarily.

Critics contend that index arbitrage program trading gives unfair advantage to institutional users at the expense of individual investors, causes needless volatility in stock prices, and creates opportunities for abuse. In response to these growing criticisms, a number of so-called "collars" were placed on program traders to temporarily prohibit or curtail such trading when the markets move sharply higher or lower. For example, index arbitrage trading is "side-tracked"—effectively halted—once the DJIA moves 50 points above or below the previous day's close. These collars probably have curtailed market volatility caused by program trading. But another very important development has also taken place. That is, more and more big institutional traders have entered the index arbitrage game (for self-protection, if nothing else), and in so doing, they have kept the spreads between futures and stock prices razor-thin. As you would expect in any efficient market, as more players got into the game, profits became harder to come by. In spite of the shrinking profit margins, index arbitrage is still around today, but not as a stand alone

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money maker like it used to be. Rather, index arbitrage is now being used increasingly as a hedging technique for sophisticated, custom-designed equity options and swap contracts. And that's good news for the market, because this new brand of index arbitrage is far less likely to cause wide swings in stock prices.

Contract Specifications

In principle, financial futures contracts are like the commodities contracts that we examined above. They control large sums of the underlying financial instrument and are issued with a variety of delivery months. All this can be seen in Figure 12.4, which lists quotes for several foreign currency, interest rate, and stock-index futures contracts. Looking first at currency futures, we see that the contracts entitle the holders to a certain position in a specified foreign currency; in effect, the owner of a currency future holds a claim on a certain amount of foreign money. The precise amount ranges from 62,500 British pounds to 12.5 million Japanese yen. In a similar fashion, holders of interest rate futures have a claim on a certain amount of the underlying debt security. This claim is also quite large, as it amounts to $100,000 worth of Treasury notes and bonds, $1 million worth of Eurodollar deposits and Treasury bills, and $5 million in 30-day interest rate contracts.

Stock-index futures, however, are a bit different, as the seller of one of these contracts is *not* obligated to deliver the *underlying stocks* at expiration date. Instead, ultimate delivery is in the form of cash (which is fortunate, since it would indeed be a task to make delivery of the 1,700 stocks that make up the Value Line Index, or the 500 issues in the S&P index). The commodity underlying stock-index futures, therefore, is *cash*; basically, the amount of underlying cash is set at 500 times the value of the stock index. For example, if the S&P 500 Index stood at 410, the amount of cash underlying a single S&P 500 stock-index futures contract would be $\$500 \times 410 = \$205{,}000$. Again, the value is substantial. In terms of delivery months, the lives of financial futures contracts run from about 12 months or less for stock index and currency futures to about 3 years or less for interest rate instruments.

Prices and Profits

All currency futures are quoted in dollars or cents per unit of the underlying foreign currency (for instance, in dollars per British pound or cents per Japanese yen). Thus, according to the closing (''settle'') prices in Figure 12.4, one June British pound contract was worth $109,762.50 (62,500 pounds × $1.7562) and a December Japanese yen was valued at $99,187.50 (since a quote of .7935 cents per yen amounts to less than a penny, we have 12,500,000 yen × $0.007935). Except for the quotes on Treasury bills and other short-term securities, which will be examined below, interest rate futures contracts are priced as a percentage of the par value of the underlying debt instrument (either Treasury notes or Treasury bonds). Since these instruments are quoted in increments of 1/32 of 1 percent, a quote of 99–31 for the settle price on the June Treasury bonds (in Figure 12.4) translates into $99^{31}/_{32}$—which, when you divide 31 by 32, converts finally into a quote of

CURRENCY

	Open	High	Low	Settle	Change	Lifetime High	Lifetime Low	Open Interest
JAPAN YEN (IMM)—12.5 million yen; $ per yen (.00)								
Mar	.7975	.7988	.7934	.7944	+ .0014	.8139	.7000	58,709
June	.7964	.7977	.7928	.7933	+ .0016	.8125	.7015	4,586
Sept	....	....	....	.7930	+ .0018	.8080	.7265	1,709
Dec	....	....	....	.7935	+ .0021	.8045	.7512	1,623
Mr93	....	....	....	.7947	+ .0023	.8005	.7960	1,242
Est vol 24,751; vol Tues 20,990; open int 67,869, −232.								
DEUTSCHEMARK (IMM)—125,000 marks; $ per mark								
Mar	.6252	.6275	.6166	.6196	− .0002	.6575	.5353	97,862
June	.6175	.6190	.6095	.6116	− .0004	.6490	.5322	3,953
Sept	....	....	....	.6048	− .0005	.6400	.5685	673
Dec	....	....	....	.5998	− .0002	.6106	.5645	1,146
Est vol 55,984; vol Tues 30,925; open int 63,636, +1,088.								
CANADIAN DOLLAR (IMM)—100,000 dlrs.; $ per Can $								
Mar	.8480	.8510	.8466	.8479	− .0001	.8857	.8253	20,441
June	.8425	.8450	.8413	.8425	− .0001	.8820	.8330	2,129
Sept	....	....	....	.8375	− .0001	.8774	.8348	150
Est vol 5,792; vol Tues 4,414; open int 22,817, +424.								
BRITISH POUND (IMM)—62,500 pds.; $ per pound								
Mar	1.7892	1.7974	1.7782	1.7822	+.0072	1.8646	1.5560	22,382
June	1.7630	1.7710	1.7530	1.7562	+.0068	1.8346	1.6410	2,535
Sept	1.7450	1.7470	1.7310	1.7330	+.0070	1.8066	1.6740	116
Est vol 17,685; vol Tues 9,153; open int 25,033, +453.								

INTEREST RATE

	Open	High	Low	Settle	Chg	Yield Settle	Yield Chg	Open Interest
TREASURY BONDS (CBT)—$100,000; pts. 32nds of 100%								
Mar	102-07	102-26	101-01	101-02	− 40	7.893	+ .123	298,778
June	101-05	101-23	99-30	99-31	− 40	8.003	+ .125	31,462
Sept	100-18	100-20	98-31	98-31	− 40	8.105	+ .127	8,460
Dec	99-20	99-20	98-01	98-01	− 41	8.202	+ .132	4,436
Mr93	98-26	98-27	97-07	97-07	− 41	8.287	+ .134	1,018
June	98-02	98-02	96-14	96-14	− 42	8.370	+ .039	155
Est vol 450,000; vol Tues 294,659; op int 344,428, −5,833.								
5 YR TREAS NOTES (CBT)—$100,000; pts. 32nds of 100%								
Mar	05-255	06-045	05-095	105-10	− 16	6.731	+ .115	110,118
June	104-28	105-06	104-11	04-115	− 17	6.953	+ .124	4,923
Est vol 28,888; vol Tues 25,364; open int 115,041, −1,678.								
2 YR TREAS NOTES (CBT)—$200,000, pts. 32nds of 100%								
Mar	104-19	04-255	104-15	04-165	− 30	5.582	+ .048	16,345
Est vol 1,200; vol Tues 1,359; open int 16,346, −465.								

	Open	High	Low	Settle	Chg	Discount Settle	Discount Chg	Open Interest
TREASURY BILLS (IMM)—$1 mil.; pts. of 100%								
Mar	96.29	96.29	96.17	96.18	− .04	3.82	+ .04	31,155
June	96.18	96.18	96.03	96.04	− .06	3.96	+ .06	16,457
Sept	95.87	95.92	95.75	95.76	− .05	4.24	+ .05	2,834
Dec	95.39	95.39	95.20	95.20	− .07	4.80	+ .07	996
Est vol 13,450; vol Tues 7,114; open int 51,498, −34.								

INDEX

	Open	High	Low	Settle	Chg	High	Low	Open Interest
S&P 500 INDEX (CME) 500 times index								
Mar	414.60	418.85	408.60	410.90	− 4.55	422.85	372.90	142,484
June	416.00	420.35	410.80	412.35	− 4.55	424.40	374.50	5,076
Sept	418.45	421.50	412.00	413.75	− 4.65	425.50	376.25	419
Dec	419.40	423.50	413.80	415.20	− 4.80	427.25	391.40	345
Est vol 70,509; vol Tues 38,826; open int 148,324, +713.								
Indx prelim High 417.83; Low 409.17; Close 410.34 −4.62								
NYSE COMPOSITE INDEX (NYFE) 500 times index								
Mar	228.70	231.05	225.40	226.80	− 2.35	233.00	205.70	4,451
June	228.90	231.25	227.20	227.35	− 2.40	233.50	206.50	455
Sept	230.50	230.50	230.50	227.90	− 2.50	233.65	212.55	191
Est vol 9,024; vol Tues 3,856; open int 5,107, +349.								
The Index: High 230.32; Low 226.17; Close 226.64 −2.31								
MAJOR MKT INDEX (CBT) $500 times index								
Feb	348.50	353.75	344.95	346.35	− 3.50	353.75	311.50	4,888
Mar	348.20	354.00	345.00	346.70	− 3.65	354.00	311.60	308
Apr	353.95	353.95	346.00	347.25	− 3.75	353.95	345.75	102
Est vol 3,000; vol Tues 1,757; open int 4,832, +212.								
The Index: High 354.47; Low 345.20; Close 346.23 −4.56								

• FIGURE 12.4 Quotations on Selected Actively Traded Financial Futures

The trading exchange, size of the trading unit, pricing unit, and delivery months are all vital pieces of information included as part of the quotation system used with financial futures. (*Source: The Wall Street Journal,* January 30, 1992.)

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99.96875 percent of par. Applying this rate to the par value of the underlying securities, we see that a June Treasury bond contract is worth $99,968.75 (i.e., $100,000 × 0.9996875). Stock index futures are quoted in terms of the actual underlying index, but, as noted above, they carry a face value of $500 times the index.

The value of an interest rate futures contract responds to interest rates exactly like the debt instrument that underlies the contract. That is, when interest rates go up, the value of an interest rate futures contract goes down, and vice versa. However, the quote system for interest rate as well as currency and stock-index futures is set up to reflect the market value of the contract itself. Thus, when the price or quote of a financial futures contract increases, the investor who is long makes money; in contrast, when the price decreases, the short seller makes money. Price behavior is the only source of return to speculators; for even though stocks and debt securities are involved in some financial futures, such contracts have no claim on the dividend and interest income of the underlying issues. Even so, huge profits (or losses) are possible with financial futures due to the equally large size of the contracts. For instance, if the price of Swiss francs goes up by just 2 cents against the dollar, the investor is ahead $2,500, since one futures contract covers 125,000 Swiss francs; likewise, a 3-point drop in the NYSE Composite Index means a $1,500 loss to an investor (3 × $500). When related to the relatively small initial margin deposit required to make transactions in the financial futures markets, such price activity can mean very high rates of return—or very high risk of a total wipeout.

Pricing Futures on Treasury Bills and Other Short-Term Securities

Because Treasury bills and other short-term securities are normally traded in the money market on what is known as a "discount" basis, it was necessary to devise a special pricing system that would reflect the actual price movements of these futures contracts. To accomplish this, an **index price** system was developed whereby the yield is subtracted from an index of 100. Thus, a Treasury bill or Eurodollar contract, for example, would be quoted at an index of 94.75 when the yield on the underlying security is 5.25 percent (100.00 − 5.25). Under such a system, when someone buys, say, a T-bill future and the index goes up, that individual has made money; when the index goes down, a short seller has made money. Note also that the 30-day interest rate futures, as well as 90-day T-bill and Eurodollar contracts are all quoted in *basis points,* where 1 basis point equals 1/100 of 1 percent. Thus, a quote of 95.20 (which was the settle price of the December T-bill contract) translates into a T-bill yield of 4.80 percent (100.00 − 95.20).

index price technique used to price T-bill (and other short-term securities) futures contracts, which reflects the actual price movements of these futures contracts.

The index price system traces only the price behavior of the futures contract. To find the *actual price* or *value* of a 90-day T-bill or Eurodollar contract (the two most actively traded short-term contracts), we use the following formula:

Equation 12.2

$$\text{Price of a 90-day futures contract} = \$1{,}000{,}000 - \left(\frac{\text{security's yield} \times 90 \times \$10{,}000}{360}\right)$$

(A similar formula would be used to find the price of a 30-day interest rate contract, except a value of 30 would be used in the formula's numerator, in place of the 90; everything else would be handled exactly the same as shown in Equation 12.2.)

Notice that this price formula is based not on the quoted price index, but on the *yield of the security itself,* which can be determined by subtracting the price index quote from 100.00. To see how it works, consider a 90-day T-bill futures contract quoted at 95.20; recall this T-bill futures contract is priced to yield 4.80 percent. Now, using Equation 12-2, we can see that the price (or value) of this futures contract is:

$$\begin{aligned}\text{Price of 90-day (CD) futures contract} &= \$1{,}000{,}000 - \left(\frac{4.80 \times 90 \times \$10{,}000}{360}\right)\\ &= \$1{,}000{,}000 - \$12{,}000\\ &= \underline{\underline{\$988{,}000}}\end{aligned}$$

A handy shortcut for *tracking the price behavior* of T-bill or Eurodollar futures contracts is to remember that the price of a 90-day contract will change by $25 for every one basis point change in yield. Thus, when the yield on the underlying 90-day security moves from, say, 4.80 to 4.95 percent, it goes up by 15 basis points and causes the price of the futures contract to drop by 15 × $25 = $375.

Trading Techniques

Financial futures can be used for three purposes: hedging, spreading, and speculating. Multinational companies and firms that are active in international trade might consider *hedging* with currency or Eurodollar futures, whereas various types of financial institutions and corporate money managers often use interest rate futures for hedging purposes. In either case the objectives are the same: to lock in the best monetary exchange or interest rate possible. In addition, individual investors and portfolio managers use stock-index futures for hedging purposes in order to protect their security holdings against temporary market declines. Financial futures can also be used for *spreading*. This tactic is popular with investors who adopt strategies of simultaneously buying and selling combinations of two or more contracts to form a desired investment position. A type of futures spread is described in the *Investor Insights* box nearby—note in this case that the spread is set up to capture profits from the "January Effect" in the stock market. Finally, financial futures are widely used for *speculation*. As this brief review suggests, although the instruments may differ, the trading techniques used with financial futures are virtually identical to those used with commodities. While all three techniques are widely employed by investors, except for the *Investor Insights* box below, we will illustrate the use of financial futures by speculators and hedgers only. We will first examine speculating in currency and interest rate futures and then look at how these contracts can be used to hedge investments in stocks, bonds, and foreign securities.

Speculating in Financial Futures

Speculators are especially interested in financial futures because of the large size of the futures contracts. For instance, in early 1992, Canadian dollar contracts were worth over $84,000, Treasury notes were going for over $100,000, and Treasury bill contracts were being quoted at close to a million dollars. With contracts of this

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INVESTOR INSIGHTS

Playing the "January Effect" with Stock Index Futures

In an efficient market, an investor should not be able to consistently out-perform the market. And yet we know that certain *market anomalies* do exist, such that knowledgeable investors can take advantage of unusual price patterns that seem to appear with some degree of regularity. One of the most widely-known market anomalies is the so-called *January effect,* in which small stocks typically begin to rally each December, outpacing big stocks, in a phenomenon that extends into January. This occurs after tax-related selling beats prices to bargain-basement levels. But trying to profit from the January effect is dicey at best. That's because playing this price pattern in the most obvious ways (buying and selling small stocks) isn't always so easy. For example, if investors buy just a few small stocks, they might select ones that perform poorly. And when they buy, they frequently pay the highest going price, the "asked price," and usually receive the lower "bid price" when they sell; obviously, this bid-ask penalty can put a real dent in January-effect profits. Then, throw in commissions, and investors are lucky if there's any profit left.

One way small investors can play the January effect *and* minimize transaction costs is to use the futures markets. The Value Line futures contract on the Kansas City Board of Trade is based on an index of 1,665 stocks; of these, 66% have a market value—the total shares outstanding times the market price—of less than $1 billion. Only about 30% of the stocks in the Standard & Poor's 500-stock index have market values below $1 billion. Other indexes top-weighted with big stocks are the New York Stock Exchange Composite Index and the Major Market Index. The difference in composition means the January effect can be exploited *by buying Value Line futures and simultaneously selling futures contracts based on an index with more big stocks, such as the S&P 500.* This kind of futures trade is known as a *spread.*

For instance, if the market really does rally and the January effect works, the Value Line contracts should move up more than the S&P 500 contracts do. If the market falls, the Value Line contracts should fall less than the big-stock index futures do. Either scenario would produce a profit for those holding a spread that consisted of long, or purchased, Value Line futures and short positions in futures based on a big-stock index.

Since 1982, when stock-index futures started trading, this futures strategy has produced a theoretical profit each year the Value Line contract was used as a proxy for small stocks and the S&P 500 represented big stocks. In each case, it was assumed that the trade was instituted on December 15 and closed out on the following January 15. All profit and

size, it obviously does not take much movement in the underlying asset to produce big price swings and therefore big profits. Currency or interest rate futures can be used for just about any speculative purpose. For example, if an investor expects the dollar to be devalued relative to the German mark, she would buy mark currency futures, since the contracts should go up in value. If a speculator anticipates a rise in interest rates, he might consider going short (selling) interest rate futures, since they should go down in value. Because margin is used and financial futures have the

loss calculations were made using the prices for March futures contracts. (With a spread, if the market goes up, you'll make money on the long position but lose on the short—the object, of course, is to net out more profit than loss.) The accompanying table lists the track record of this particular futures spread. Note that the largest profit was $2,750 per spread (one contract purchased and one sold short) closed out in January 1991, and the smallest was $275 for a trade closed in 1989, and again in 1992. That's not bad—especially when you consider the minimum capital needed to execute this spread is only $9,500. And with commissions at a discount broker of only $30 to $50, there's still plenty of profit left. Of course, there's no guarantee that the January effect will occur each year. But it's clear that the futures spread described here puts you in a pretty good position to make a nice profit when it does—and, to make at least a little money even if the January effect doesn't occur!

Playing the "January Effect"

One way of playing the January effect involves buying the Value Line contract and simultaneously selling the S&P 500 contract. In this example, trades are entered on December 15 and closed out on January 15, or the first business day following if the 15th falls on a weekend. Calculations don't include commissions.

		Profit
Entry Date	**Exit Date**	**Value Line vs. S&P 500**
12/15/82	1/17/83	$2,275
12/15/83	1/16/84	1,725
12/17/84	1/15/85	2,325
12/16/85	1/15/86	1,800
12/15/86	1/15/87	1,225
12/15/87	1/15/88	2,700
12/15/88	1/16/89	275
12/15/89	1/15/90	675
12/17/90	1/15/91	2,750
12/16/91	1/15/92	275
Average		**$1,600**

Source: Adapted from Stanley W. Angrist, "Futures Offer Cheap Play on Small Stocks' Annual Rally," *The Wall Street Journal,* December 13, 1990, p. C1.

same source of return as commodities (appreciation in the price of the futures contract), return on invested capital is used to measure the profitability of financial futures.

Let's look at an example of a foreign currency contract. Suppose an individual investor feels that the Japanese yen is about to appreciate in value *relative to the dollar*. As a result, this investor decides to buy three September yen contracts at

.6195. Each contract is worth $77,438 (12,500,000 × 0.006195), so the total market value of three contracts would be $232,314. Even so, the investor has to deposit only $6,000 to acquire this position. (Recall from Table 12.2 that the required initial margin for Japanese yen is $2,000 per contract.) If the price of the yen moves up just a fraction (from .6195 to .6700), the value of the three contracts will rise to $251,250, and the investor, in a matter of months, will have made a profit of $18,936. Using Equation 12-1, for return on invested capital, such a profit translates into an enormous 316 percent rate of return. Of course, an even smaller fractional change in the other direction would have wiped out this investment, so it should be clear that *these high returns are not without their equally high risks.*

Now consider an investment in an interest rate future. Assume the investor is anticipating a sharp rise in long-term rates. Because a rise in rates means that interest rate futures will drop in value, the investor decides to short sell two December T-bond contracts at 87–22; this quote translates into a price of 87 22/32, or 87.6875 percent of par. The two contracts are worth $175,375 ($100,000 × .876875 × 2), but the amount of money required to make the investment is only $5,400 (as the initial margin deposit is $2,700 per contract). Assume that interest rates do in fact move up, and as a result the price on Treasury bond contracts drops to 80. Under such circumstances, the investor would buy back the two December T-bond contracts (in order to cover his short position) and in the process make a profit of $15,375. (Recall that he originally sold the two contracts at $175,375 and then bought them back some time later at $160,000; like any investment, the difference between what you pay for a security and what you sell it for is profit.) In this case, the return on invested capital amounts to a whopping 285 percent. Again, however, this kind of return is due in no small part to the *enormous risk of loss* the investor assumes.

Trading Stock-Index Futures

Most investors use stock-index futures for speculation or hedging. (Stock-index futures are similar to the *index options* introduced in Chapter 11 and, as such, much of the discussion that follows also applies to index options.) Whether speculating or hedging, the key to success is *predicting the future course of the stock market.* Because investors are buying the market with stock-index futures, it is important to get a handle on the future direction of the market via technical analysis (as discussed in Chapter 7) or some other technique. Once an investor feels she has this, she can formulate a stock-index futures trading or hedging strategy. For example, if she feels strongly that the market is headed up, she would want to go long (buy stock-index futures); in contrast, if her analysis of the market suggests a sharp drop in equity values, she could make money by going short (selling stock-index futures). Speculating in this way would prove profitable so long as our investor's expectations about the market actually materialize.

Consider, for instance, an investor who believes the market is undervalued and therefore a move up is imminent. He can try to identify one or a handful of stocks that should go up with the market (and assume the stock selection risks that go along with this approach), or he can buy an S&P 500 stock-index future presently trading at, say, 424.45. To execute such a transaction the speculator need deposit an initial

margin of only $9,000. Now, if his expectations are correct and the market does rise so that the S&P 500 Index moves to 440.95 by the expiration of the futures contract, the investor will earn a profit of $8,250: (440.95 − 424.45) × $500 = $8,250. Given that this amount was earned on a $9,000 investment, his return on invested capital would amount to a very respectable 92 percent. Of course, keep in mind that if the market drops by only 18 points (or just 4.2%), the investment will be a *total loss*.

Stock index futures also make excellent hedging vehicles in that they provide investors with a highly effective way of protecting stock holdings in a declining market. Although this tactic is not perfect, it does enable investors to obtain desired protection without disturbing their equity holdings. Here's how a so-called short hedge, which is used to protect an investor's stock portfolio against a decline in the market, would work. Assume an investor holds a total of 2,000 shares of stock in 15 different companies and that the market value of this portfolio is around $110,000. If the investor thinks the market is about to undergo a temporary sharp decline, he can do one of three things: sell his shares, short sell all his stock holdings against the box, or buy puts on each of his stocks. Clearly, these alternatives are cumbersome and/or costly and therefore undesirable for protecting a widely diversified portfolio. The desired results could be achieved, however, by short selling stock-index futures. (Note that basically the same protection can be obtained in this hedging situation by turning to options and buying a *stock index put*.)

Suppose the investor short sells one NYSE stock-index futures contract at 218.75. Such a contract would provide a close match to the current value of the investor's portfolio, as it would be valued at $109,375, and yet it would require an initial margin deposit of only $4,500. (Margin deposits are lower for hedgers than for speculators.) Now, if the NYSE Composite Index does drop to, say, 198.00, the investor will make a profit from the short sale transaction of some $10,000. That is, since the index fell 20.75 points (218.75 − 198.00), the total profit will be: 20.75 × $500 = $10,375. Ignoring taxes, this profit can be added to the portfolio (additional shares of stock can be purchased at their new lower prices), with the net result being a new portfolio position that will approximate the one that existed prior to the decline in the market. How well the "before" and "after" portfolio positions match will depend on how far the portfolio dropped in value. If the average price dropped about $5 per share in our example, the positions will closely match. However, this does not always happen; the price of some stocks will change more than others and therefore the amount of protection provided by this type of short hedge depends on how sensitive the stock portfolio is to movements in the market. Thus, the type of stocks held in the portfolio is an important consideration in structuring the stock-index short hedge. OTC and highly volatile stocks will probably require more protection than stocks that are relatively more price-stable or have betas closer to 1.0. In any event, hedging with stock-index futures can be a low-cost yet effective way of obtaining protection against loss in a declining stock market.

Hedging Other Securities

Just as stock-index futures can be used to hedge stock portfolios, so *interest rate futures* can be used to hedge bond portfolios and *foreign currency futures* can be

used with foreign securities as a way to protect against foreign exchange risk. Consider an interest rate hedge: If an investor holds a substantial portfolio of bonds, the last thing he wants to see is a big jump in interest rates, as that could cause a sharp decline in the value of his portfolio. Assume this investor holds nearly $300,000 worth of Treasury and agency issues, with an average (approximate) maturity of 20 years. If he strongly believes that market rates are headed up, he could hedge his bond portfolio by short selling three U.S. Treasury bond futures contracts (since each T-bond futures contract is worth about $100,000, it would take three of them to cover a $300,000 portfolio). Now if rates do head up, his portfolio will be protected against loss—though as we noted with stocks above, the exact amount of protection will depend on how well the T-bond futures contracts parallel the price behavior of this particular bond portfolio.

There is, of course, a downside to all this: i.e., *if market interest rates go down, rather than up, the investor will miss out on potential profits as long as the short hedge position remains in place*. This is so because all or most of the profits being made in the portfolio will be offset by losses from the futures contracts. Actually, this will occur with any type of portfolio (stocks, bonds, or anything else) that's tied to an offsetting short hedge, because when the short hedge is created, it essentially *locks in a position at that point*. Although you don't lose anything when the market falls, you also don't make anything when the market goes up. In either case, the profits you make from one position are offset by losses from the other.

To see how futures contracts can be used to hedge foreign exchange risk, let's assume that an investor just purchased $150,000 worth of German government one-year notes (the investor did this because higher yields were available on the German notes than on comparable U.S. Treasury securities). Now, since these notes are denominated in *deutshe marks,* this investment is subject to loss if currency exchange rates move against the investor—i.e., if the value of the dollar rises relative to the mark. If all the investor wanted was the higher yield offered by the German note, she could basically *eliminate* the currency exchange risk by setting up a currency hedge. Here's how it's done: Let's say at the current exchange rate that one U.S. dollar will "buy" 1.65 marks, meaning marks are worth about 60 cents (i.e., $1/1.65 marks = 60¢). If currency contracts on German marks were trading at around $0.60 a mark, our investor would have to sell two contracts in order to protect her $150,000 investment: each German mark contract covers 125,000 marks, so if they're being quoted at .6000, then each contract is worth: $0.60 × 125,000 = $75,000.

Assume one year later the value of the dollar has, in fact, increased, relative to the mark, so that one U.S. dollar will now "buy" 1.725 marks. Under such conditions, a German mark futures contract would be quoted at around .5800 (i.e., $1/1.725 = $0.58). At this price, each futures contract would be worth $72,500 (125,000 × $0.58). Each contract, in effect, would be worth $2,500 *less* than it was a year ago, but since the contract was sold short when the hedge was set up, that means the hedger will make a profit of $2,500 per contract—a total profit of $5,000 on the two contracts. Unfortunately, that's *not* net profit, since all this profit will do is offset the loss the investor will incur on her German note investment. In very

simple terms, when she sent her $150,000 overseas to buy the German notes, her money was worth 250,000 marks; however, when she brought the money back one year later, those 250,000 marks purchased only 145,000 American dollars. So the investor's out $5,000 on her original investment. Were it not for the currency hedge, this investor would be out the full $5,000, and the return on this investment would be a lot lower. But the hedge covered the loss and the net effect was that the investor was able to enjoy the added yield of the German note, without having to worry about any potential loss from currency exchange rates.

Financial Futures and the Individual Investor

Financial futures can play an important role in an investor's portfolio so long as: (1) the individual thoroughly understands these investment vehicles, (2) he or she clearly recognizes the tremendous risk exposure of such vehicles, and (3) he or she is fully prepared (financially and emotionally) to absorb some losses. Financial futures are highly volatile securities that have enormous profit and loss potential. For instance, in 1991, during an eight-month period of time, the March (1992) S&P 500 futures contract fluctuated in price from a low of 372.90 to a high of 422.85. This range of nearly 50 points for a single contract meant a potential profit, or loss, of nearly $25,000—and all from an initial investment of only $9,000. Investment diversification is obviously essential as a means of reducing the potentially devastating impact of price volatility. Financial futures are exotic investment vehicles, but if properly used they can provide generous returns.

Options on Futures

The evolution that began with listed stock options and financial futures in time spread to interest rate options and stock-index futures. Eventually, it led to the merger of options and futures and to the creation of the ultimate leverage vehicle: options on futures contracts. Known as **futures options,** they represent listed puts and calls on actively traded futures contracts. In essence, they give the holders the right to buy (with calls) or sell (with puts) a single standardized futures contract for a specific period of time at a specified striking price. Table 12.4 provides a list of the futures options available in early 1992; note that such options are available on both commodities and financial futures. These puts and calls cover the same amount of assets as the underlying futures contracts—for example, 112,000 pounds of sugar, 100 ounces of gold, 62,500 British pounds, or $100,000 in Treasury bonds. Accordingly, they also involve the same amount of price activity as normally found with commodities and financial futures.

futures options options that give the holders the right to buy or sell a single standardized futures contract for a specified period of time at a specified striking price.

Futures options have the same standardized striking prices, expiration dates, and quotation system as other listed options. Depending on the striking price on the option and the market value of the underlying futures contract, these options can also be in-the-money and out-of-the-money. Futures options are valued like other puts and calls—by the difference between the option's striking price and the market price of the underlying futures contract (see Chapter 11). Moreover, they can also

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TABLE 12.4 Futures Options: Puts and Calls on Futures Contracts

Commodities	Financial Futures
Corn	British pound
Soybeans	German mark
Soybean meal	Swiss franc
Soybean oil	Japanese yen
Heating oil	Canadian dollar
Gasoline	Australian dollar
Cotton	U.S. dollar index
Sugar	Municipal bond index
Live cattle	Eurodollar deposits
Live hogs	Treasury bills
Feeder cattle	Treasury notes
Pork bellies	Treasury bonds
Lumber	NYSE Composite Index
Orange juice	S&P 500 Stock Index
Cocoa	Major Market Index
Coffee	
Wheat	
Platinum	
Copper	
Gold	
Silver	
Crude oil	

be used like any other listed option, that is, for speculating or hedging, in writing programs, or for spreading.

The biggest difference between a futures option and a futures contract is that *the option limits the loss exposure* to the price of the option. The most you can lose is the price paid for the put or call, whereas there is no real limit to the amount of loss a futures investor can incur. To see how futures options work, consider an investor who wants to trade some gold contracts. She believes that the price of gold will increase over the next nine months from its present level of $355 an ounce to around $400 an ounce. She can buy a futures contract at 364.50 by depositing the required initial margin of $1,300, or she can buy a futures call option with a $350 per ounce strike price that is presently being quoted at, say, 10.75. (Since the underlying futures contract cover 100 ounces of gold, the total cost of this option would be: $10.75 \times 100 = $1,075.) The call is an in-the-money option, since the market price of gold exceeds the exercise price on the option. The figures below summarize what happens to both investments if the price of gold reaches $400 per ounce by the expiration date, and in addition, what happens if the price of gold drops by $45 to $310 an ounce:

	Futures Contract		Futures Option	
	Dollar Profit (or Loss)	Return on Invested Capital	Dollar Profit (or Loss)	Return on Invested Capital
If price of gold *increases* by $45 an ounce	$3,550	273.1%	$3,925	365.1%
If price of gold *decreases* by $45 an ounce	($5,450)	—	($650)	—

Clearly, the futures option provides a much higher rate of return as well as a reduced exposure to loss. Futures options offer interesting investment opportunities, but they should be used only by knowledgeable commodities and financial futures investors.

TANGIBLE INVESTMENTS

tangible investment an investment that has an actual form or substance, such as precious metals, stamps, or works of art.

A **tangible investment** is one that can be seen and touched and that has an actual form or substance. Examples of tangible investments include real estate, precious metals and stones, stamps, coins, works of art, antiques, and other-so-called *hard assets*. A *financial asset,* in contrast, is a claim on paper evidencing ownership, debt, or an option to acquire an interest in some intangible or tangible asset. Many investors own tangibles because they can be seen and touched; others prefer them for their investment value. During the decade of the 1970s, particularly in 1978 and 1979, tangible investments soared in popularity. There were several reasons for this. First, the 1970s was a period of very high inflation. Double-digit inflation rates, unknown in the United States since the late 1940s, became commonplace. These high inflation rates made investors nervous about holding financial assets, like money, bank accounts, stocks, and bonds. Their nervousness was heightened by the poor returns financial assets offered in those years. As a result, they turned to investments that offered returns that exceeded the rate of inflation—in other words, to tangibles. The year 1979 in particular was a period of heavy tangibles investing. During that year, inflation soared, and the expectation was for even worse inflation in the future.

In 1981 and 1982, things began to change, however, as interest in tangibles waned and their prices underwent substantial declines. For example, in the 12-month period from June 1981 to June 1982 the price of gold dropped 34 percent, silver plunged 45 percent, and U.S. coins fell almost 30 percent in value. With a few exceptions, the investment returns on tangible investments continued at a substandard pace through the rest of the 1980s and into the 1990s. Such performance, of course, is precisely what you would have expected: These investment vehicles tend to perform very nicely during periods of high inflation, but they don't do nearly so well when inflation drops off—as it has since 1982. Indeed, as Table 12.5

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TABLE 12.5 Comparative Rates of Return for Various Investment Vehicles

10 Years, 6/72–6/82		10 Years, 6/82–6/92	
	Return		Return
Stamps	21.9%	Stocks	18.4%
Gold	18.6	Bonds	15.2
Chinese ceramics	15.3	Old Master paintings	13.3
Silver	13.6	Chinese ceramics	8.5
Diamonds	13.3	3-month Treasury bills	7.6
Real estate	9.9	Diamonds	6.4
Old Master paintings	9.0	Foreign exchange	4.5
Stocks	3.8	Housing	4.0
Bonds	3.6	Gold	0.6

*Investment returns are measured in terms of *average annual* fully compounded rates of return. They represent the effective *annual* yields from these investments; annual returns do *not* include taxes or transaction costs.

Source: Salomon Bros., Inc.

reveals, the investment performance of tangibles from 1972 to 1982 stands in stark contrast to the returns on these same investments from 1981 to 1992. Note especially how stocks and bonds performed in the latest period compared to the decade of the seventies. There's no doubt financial assets are back and that such investments today are more lucrative than most tangible investments. Even so, since there's still a lot of interest in tangibles as investment vehicles, we'll take a brief look at this unusual, but at times highly profitable, form of investing.

Tangible Assets as Investment Outlets

Tangibles are real things: You can sit in an antique car, hold a gold coin, or look at a work of art. Some tangibles, such as gold and diamonds, are portable; others, such as land, are not. These differences can affect the price behavior of tangibles. Land, for example, tends to appreciate fairly rapidly during periods of high inflation and relatively stable international conditions. Gold, on the other hand, is preferred during periods of unstable international conditions, in part because it is portable. Investors appear to believe that if international conditions deteriorate past the crisis point, at least they can ''take their gold and run.'' The market for tangibles varies widely and therefore so too does the *liquidity* of these investments. On one hand we have gold and silver, which can be purchased in a variety of forms and which are generally viewed as being fairly liquid to the extent that it's relatively easy to buy and sell these metals. (To a degree, platinum also falls into this category, since it's widely traded as a futures contract.) On the other hand, we have *all* the other forms of tangible investments, which are highly *illiquid:* They are bought and sold in rather fragmented markets, where transaction costs are very high and where selling an item is often a time-consuming and laborious process.

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Alternative Investment Vehicles

One very popular way of investing in tangible assets is to buy *real estate*. Indeed, such investing dwarfs all other forms of tangible investing, and because of its importance, we examine real estate separately in Chapter 14. That still leaves a wide range of investment vehicles to choose from. Excluding real estate, the tangibles market is dominated by three forms of investments:

- Gold and other precious metals (silver and platinum)
- Gemstones (diamonds, rubies, emeralds, sapphires)
- Collectibles (everything from stamps and coins to artworks and antiques)

These are the tangibles that are likely to be of interest to so-called collector-investors.

Investment Merits

The only source of return from a tangible investment comes in the form of *appreciation in value*—capital gains, in other words. There's no current income (dividends or interest) from holding tangible investments. Instead, investors may be facing substantial *opportunity costs,* in the form of lost income that could have been earned on the capital, if their tangibles do not appreciate rapidly in value. Another factor to consider is that most tangibles have *storage* and/or *insurance costs* that require regular cash outlays.

The future prices, and therefore potential returns, on tangible investments tend to be affected by one or more of the following key factors:

- Rate of inflation
- Scarcity (or supply and demand) of the assets
- Domestic and international instability

Because future prices are linked to inflation as well as to the changing supply of these assets, such investments tend to be somewhat risky. A slowdown in inflation or a sizable increase in the supply of the asset can unfavorably affect its market price. On the other hand, increasing inflation and continued scarcity can favorably influence the return. Another factor that tends to affect the market value—and therefore the return—of tangible investments, especially precious metals and gemstones, is the domestic and/or international political environment. In favorable times, these forms of investing are not especially popular, whereas in times of turmoil, their demand tends to rise due to their tangible (and portable) nature.

Investing in Tangibles

Investing in tangibles is, to some extent, no different from investing in securities. Selection and timing are important in both cases and play a key role in determining the rate of return on invested capital. Yet, when investing in tangibles, you have to be careful to separate the economics of the decision from the pleasure of owning

these assets. Let's face it, many people gain a lot of pleasure from wearing a diamond, driving a rare automobile, or owning a piece of fine art. There's certainly nothing wrong with that, but when you're buying tangible assets for their *investment merits,* there's only one thing that matters, and that's the economic payoff from the investment. Thus, as a serious investor you must consider expected price appreciation, anticipated holding period, and potential sources of risk. In addition, you should carefully weigh the insurance and storage costs of holding such assets, as well as the potential impact that a lack of a good resale market can have on return. Perhaps most important, *don't start a serious tangibles investment program until you really know what you're doing*. Know what to look for when buying a piece of fine art, a diamond, or a rare coin, and know what separates the good artworks (or diamonds or rare coins) from the rest. In the material that follows, we look at tangibles strictly as *investment vehicles*.

Gold and Other Precious Metals

precious metals
tangible assets, like gold, silver, and platinum, that concentrate a great deal of value in a small amount of weight and volume.

Precious metals concentrate a great deal of value in a small amount of weight and volume. In other words, just a small piece of a precious metal is worth a lot of money. There are three kinds of **precious metals** that command the most investor attention: gold, silver, and platinum. Of these three, silver is the cheapest (far *less* expensive than either gold or platinum, which were about equally priced in early 1992); gold is, by far, the most popular. Thus, we'll use gold here as the principal vehicle to discuss precious metals. For thousands of years, people have been fascinated with gold. Records from the age of the pharaohs in Egypt show a desire to own gold. Today ownership of gold is still regarded as a necessity by many investors, although its price has dropped considerably since the January 1980 peak of $875 per ounce. Actually, Americans are relatively recent gold investors, due to the legal prohibition on gold ownership, except in jewelry form, that existed from the mid-1930s until January 1, 1975.

Like other forms of precious metals, gold is a highly speculative investment vehicle whose price has fluctuated widely in recent years (see Figure 12.5). Many investors hold at least a part—and at times, a substantial part—of their portfolios in gold as a hedge against inflation and/or a world economic or political disaster. Gold can be purchased as coins, bullion, or jewelry (all of which can be physically held); it can also be purchased though gold futures (and futures options), gold mining stocks, mutual funds, and gold certificates. Here's a brief run down of the different ways that gold can be held as a form of investing:

- **Gold Coins.** Gold coins have little or no collector value; rather, their value is determined primarily by the quality and amount of gold in the coins. Popular gold coins include the American Eagle, the Canadian Maple Leaf, the Mexican 50-Peso, and the Chinese Panda.
- **Gold Bullion.** Gold bullion is gold in its basic ingot (bar) form. Bullion ranges in weight from 5-gram to 400-gram bars; the kilo bar (which weighs 32.15 troy ounces) is probably the most popular size.

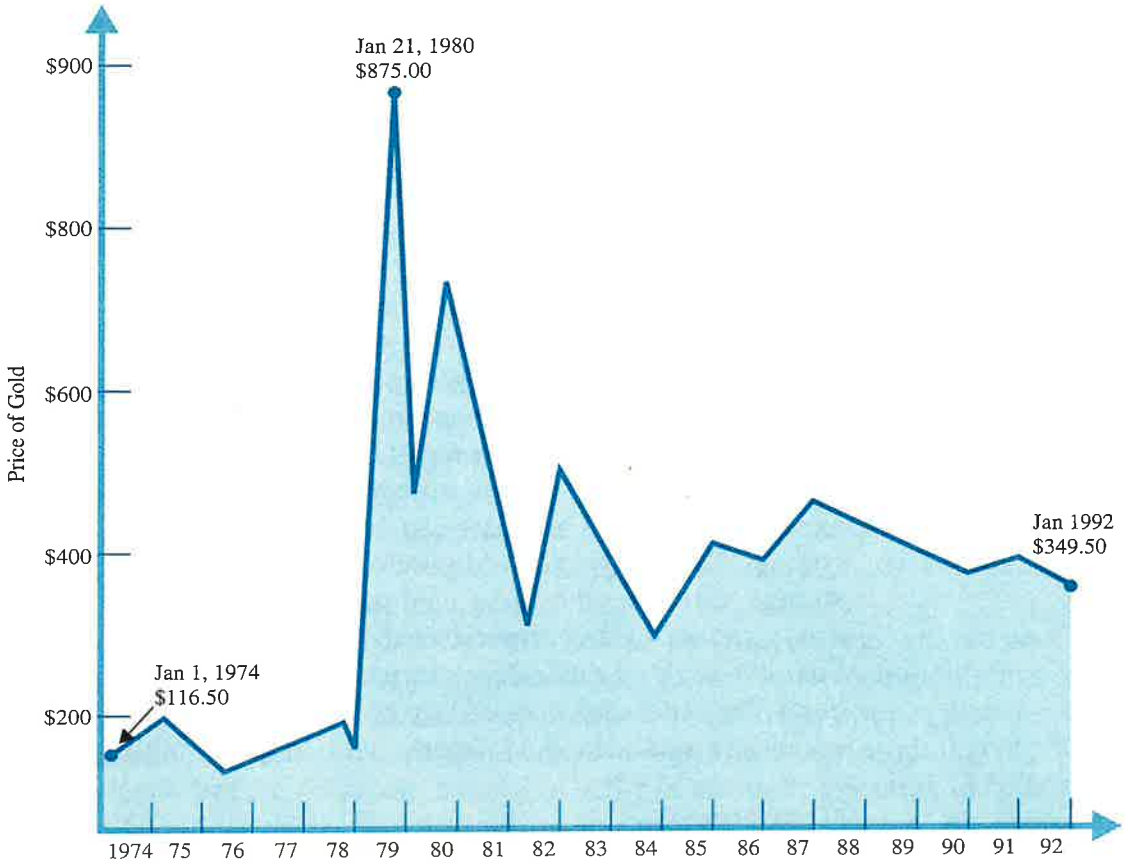


FIGURE 12.5 The Price of Gold, 1974–1992
The price of gold is highly volatile and can pave the way to big profits or, just as easily, subject the investor to enormous losses.

- **Gold Jewelry.** Jewelry is a popular way to own gold, but it's not a very good way to *invest* in gold, because gold jewelry usually sells for a substantial premium over its underlying gold value (to reflect artisan costs, retail markups, and other factors). Moreover, most jewelry is not pure 24-carat gold but a 14- or 18-carat *blend* of gold and other nonprecious metals.
- **Gold Futures.** A popular way of investing in the short-term price volatility of gold is through futures contracts or futures options.
- **Gold Stocks and Mutual Funds.** Many investors prefer to purchase shares of gold-mining companies or mutual funds that invest in *gold stocks*. The prices of gold-mining stocks tend to move in direct relationship to the price of gold. Thus, if gold rises in value, these stocks usually move up too. It is also possible to purchase shares in mutual funds that invest primarily in gold-mining stocks. Gold funds offer not only professional management but a much higher level of portfolio diversification; the shares of gold-oriented mutual funds also tend to fluctuate along with the price of gold.
- **Gold Certificates.** A convenient and safe way to own gold is to purchase a gold certificate through a bank or broker. The certificate represents ownership

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of a specific quantity of gold that is stored in a bank vault. In this way, investors do not have to be concerned about the safety that taking physical possession of gold entails; also, by purchasing gold certificates, investors can avoid state sales taxes (which may be imposed on coin or bullion purchases).

Like gold, silver and platinum can also be bought in a variety of forms. Silver can be purchased as bags of silver coins, bars or ingots, futures contracts, futures options, or stock shares. Similarly, platinum can be bought in the form of plates and ingots, coins, futures contracts, and platinum stocks.

Transaction costs in precious metals vary widely, depending on the investment form chosen. At one extreme, an investor buying one Canadian Maple Leaf coin might pay 5 percent commission, 7 percent dealer markup, and 4 percent gross excise tax (sales tax). In contrast, the purchase of a gold certificate would entail only a 2 percent total commission and markup, with no sales tax. Storage costs vary as well. Gold coins and bars can easily be stored in a safety deposit box that costs perhaps $20 per year. Gold purchased via gold certificates usually is subject to a storage fee of less than 1 percent per year. Gold coins, bullion, and jewelry can be easily stolen, so it is imperative that these items be safely stored. A safety deposit box at a bank or other depository can alleviate this worry. Except for transaction costs, the other expenses of buying and holding gold can be avoided when investments are made in gold futures and in gold mining stocks and mutual funds.

Gemstones

gemstones
diamonds and colored precious stones (rubies, sapphires, and emeralds).

By definition, **gemstones** consist of diamonds and the so-called colored precious stones (rubies, sapphires, and emeralds). Precious stones offer their owners beauty and are often purchased for psychic and aesthetic pleasure. However, diamonds and colored stones also serve as a viable form of investing. Along with gold, they are among the oldest of investment vehicles, providing a source of real wealth, as well as a hedge against political and economic uncertainties. However, diamonds and colored stones are very much a specialist's domain. Generally, standards of value are fully appreciated only by experienced personnel at fine stores, dealers, cutters, and an occasional connoisseur-collector. In diamonds, the value depends on the whiteness of the stone and the purity of crystallization. A key factor, therefore, is for the purchaser to understand the determinants of quality. Precious stones will vary enormously in price, depending on how close they come to gem color and purity.

Investment diamonds and colored stones can be purchased through registered gem dealers. Depending on quality and grade, commissions and dealer markups can range from 20 to 100 percent. Due to the difficulty in valuing gemstones, it is imperative to select only dealers with impeccable reputations. As investment vehicles, colored stones and diamonds offer no current income, but their prices are *highly* susceptible to changing market conditions. For example, the peak price of a one-carat flawless diamond, a popular investment diamond, was about $60,000 in early 1980. By late 1982, this stone was worth only about $20,000—a drop of 67 percent in just over two years. The big difficulty in precious stone investments,

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aside from the expertise needed in deciding what is in fact gem quality, is the relative *illiquidity* of the stones. As a rule gemstones should be purchased only by investors who can hold them for at least two years: High transaction costs usually prevent profitable resale after shorter periods. Furthermore, gemstones can be difficult to resell, and sellers often wait a month or more for a sale. Diamonds and colored stones also require secure storage, and there are no payoffs prior to sale.

Collectibles

collectibles
items that have value because of their attractiveness to collectors and because of their relative scarcity and historical significance.

Collectibles represent a broad range of items (from coins and stamps, to cars and posters) that are desirable for any number of reasons, such as beauty, scarcity, and age. A **collectible** has value because of its attractiveness to collectors. During the 1970s, many collectibles shot up in value, but since the early 1980s, most have either fallen in value or have appreciated at a much lower rate than inflation. There are some exceptions, of course, but they remain just that—the exception rather than the rule. Some examples of collectibles that did well in the 1980s are paintings, exotic automobiles and early muscle cars, cartoon celluloids, and baseball cards (as described in the accompanying *Investor Insights* box).

In general, collectibles are *not* very liquid. Their resale markets are poor, and transaction costs can be very high. Artwork, for example, commonly has a 100 percent dealer markup, and sales tax is added to the retail price. (Works sold on consignment to dealers have much lower costs—generally a commission of "only" 25 percent—but they can take months to sell.) In addition, investing in collectibles can be hazardous unless the investor understands the intricacies of the market. In this area of investing, *one is well advised to become a knowledgeable collector before even attempting to be a serious investor in collectibles*. Despite these obstacles, collectibles can provide highly competitive rates of return and can be good inflation hedges during periods of abnormally high inflation.

An investment-grade collectible is an item that is relatively scarce as well as historically significant within the context of the collectible genre itself, and, preferably, within the larger context of the culture that produced it. Further, it should be in excellent condition and attractive to display. Although there are almost no bounds to what can be collected (for example, beer cans, fishing tackle, magazines, and sheet music), the major categories of collectibles that tend to offer the greatest investment potential include:

- Rare coins (*numismatics*)
- Rare stamps (*philately*)
- Artwork (the paintings, prints, sculpture, and crafts of recognized artists)
- Antiques (cars, furniture, and so on)
- Baseball cards
- Books
- Games, toys, and comic books
- Posters
- Movie memorabilia
- Historical letters

INVESTOR INSIGHTS

There's More to Baseball Cards Than R.B.I.s and E.R.A.s

One of the most publicized tangible investments is baseball cards. Collectors of these cards can begin with little money and not much special expertise and still reap good results. A 1988 study in *The Wall Street Journal* reported a 43% compounded annual rate of return between 1980 and 1987 for baseball cards. Another study found card prices rose 32% a year from 1978 to 1988. No wonder the cards catch investor interest.

Perhaps the most famous baseball cards are those of Honus Wagner, a Pittsburgh Pirates shortstop in the early 1900s. A 1910 Honus Wagner card sold in 1987 for $110,000; its estimated worth in 1990 was $300,000. Although Wagner *is* in the Hall of Fame, the price of his cards is probably explained by scarcity: fewer than a hundred such cards are known to exist. Similarly, a rare 1932 Freddy Lindstrom card is valued at $1 million. Cards of more recent players are more affordable, yet highly prized: a 1952 rookie-year card of Mickey Mantle is valued at around $7,000; Nolan Ryan's 1968 rookie card sells for about $1,000; and the 1984 rookie card of Don Mattingly sells for about $80. As with any investment, the law of supply and demand applies. Some of the huge prices of older cards are determined by the fact that there just aren't many of them available.

Cards were first issued as promotions in the 1880s by U.S. cigarette companies. Production stopped during both World Wars and was started again in 1948 by gum and candy companies. Topps, now the market leader and the only company that still offers bubble gum along with its cards, began producing cards in 1951. Its first complete set was issued in 1952 with 407 cards, including the rookie cards of both Mickey Mantle and Willie Mays. Such a set today would be worth as much as $40,000. Baseball card companies no longer release information on the number of cards printed and distributed. Estimates of annual production range from 600,000 to 5 million per player and 5 billion total.

Baseball cards are traded by over one million serious collectors through some 3,500 retail card stores and 10,000 other dealers such as card shows and flea markets. There seem to be two main groups of card collectors: 25- to 45-year-old middle- to upper-income males and young traders, aged 6 to 16 years. The market for cards is largely driven by demand. For example, middle-aged collectors seldom sell their cards; when they do, it is typically to buy other cards.

Various forms of collecting often provide pleasure and satisfaction as well as attractive returns. However, although certain psychic income may be realized in the form of aesthetic pleasure, the financial return, if any, is realized only when the item is sold. While the acquisition of collectibles commonly stems from an individual's personal interest, on a strictly financial basis, items that have a good market and are likely to appreciate in value are the ones to collect. If an item under consideration is expensive, *its value and authenticity should always be confirmed by an expert prior to purchase* (there are many unscrupulous dealers in collectible items). And after purchase, one should make certain to store collectibles in a safe place and adequately insure them against all relevant perils.

A 1991 study by Dilip D. Kare and Kenneth M. Jennings sought to answer two key questions facing baseball card investors: (1) Which player's cards provide a maximum of return, and (2) which year in the sequence of that player's cards performs best? Kare and Jennings restricted their study to 28 well-known players in the major leagues. These players were divided into two groups: modern players (careers started in 1960s) and earlier players (late 1940s or early 1950s). All players in the study had name recognition through membership or likelihood of membership in the Hall of Fame.

Kare and Jennings plotted the price of individual cards against the age of the cards, using price data from the *Beckett Baseball Card Monthly,* the baseball collectors' blue-book. They found a clear relationship between the price and age of the card: as a card aged, it increased in price at a constant rate. They also found, for the 28 "blue chip" cards studied, that the group of earlier players had a lower average return than did the group of 17 modern players. The top performing card in the study was Tom Seaver's, with an average return of 45.5%. The lesson for collectors: The cards of "modern" players perform better, on average, than those of the players from the earlier generation. That finding appears to conflict with the actual returns cited earlier for rare cards but can perhaps be explained by the law of demand—as baby boomers move into the group of middle-aged collectors, they want the cards of players they remember from their childhood and youth, thus increasing demand. The year in which the card was printed—whether the rookie season or otherwise—was not found to be material to the card's return. Finally, the study found that, contrary to popular wisdom, an investment in non-mint cards (cards that may be tattered) of "blue-chip" players provided essentially the same rate of return as cards in mint condition.

An obvious conclusion to be drawn from the Kare/Jennings study is that the most important consideration in baseball card collecting is choosing the right player. This choice offers card collectors, whatever their age, the opportunity to display considerable fervor over the merits of various players and show off their baseball expertise. One other certain conclusion can be drawn: If she hasn't already done so, don't let your mom throw out your set of cards the next time she cleans out the attic!

Source: Based on Dilip D. Kare and Kenneth M. Jennings, "Avoiding the Strikeouts in Baseball Card Investing, *AAII Journal,* July 1991, pp. 7–10; and David R. Krause, "Baseball Cards Bat .425," *Money,* June 1988, pp. 140–47.

SUMMARY

1. Commodities and financial futures are traded in the futures market, a market that has its roots in the agricultural segment of our economy. Today there are 12 exchanges that deal in futures contracts, which are commitments to make (or take) delivery of a certain amount of some real or financial asset at a specified date in the future.
2. From the investor's point of view, the key fact about futures contracts is that they control large amounts of the underlying commodity or financial instrument and, as a result, can produce wide price swings and very attractive rates of return (or very unattractive losses); such returns (or losses) are further magnified since all trading in the futures market is done on margin. Whereas a speculator's profit is derived directly from the

wide price fluctuations that occur in the market, hedgers derive their profit from the protection they gain against adverse price moves.

3. Commodities like grains, metals, meat, and wood make up the traditional (commodities) segment of the futures market. Financial futures are the newcomers to the futures market. Trading in these vehicles did not begin until 1972, but even so, this segment of the market has grown to the point that the volume of trading in financial futures now exceeds that of commodities. In addition to the traditional futures contracts, there's also a growing interest in futures options: a type of trading vehicle that combines the features of both options and futures.

4. The same trading strategies are used with both commodities and financial futures; that is, they can be used for speculating, spreading, or hedging. Irrespective of whether investors are in a long or short position, they have only one source of return from commodities and financial futures: appreciation (or depreciation) in the price of the contract. Investors use the rate of return on invested capital to assess the actual or potential profitability of a futures transaction.

5. There are three types of financial futures: currency futures, interest rate futures, and stock-index futures. The first type deals in several different kinds of foreign currencies. Interest rate futures, in contrast, involve various types of short- and long-term debt instruments, like Treasury bonds and Treasury bills. Stock-index futures are contracts pegged to broad movements in the stock market, as measured by such indexes as the S&P 500 or the NYSE Composite Index. These securities are often used to hedge other security positions—for example, interest rate futures contracts are widely used to protect bond portfolios against a big jump in market interest rates, and currency futures are used to hedge the foreign currency exposure that accompanies investments in foreign securities.

6. Tangible assets represent a special type of investment vehicle, which can be seen and touched and have an actual form and substance. Excluding real estate, the three basic types of tangible investments include precious metals (gold, silver, and platinum); gemstones (diamonds and colored stones); and collectibles (coins, stamps, baseball cards, artwork, and so on). Although tangible investments were able to provide substantial returns in the 1970s, with few exceptions, they haven't done nearly so well in the past 10 or 12 years.

QUESTIONS

1. What is a futures contract? Briefly explain how it is used as an investment vehicle.

2. Discuss the difference between a cash market and a futures market.

   a. Note some of the reasons why the futures market has become so popular.
   b. What effect does inflation have on the futures market?
   c. What is the difference between a futures contract and a forward contract?

3. What is the major source of return to commodities speculators? How important are various types of current income like dividends and interest to these investors?

4. Using settle prices from Figure 12.2, find the value of the following commodity contracts:

   a. July barley.
   b. February ('93) gold.

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c. August soybeans.
d. November orange juice.

5. Why are both hedgers and speculators so important to the efficient operation of a futures market.

6. Explain how margin trading is conducted in the futures market.

a. What is the difference between an initial deposit and a maintenance deposit?
b. Are investors ever required to put up additional margin? When?
c. What is the effect of margin trading on an investor's rate of return?

7. Note and briefly define the five essential parts of a commodity contract. Which parts have a direct bearing on the price behavior of the contract?

8. Briefly define each of the following:

a. Settle price.
b. Daily price limit.
c. Open interest.
d. Maximum daily price range.
e. Delivery month.

9. Note several approaches to investing in commodities and explain the investment objectives of each.

10. What is the difference between physical commodities and financial futures? What are their similarities?

11. Describe a currency future and contrast it with an interest rate future. What is a stock index future, and how can it be used by investors?

12. What is program trading? What kind of futures contracts are used in program trading? Does program trading have any impact on the price behavior of common stocks? Explain.

13. Explain why it is so important that an individual be well versed in the behavior and investment characteristics of commodities and financial futures. Why should futures holdings be well diversified?

14. Discuss how stock-index futures can be used for speculation and for hedging. What advantages are there to speculating with stock-index futures rather than specific issues of common stock?

15. What are futures options? Explain how they can be used by speculators. Why, for example, would an investor want to use an option on an interest rate futures contract rather than the futures contract itself?

16. Compare and contrast financial assets with tangible assets as investment vehicles. Explain the widespread popularity of tangible investments during the 1970s, and describe the conditions that tend to cause tangibles to rise in price and hence find favor with investors.

17. Identify and briefly discuss the three major classes of tangible investments. Note some of the popular forms of collectibles; what are the key variables that should be taken into account when investing in collectibles?

18. Suppose Eastman Kodak has just announced a new film that does not require silver in its manufacture or development. How do you suppose this development will affect silver bullion prices? Silver mining stock prices?

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PROBLEMS

1. Using Figures 12.2 and 12.4, indicate how much profit or loss you would make in the following transactions:
   a. You buy three yen contracts at a quote of .7940 and sell them a few months later at .8125.
   b. The price of orange juice goes up 60 cents a pound, and you hold 3 contracts.
   c. You short sell two copper contracts at $1.30 a pound, and the price of copper drops to $1.05 a pound.
   d. You recently purchased a 90-day Treasury bill contract at 96.20, and T-bill interest rates rise to 4.50%.
   e. You short four Major Market contracts when the index is at 346.55 and cover when the index moves to 321.95.
   f. You short sell three cotton contracts at 54 cents a pound and the price of cotton goes up to 62½ cents a pound.

2. Kirk O'Malley considers himself to be a shrewd commodities investor. For instance, not long ago he bought one July cotton contract at 54 cents a pound and recently sold it at 58 cents a pound. How much profit did he make? What was his return on invested capital if he had to put up a $1,500 initial deposit?

3. Mrs. Shirley Ledbetter is a regular commodities speculator; she is presently considering a short position in July oats, which are now trading at 148. Her analysis suggests that July oats should be trading at about 140 in a couple of months. Assuming her expectations hold up, what kind of return on invested capital would she make if she shorts three July oats contracts (with each contract covering 5,000 bushels of oats) by depositing an initial margin of $500 per contract?

4. Explain the index price system used with Treasury bill futures contracts. Also, find the value of the following financial futures contracts:
   a. September German marks quoted at .5392.
   b. December Treasury bonds that settled at 87-22.
   c. March 90-day T-bills quoted at 93.55.
   d. June S&P 500 index that opened at 462.15.
   e. May 30-day interest rate contracts quoted at 96.25.

5. Walt Benaski is thinking about doing some speculating in interest rates; he thinks rates will fall and in so doing, the price of Treasury bond futures should move from 92-15, their present quote, to a level of about 98. Given a required margin deposit of $2,000 per contract, what would Walt's return on invested capital be if prices behave as he expects?

6. Judi Jordan has been an avid stock market investor for years; she manages her portfolio fairly aggressively and likes to short sell whenever the opportunity presents itself. Recently, she has become fascinated with stock-index futures, especially the idea of being able to play the market as a whole. At the present time, Judi thinks the market is headed down, and she decides to short sell some NYSE Composite stock-index futures. Assume she shorts three contracts at 287.95 and that she has to make a margin deposit of $6,000 for each contract. How much profit will she make, and what will her return on invested capital be if the market does indeed drop so that the NYSE contracts are trading at 265.00 by the time they expire?

7. A wealthy investor holds $500,000 worth of U.S. Treasury bonds; these bonds are currently being quoted at par (100). The investor is concerned, however, that rates are headed up over the next 6 months, and he would like to do something to protect this bond portfolio. His

broker advises him to set up a hedge using T-bond futures contracts; assume these contracts are presently trading at 101-06.

a. Briefly describe how the investor would set up this hedge—would he go long or short, and how many contracts would he need?
b. It's now 6 months later and rates have, indeed, gone up! The investor's Treasury bonds are now being quoted at 91½, and the T-bond futures contract used in the hedge are now trading at 94-00. Show what has happened to the value of the bond portfolio *and* the profit (or loss) made on the futures hedge.
c. Was this a successful hedge? Explain.

8. Not long ago, Joan Atwood sold the company she founded for several million dollars (after taxes); she took some of that money and put it into the stock market. Today, Joan's portfolio of blue-chip stocks is worth $2.3 million. Joan wants to keep her portfolio intact, but she's concerned about a developing weakness in the market for blue chips. She decides, therefore, to hedge her position with 6-month futures contracts on the Major Market Index (MMI), which is currently trading at 460.

a. Why would she choose to hedge her portfolio with the Major Market Index rather than the S&P 500?
b. Given that Joan wants to cover the full $2.3 million in her portfolio, describe how she would go about setting up this hedge.
c. If each contract required a margin deposit of $7,500, how much money would she need to set up this hedge?
d. Assume that over the next 6 months stock prices do fall, and the value of Joan's portfolio drops to $2.0 million. If MMI futures contracts are trading at 391, how much will she make (or lose) on the futures hedge? Is it enough to offset the loss in her portfolio—i.e., what's her *net* profit or loss on the hedge?
e. Will she now get her margin deposit back, or is that like a "sunk cost" and gone forever?

9. An American currency speculator feels strongly that the value of the Canadian dollar is going to fall relative to the U.S. dollar over the short-run. If he wants to profit from these expectations, what kind of a position (long or short) would he take in Canadian dollar futures contracts? How much money would he make from each contract if Canadian dollar futures contracts moved from an initial quote of .8775 to an ending quote of .8250?

10. With regard to *futures options,* how much profit would an investor make if she bought a call option on gold at 7.20 when gold was trading at $482 an ounce, given that the price of gold went up to $525 an ounce by the expiration date on the call? (*Note:* Assume the call carried a strike price of 480.)

CFA QUESTION (This question is from the 1991 Level II Exam.)

CFA

Robert Chen, CFA, is reviewing the characteristics of derivative securities and their use in portfolios. He is considering the addition of either a short position in stock index futures or a long position in stock index options to an existing well-diversified portfolio of equity securities. Contrast the way in which *each* of these *two* alternatives would affect the risk and return of the resulting combined portfolios.

(See Appendix C for Guideline Answer to this question.)

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CASE PROBLEMS

12.1 T. J.'s Fast Track Investments: Interest Rate Futures

T. J. Patrick is a successful industrial designer who enjoys the excitement of commodities speculation. Although only 29 years old, T. J. has been dabbling in commodities since he was a teenager. He was introduced to it by his dad, who is a grain buyer for one of the leading food processors. T. J. recognizes the enormous risks involved in commodities speculating but feels that since he's still single, now is the perfect time to take chances. And he can well afford to, as this resident of Portland, Oregon, is a principal in a thriving industrial design firm. T. J.'s income ranges between $60,000 and $75,000 per year—enough to allow him to enjoy some of the finer things in life. Even so, he does follow a well-disciplined investment program and annually adds $10,000 to $15,000 to his portfolio.

Recently, T. J. has started playing with financial futures—interest rate futures, to be exact. He admits he is no expert in interest rates, but likes the price action these investment vehicles offer. This all started several months ago when T. J. was at a party and became acquainted with Vinnie Banano, a broker who specializes in financial futures. T. J. liked what Vinnie had to say (mostly how you couldn't go wrong with interest rate futures), and set up a trading account with Vinnie's firm: Banano's of Portland. The other day, Vinnie called T. J. and suggested he get into T-bill futures. As Vinnie saw it, interest rates were going to continue to head up at a brisk pace, and T. J. should short sell some 90-day T-bill futures. In particular, he thinks that rates on T-bills should go up by another half-point (moving from about 5½ up to 6 percent) and recommends that T. J. short four contracts. This would be a $4,000 investment, since each contract requires an initial margin deposit of $1,000.

Questions

1. Assume 90-day T-bill futures are now being quoted at 94.35.
   a. Determine the current price (underlying value) of this T-bill futures contract.
   b. What would this futures contract be quoted at if Vinnie is right and the yield goes up by ½ of 1 percent?
2. How much profit would T. J. make if he shorts four contracts at 94.35, and T-bill yields do go up by ½ of 1 percent—that is, if T. J. covers his short position when T-bill futures contracts are quoted at 93.85? Also, calculate the return on invested capital from this transaction.
3. What happens if rates go down? For example, how much would T. J. make if the yield on T-bill futures goes down by just ¼ of 1 percent?
4. What risks do you see in the recommended short sale transaction? What is your assessment of T. J.'s new interest in financial futures; how do you think it compares to his established commodities investment program.

12.2 Jim Parker Tries Hedging with Stock-Index Futures

Jim Parker and his wife, Polly, live in Birmingham, Alabama. Like many young couples today, the Parkers are a two-income family, as both are college graduates and hold well-paying jobs. Jim has been an avid investor in the stock market for a number of years and over time has built up a portfolio that is currently worth nearly $115,000. The Parker's portfolio is well balanced: it contains quality growth stocks, some high-income utilities, and a small amount of moderately speculative stock. The Parkers reinvest all dividends and regularly add investment capital to their portfolio; up to now, they have avoided short selling and do only a modest amount of margin trading.

Their portfolio has undergone a substantial amount of capital appreciation in the last 18 months or so, and Jim is anxious to protect the profit they have earned. And that's the problem! For Jim feels the market has pretty much run its course and is about to enter a period of decline. Parker has studied the market and economic news very carefully, and as a result does not believe the retreat will be of a major magnitude or cover an especially long period of time. He feels fairly certain, however, that most, if not all, of the stocks in his portfolio will be adversely affected by these market conditions—though they certainly won't all be affected to the same degree (some will drop more in price than others). Jim has been following stock index futures since they were first introduced in 1982. He's done some investing in them (with a moderate amount of success) and feels he knows the ins and outs of these securities pretty well. After careful deliberation, Jim decides to use stock-index futures—in particular, the NYSE Composite futures contract—as a way to protect (hedge) his portfolio of common stocks.

Questions

1. Explain why Parker would want to use stock-index futures to hedge his stock portfolio and note how he would go about setting up such a hedge; be specific.
   a. What alternatives does Jim have to protect the capital value of his portfolio?
   b. What are the benefits and risks of using stock-index futures for such purposes (as hedging vehicles)?
2. Presume NYSE Composite futures contracts are presently being quoted at 225.60. How many contracts would Parker have to buy (or sell) to set up the hedge?
   a. If the value of the Parker portfolio dropped 12 percent over the course of the market retreat, to what price must the stock-index futures contract move in order to cover that loss?
   b. Given that a $6,000 margin deposit is required to buy or sell a single NYSE futures contract, what would be the Parkers' return on invested capital if the price of the futures contract changes by the amount computed in part 2(a)?
3. Assume the value of the Parker portfolio declined by $12,000, while the price of a NYSE Composite futures contract moved from 225.60 to 207.60 (assume Jim short sold one futures contract to set up the hedge).
   a. Add the profit from the hedge transaction to the new (depreciated) value of the stock portfolio; how does this compare to the $115,000 portfolio that existed just before the market started its retreat?
   b. Why did the stock-index futures hedge fail to give complete protection to the Parker portfolio? Is it possible to obtain *perfect* (dollar-for-dollar) protection from these types of hedges? Explain.
4. What if, instead of hedging with futures contracts, Parker decides to set up the hedge by using *futures options?* Suppose a put on a NYSE Composite futures contract (strike price = 225) is presently quoted at 5.80, while a comparable call is being quoted at 2.35. Use the same portfolio and futures price conditions as set out in question 3 (above) to determine how well the portfolio would be protected. (*Hint:* Add the net profit from the hedge to the new depreciated value of the stock portfolio.) What are the advantages and disadvantages of using futures options to hedge a stock portfolio, rather than the stock-index futures contract itself?

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17 Portfolio Management and Control

After studying this chapter, you should be able to:

1. Discuss sources of needed data and common indexes used to evaluate the performance of investments.
2. Describe the techniques used to measure the performance of individual investment vehicles, and compare it to investment goals.
3. Understand the techniques used to measure current income, capital gains, and total portfolio return relative to the amount of money invested in a portfolio.
4. Use the Sharpe, Treynor, and Jensen measures to compare a portfolio's return with a risk-adjusted, market-adjusted rate of return, and discuss portfolio revision.
5. Describe the role of formula plans and the logic of dollar cost averaging, constant dollar plans, constant ratio plans, and variable ratio plans.
6. Explain the role of limit and stop-loss orders in investment timing, the warehousing of liquidity, and the key factors in timing investment sales in order to achieve maximum benefits.

Imagine that one of your most important personal goals is to accumulate savings of $15,000 three years from now in order to have enough money to purchase your first home. Based on your projections, the desired home will cost $100,000, and the $15,000 will be sufficient to make a 10 percent down payment and pay the associated closing costs. Your calculations indicate that this goal can be achieved by investing existing savings plus an additional $200 per month over the next three years in a vehicle earning 12 percent per year. Projections of your earnings over the three-year period indicate that you should just be able to set aside the needed $200 per month. Consultation with an investment advisor, Cliff Orbit, leads you to believe that under his management the 12 percent return can be achieved.

It seems simple: Give Cliff your existing savings, send him $200 each month over the next 36 months, and at the end of that period you will have the $15,000 needed to purchase the home. Of course, there are many uncertainties involved in this decision. For example, What if your income proves inadequate to set aside $200 each month? What if Cliff fails to earn the needed 12 percent annual return? What if the desired house costs more than $100,000 in three years? Clearly you must do more than simply devise what appears to be a feasible plan for achieving a future goal. By periodically assessing progress toward the goal, you can improve the chances that it will be met. For example, had you found that your earnings were not adequate to permit the $200 per month investment, you might have found a new, higher-paying job. Or if the required 12 percent return was not being earned on your funds, you might have sought a new investment advisor. As *actual* outcomes occur, one must compare them to the *planned* outcomes in order to make any necessary alterations in one's plans. If such changes do not permit goal achievement, the goal and/or its timing may have to be adjusted.

The final, and most important, aspect of the personal investment process involves continuously managing and controlling the portfolio as needed in order to keep moving toward the achievement of financial goals. This process involves assessing actual performance, comparing it to planned performance, revising and making needed adjustments, and timing these adjustments to achieve maximum benefit. Let us see how this is done.

EVALUATING THE PERFORMANCE OF INDIVIDUAL INVESTMENTS

Investment vehicles are typically selected for a portfolio on the basis of expected returns, associated risks, and certain tax considerations that may affect the returns. Since the actual outcomes may not coincide with those expected, investors must measure and compare actual performance with anticipated performance. Here we will emphasize developing measures suitable for analyzing investment performance. We begin with sources of data.

Obtaining Needed Data

The first step in analyzing investment returns is gathering data that reflect the actual performance of each investment. As pointed out in Chapter 3, a broad range of sources of investment information is available. *The Wall Street Journal* and *Bar-*

ron's, for example, contain numerous items of information useful in assessing the performance of securities. The same type of information used when making an investment decision is used to manage and control the performance of investments held as part of an investment portfolio. Two key areas one must keep abreast of are returns on owned investments, and economic and market activity.

Return Data

The basic ingredient in analyzing investment returns is current market information. Many publications provide daily price quotations for securities such as stocks and bonds. Investors often maintain logs that contain the cost of each investment, as well as dividends, interest, and other sources of income received. By regularly recording price and return data, an investor can create an ongoing record of price fluctuations and cumulative returns that can be used in managing and controlling performance. The investor should also monitor corporate earnings and dividends, since a company's earnings and dividends will affect its stock price. The two sources of investment return—current income and capital gains—of course must be combined to determine total return. The combination of components using the techniques presented in Chapter 4 will be illustrated for some of the more popular investment vehicles later in this chapter.

Economic and Market Activity

Changes in the economy and market will affect returns—both the level of current income and the market value of an investment vehicle. The astute investor will keep abreast of international, national, and local economic and market developments. By following economic and market changes, an investor should be able to assess their potential impact on individual investment returns and on the portfolio's return.

Stock prices, for example, are affected by the world economy. As we pointed out in Chapter 3, economic information is available from a variety of publications and special subscription services. An investor should relate macroeconomic developments to the returns on securities held in a portfolio. As economic and market conditions change, an investor must be prepared to make revisions in the portfolio to respond to new developments. In essence, a knowledgeable investor improves his or her chances of generating a profit (or avoiding a loss).

Indexes of Investment Performance

In measuring investment performance, it is often worthwhile to compare the investor's returns with appropriate broad-based market measures. Indexes useful for the analysis of common stock include the Dow Jones industrial average (DJIA), the Standard & Poor's 500 stock composite index (S&P 500), and the New York Stock Exchange composite index (NYSE index). (Detailed discussions of these averages and indexes were included in Chapter 3). Although the DJIA is widely cited by the news media, it is *not* considered the most appropriate comparative gauge of stock price movement because of its narrow coverage and because it excludes many types of stocks. For example, companies like CBS, Dow Chemical, K-Mart, and Quaker

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Oats are not included. If an investor's portfolio is composed of a broad range of common stocks, the NYSE composite index is probably a more appropriate tool. This index consists of stocks that constitute more than 50 percent of all publicly traded stocks, based upon dollar market value. The scope of coverage as measured by market value is three times that of the DJIA.

A number of bond market indicators are also available for assessing the general behavior of these markets. These indicators consider either bond price behavior or bond yield. The Dow Jones composite bond average, based on the closing prices of 10 utility and 10 industrial bonds, is a popular measure of bond price behavior. Like bond quotations, this average reflects the average percentage of face value at which the bonds sell. Other sources of bond yield data, which reflect the rate of return one would earn on a bond purchased today and held to maturity, are also available. *Barron's*, Standard & Poor's, Moody's Investor Services, and the Federal Reserve are examples. Indexes of bond price and bond yield performance can be obtained for specific types of bonds (industrial, utility, and municipal), as well as on a composite basis. In addition, these and other indexes are sometimes reported in terms of *total returns*—that is, dividend/interest income is combined with price behavior (capital gain or loss) to reflect total return. Such indexes are available for both stocks and bonds.

There are a few other indexes that cover listed options and futures; there are no widely publicized indexes/averages for tangibles or mutual funds. Nor is there a broad index of real estate returns. Such returns tend to be localized; that is, they vary widely from area to area. And different types of property investments yield widely varying returns. For example, farmland moves in value in relation to farm product prices and to foreign investment in farmland. Thus real estate investors should compare their returns with those earned by other local real estate investors. In addition, it might be wise to compare the investor's real estate returns with the Consumer Price Index and with the NYSE composite index. The former will serve as a useful comparative measure of its effectiveness as an inflation hedge. The latter is useful in comparing the relative return on a diversified stock portfolio with that from real estate investment. Similar approaches can be used in assessing other forms of property investment.

Measuring the Performance of Investment Vehicles

Reliable techniques for consistently measuring the performance of each investment vehicle are needed to monitor an investment portfolio. In particular, the holding period return (HPR) measure first presented in Chapter 4 is also used to determine *actual* return performance from stocks, bonds, tangibles, mutual funds, real estate, and other investments. Investment holdings need to be evaluated periodically over time—at least once a year. HPR is an excellent way to assess actual return behavior, since it captures *total return* performance and is most appropriate for holding or assessment periods of one year or less. Total return, in this context, includes the periodic cash income from the investment as well as price appreciation or loss, whether realized or unrealized. Clearly the calculation of returns for periods of more than a year should, as noted in Chapter 4, be made using *yield* (internal rate of

return) since it recognizes the time value of money; yield can easily be estimated with the *approximate yield formula*. Since the following discussions center on the annual assessment of return, HPR will be used as the measure of return. The formula for HPR, presented in Chapter 4 (Equation 4.8) and applied throughout this chapter, is restated in Equation 17.1:

Equation 17.1

$$\text{Holding period return} = \frac{\text{current income during period} + \text{capital gain (or loss) during period}}{\text{beginning investment value}}$$

Equation 17.1a

$$\text{HPR} = \frac{C + CG}{V_0}$$

where

Equation 17.2

$$\text{Capital gain (or loss) during period} = \text{ending investment value} - \text{beginning investment value}$$

Equation 17.2a

$$CG = V_n - V_0$$

Stocks and Bonds

There are several measures of investment return for stocks and bonds. The dividend yield, for instance, measures the current yearly dividend return earned from a stock investment. It is calculated by dividing a stock's yearly cash dividend by its price. This measure of investment return was discussed in Chapter 5. The current yield and promised yield (yield to maturity) for bonds were analyzed in Chapter 8. These measures of investment return capture various components of an investor's return but do not reflect actual total return. To provide a measure of total return, the holding period return method is applied. The total return on an investment in stocks or bonds consists of two components: current income (dividends or interest), plus any capital gain or loss. *Holding period return (HPR) measures the total return (income plus change in value) actually earned on an investment over a given investment period*. We will use a holding period of approximately one year in the illustrations that follow.



Stocks. The HPR for common and preferred stocks includes both cash dividends received as well as any price change in the security during the period of ownership. Table 17.1 illustrates the HPR calculation as applied to the actual performance of a common stock. This investor purchased 1,000 shares of Dallas National Corporation in May 1992 at a cost of $27,312 (including commissions). After holding the stock for just over one year, the stock was sold with proceeds to the investor of $32,040. The investor received $2,000 in cash dividends during the period of ownership. In addition, a $4,728 capital gain was realized on the sale. Thus the calculated HPR is 24.63 percent.

The HPR found above was calculated without consideration for income taxes paid on the dividends and capital gain. Because many investors are concerned with both pretax and after-tax rates of return, it is useful to calculate an after-tax HPR. We assume, for simplicity, that the investor in this example is in the 30 percent tax

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TABLE 17.1 Calculation of Pretax HPR on a Common Stock

Security: Dallas National Corporation common stock
Date of purchase: May 1, 1992
Purchase cost: $27,312
Date of sale: May 7, 1993
Sale proceeds: $32,040
Dividends received (May 1992 to May 1993): $2,000

$$\text{Holding period return} = \frac{\$2{,}000 + (\$32{,}040 - \$27{,}312)}{\$27{,}312}$$
$$= +24.63\%$$

bracket (federal and state combined); we also assume that for federal and state tax purposes, capital gains are taxed at the full marginal tax rate. Thus, dividend and capital gain income to this investor is taxed at a 30 percent rate. Income taxes reduce the after-tax dividend income to $1,400 [(1 − .30) × $2,000] and the after-tax capital gain to $3,310 [(1 − .30) × ($32,040 − $27,312)]. The after-tax HPR, therefore, is 17.25 percent, a reduction of 7.38 percent. It should be clear that both the pretax and after-tax HPR are useful gauges of return.

Bonds. The HPR for a bond investment is similar to that for stocks. The calculation holds for both straight debt and convertible issues. It includes the two components of a bond investor's return: interest income and capital gain or loss. Calculation of the HPR on a bond investment is illustrated in Table 17.2. The investor purchased the Phoenix Brewing Company bonds for $10,000, held them for just over one year, and then realized $9,704 at sale. In addition, the investor earned $1,000 in interest during the period of ownership. Thus the HPR of this investment

TABLE 17.2 Calculation of Pretax HPR on a Bond

Security: Phoenix Brewing Company 10% bonds
Date of Purchase: June 2, 1992
Purchase cost: $10,000
Date of sale: June 5, 1993
Sale proceeds: $9,704
Interest earned (June 1992 to June 1993): $1,000

$$\text{Holding period return} = \frac{\$1{,}000 + (\$9{,}704 - \$10{,}000)}{\$10{,}000}$$
$$= +7.04\%$$

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is 7.04 percent. The HPR is lower than the bond's current yield of 10 percent ($1,000 interest ÷ $10,000 purchase price) because the bonds were sold at a capital loss. Assuming a 30 percent tax bracket, the after-tax HPR is 4.93 percent: {[(1 − .30) × $1,000] + [(1 − .30) × ($9,704 − $10,000)]} ÷ $10,000—about 2 percent less than the pretax HPR.

Mutual Funds

There are two basic components of return from a mutual fund investment: dividend income (including any capital gains distribution) plus any change in value. The basic HPR equation for mutual funds is identical to that for stocks. Table 17.3 presents a holding period return calculation for a no-load mutual fund. The investor purchased 1,000 shares of the fund in July 1992 at an NAV of $10.40 per share. Because it is a no-load fund, no commission was charged, so the investor's cost was $10,400. During the one-year period of ownership, the Pebble Falls Mutual Fund distributed investment income dividends totaling $270 and capital gains dividends of $320. The investor redeemed (sold) this fund at an NAV of $10.79 per share, thereby realizing $10,790. As seen in Table 17.3, the pretax holding period return on this investment is 9.42 percent. Assuming a 30 percent tax bracket, the after-tax HPR for the fund is 6.60 percent {[(1 − .30) × ($270 + $320)] + [(1 − .30) × ($10,790 − $10,400)]} ÷ $10,400—nearly 3 percent below the pretax return.

Real Estate

The two basic components of an investor's return from real estate are the yearly after-tax cash flow and the change in property value that is likely to occur. (For a more expanded analysis of real estate investments, see Chapter 14.)

An investor who purchases raw land is interested only in capital appreciation because there is normally no positive cash flow from such an investment. Carrying

TABLE 17.3 Calculation of Pretax HPR on a Mutual Fund

Security: Pebble Falls Mutual Fund
Date of purchase: July 1, 1992
Purchase cost: $10,400
Date of redemption: July 3, 1993
Sale proceeds: $10,790
Distributions received (July 1992 to July 1993):
Investment income dividends: $270
Capital gains dividends: $320

$$\text{Holding period return} = \frac{(\$270 + \$320) + (\$10{,}790 - \$10{,}400)}{\$10{,}400} = +9.42\%$$

reversion
the after-tax net proceeds received upon disposition of real property.

costs associated with a raw land investment may include property taxes, special assessments, and interest costs if financing is used. An investor's return from a raw land investment is normally realized on its disposition. **Reversion,** the after-tax net proceeds received upon disposition of property, is calculated by subtracting from the property's realized selling price all selling costs (commissions plus closing costs), plus any mortgage principal balances that are paid upon sale, and income taxes paid on realized capital gains from the sale. Reversion, then, represents the after-tax dollars an investor puts in his or her pocket when the property is sold.

An income property investment provides return in two forms: yearly after-tax cash flow and reversion. A property's yearly after-tax cash flow is basically its rental income minus operating expenses, mortgage payments, and income taxes. In other words, after-tax cash flow is the yearly net cash return an investor receives from rental properties. When calculating an investor's total return from a rental property, both yearly after-tax cash flow and reversion are included.

To provide some insight into the calculation of real estate investment returns, the calculation of the after-tax holding period return on an apartment property is demonstrated in Table 17.4 on page 707. (Note: Due to the more complex nature of real estate taxation, only the after-tax HPR calculation is illustrated.) The Maitland Apartments were acquired one year ago with a $100,000 equity investment by Prudence Zwick, who is in the 30 percent tax bracket. If Prudence sold the property today she would realize reversion of $110,000 after all sales expenses, mortgage repayments, and taxes. The holding period return analysis in Table 17.4 contains the proper real estate cash flow statement, owner's tax statement for the past year of ownership, and the HPR calculation. Ms. Zwick received $6,750 in after-tax cash flow plus $10,000 ($110,000 − $100,000) in after-tax capital appreciation, resulting in an after-tax HPR of 16.75 percent. An investor seeking to compare a security's return with real estate or other property investments' return should find the HPR calculation illustrated above a useful analytical tool.

Other Investment Vehicles

The only source of return on other investment vehicles (like options, commodities, financial futures, and tangibles) is capital gains. To calculate a holding period return for an investment in gold, for instance, the basic HPR formula is used (excluding current income, of course). If an investor purchased 10 ounces of gold for $425 per ounce and sold the gold one year later for $500 per ounce, the pretax holding period return would be 17.65 percent. This is simply sales proceeds ($5,000) minus cost ($4,250) divided by cost. Assuming a 30 percent tax rate, the after-tax HPR would be 12.35 percent, which is the after-tax gain of $525 [$750 − (.30 × $750)] divided by cost ($4,250). The HPRs of options, commodities, and financial futures are calculated in a similar fashion. Because the return is in the form of capital gains only, the HPR analysis can be applied to any investment on a pretax or an after-tax basis. (The same basic procedure would be used for securities that are sold short.)

TABLE 17.4 Cash Flow, Tax Statement, and After-Tax HPR Calculation for Maitland Apartments (Past Year)

REAL ESTATE CASH FLOW STATEMENT	
Gross potential rental income	$51,000
Less: Vacancy and collection losses	− 1,500
Effective gross income (EGI)	$49,500
Less: Total operating expenses	− 20,000
Net operating income (NOI)	$29,500
Less: Mortgage payment	− 20,500
Before-tax cash flow	$ 9,000
Less: Owner's income tax (from below)	− 2,250
After-tax cash flow (ATCF)	$ 6,750

OWNER'S INCOME TAX STATEMENT	
Net operating income	$29,500
Less: Interest	− 17,000
Less: Depreciation	− 5,000
Taxable income	$ 7500
Owner's income tax (tax rate = .30)	$ 2250

AFTER-TAX HPR CALCULATION

$$\text{After-tax HPR} = \frac{\$6{,}750 + (\$110{,}000 - \$100{,}000)}{\$100{,}000} = +16.75\%$$

Comparing Performance to Investment Goals

After computing an HPR (or yield) on an investment, the investor must compare it to his or her investment goal. Keeping track of an investment's performance by periodically computing its return will help you decide which investments you should continue to hold and which have become possible candidates for sale. Clearly an investment holding would be a candidate for sale if: (1) it failed to perform up to expectations and no real change in performance is anticipated; (2) it has met the original investment objective; or (3) more attractive uses of your funds (better investment outlets) are currently available.

Comparing Risk and Return

In this book, we have frequently discussed the basic tradeoff between investment risk and return. The relationship is fundamentally as follows: To earn more return, you must take more risk. Risk is the chance that the actual investment return will be

less than expected. In analyzing an investment, the key question is, "Am I getting the proper return for the amount of investment risk that I am taking?"

Nongovernment security and property investments are by nature riskier than U.S. government bonds or insured money market deposit accounts. This implies that a rational investor should invest in risky situations *only when the expected rate of return is well in excess of what could have been earned from a low-risk investment*. Thus, one benchmark against which to compare investment returns is the rate of return on low-risk investments. If an investor's risky investments failed to outperform low-risk investments, a careful examination of the investment strategy is in order. The fact that one's investments are outperforming low-risk investments is an indication that they are obtaining extra return for taking extra risk.

Isolating Problem Investments

problem investment
an investment that has not lived up to expectations.

A **problem investment** is one that has not lived up to expectations. It may be a loss situation or an investment that has provided a return less than the investor expected. Many investors try to forget about problem investments, hoping the problem will go away or the investment will turn around by itself. This is obviously a mistake. Problem investments require immediate attention, not neglect. In studying a problem investment, an investor must decide whether to continue to hold it. "Should I take my loss and get out, or should I hang on and hope it turns around?" is the key question. Some investors do not like to realize losses on their investments. They hold on to mediocre ones in hope that they will turn around and can eventually be sold for a profit. Such a strategy can result in a portfolio of poorly performing investments.

It is best to periodically analyze each investment in a portfolio. For each, two questions should be considered. First, has it performed in a manner that could reasonably be expected? Second, if the investment were not currently in the portfolio, would you buy it for the portfolio today? If the answers to both are negative, then the investment probably should be sold. A negative answer to one of the questions qualifies the investment for the "problem list." It should be watched closely. In general, maintaining a portfolio of investments requires constant attention and analysis to ensure the best chance of satisfactory returns. Problem investments need special attention and work.

ASSESSING PORTFOLIO PERFORMANCE

A portfolio can be either passively or actively built and managed. A *passive portfolio* results from random selection of securities that are held over the given investment horizon. An *active portfolio* is built using the traditional and modern approaches presented in Chapter 16; it is managed and controlled in order to, at minimum, achieve its stated objectives. While passive portfolios may outperform equally risky active portfolios, evidence suggests that in spite of *efficient market* arguments (see Chapter 7), **active portfolio management** is a worthwhile activity that can result in superior (excess) returns. Many of the ideas presented in this text are consistent with the belief that active portfolio management will improve the investor's chance of earning superior (excess) returns.

active portfolio management
building a portfolio using traditional and modern approaches and managing and controlling it to meet its objectives.

Once a portfolio is built, the first step in active portfolio management is to assess performance on a regular basis and use that information to revise the portfolio. Calculating the portfolio return can be tricky, as discussed in the accompanying Investor Insights box. The procedures used to assess portfolio performance are based on many of the concepts presented earlier in the chapter. Here we will look at the process of portfolio performance assessment, using a hypothetical securities portfolio over a one-year holding period. We will examine each of three measures that can be used to compare a portfolio's return with a risk-adjusted, market-adjusted rate of return.

Measuring Portfolio Return

Table 17.5 presents the investment portfolio of Robert K. Hathaway, as of January 1, 1993. Mr. Hathaway is 50 years old, a widower, and his children are married. His income is $60,000 per year. His primary investment objective is long-term growth with a moderate dividend return. He selects stocks with two criteria in mind: quality and growth potential. On January 1, 1993, his portfolio consisted of 10 issues, all of good quality. Mr. Hathaway has been fortunate in his selection process in that he has approximately $74,000 in unrealized price appreciation in his portfolio. During 1993 he decided to make a change in his portfolio. On May 7, he sold 1,000 shares of Dallas National for $32,040. Mr. Hathaway's holding period return for that issue was discussed earlier in this chapter (see Table 17.1). Using funds from the Dallas National sale, he acquired an additional 1,000 shares of Florida Southcoast Banks on May 10. He decided to make the switch because he believed the prospects for the Florida bank holding company were better than those of Dallas National, a Texas-based bank holding company. Florida Southcoast is based in one of the fastest-growing counties in the country.

TABLE 17.5 Robert K. Hathaway's Portfolio (January 1, 1993)

Number of Shares	Company	Date Acquired	Cost (Including Commissions)	Cost per Share	Current Price per Share	Current Value
1,000	Bancorp West, Inc.	1/16/91	$ 21,610	$21.61	$30	$ 30,000
1,000	Dallas National Corporation	5/ 1/92	27,312	27.31	29	29,000
1,000	Dator Companies, Inc.	4/13/87	13,704	13.70	27	27,000
500	Excelsior Industries	8/16/90	40,571	81.14	54	27,000
1,000	Florida Southcoast Banks	12/16/90	17,460	17.46	30	30,000
1,000	Maryland-Pacific	9/27/90	22,540	22.54	26	26,000
1,000	Moronson	2/27/90	19,100	19.10	47	47,000
500	Northwest Mining and Mfg.	4/17/91	25,504	51.00	62	31,000
1,000	Rawland Petroleum	3/12/91	24,903	24.90	30	30,000
1,000	Vornox	4/16/91	37,120	37.12	47	47,000
	Total		$249,824			$324,000

INVESTOR INSIGHTS

Portfolio Return is a Tough Figure to Find

Most investors have a pretty good idea how major market benchmarks like Standard & Poor's 500-stock index did in 1989. Even if the exact figures aren't on the tips of their tongues, they can easily look them up.

But when it comes to the return on their own portfolios, most people have only the roughest notion. And there aren't any easy answers in the year-end brokerage and mutual-fund statements that outnumber the bills in some investors' mailboxes these days.

Securities firms have added more information to their statements in recent years. But they still don't show an overall performance figure that can be compared with, say, last year's 31.7% total return on the S&P 500. Unless investors do the frequently daunting calculations for themselves, they generally have no way of knowing how their investments stack up.

Mutual-fund investors don't have it much better. Fund companies do report total return figures for each fund, but that's often only part of the answer. People who moved their money around—say, shifting some dollars between a money-market fund and a stock fund—are still left groping in the dark.

A stock fund's annual return "doesn't tell you how you did if you bought at the highs and sold at the lows," or the reverse, says Lynn Hopewell, a Falls Church, Va., financial planner. . . .

Investors can calculate their own portfolio returns, of course. But unless they have only a few investment accounts and don't add or subtract money over the course of the year, they'll need lots of records and a strong stomach for math.

Take a simple case first. Say a family has a single brokerage account valued at $50,000 at the beginning of 1989, and no funds were added or withdrawn during the year. All income—including stock dividends, bond interest and mutual-fund distributions—was reinvested within the account.

The total return for 1989 would simply be the percentage difference between the value at year-end 1989 and the value at year-end 1988. That would tell the family the average return for 1989, including both price change and income, on dollars invested as of the beginning of the year.

Note that it doesn't matter how many or how few trades the family made. "It's all

Measuring the Amount Invested

Every investor would be well advised to periodically list his or her holdings, as done in Table 17.5. The table lists number of shares, acquisition date, cost, and current value for each issue. These data aid in continually formulating strategy decisions; the cost data, for example, are used to determine the amount invested. Mr. Hathaway's portfolio does not utilize the leverage of a margin account. If leverage were present, all return calculations would be based on the investor's *equity* in the account. (Recall from Chapter 2 that an investor's equity in a margin account equals the total value of all the securities in the account minus any margin debt.)

To measure Mr. Hathaway's return on his invested capital we need to perform a one-year holding period return analysis. His invested capital as of January 1, 1993,

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reflected in the ending market value, as long as there were no real cash flows in or out,'' says Robert Moseson, president of Performance Analytics Inc., a Chicago firm that advises institutional investors.

The equation gets tricky, however, if the family added money or subtracted money at some time during the year.

Say they added $15,000 from an inheritance. Depending on when the new money came in, it may have contributed in a big way or not at all to the gains or losses in the portfolio. So, contrary to first impressions, you can't just add the net inflow of new funds to the original balance and measure the percentage change over the year.

Instead, Mr. Moseson says, investors should add up asset values periodically, calculate average returns for short time periods and then combine them for an annual figure.

''You need to calculate those returns at least quarterly and ideally—or close to ideally—monthly. Mutual funds do it daily,'' says Mr. Moseson.

Limited information may force investors to restrict their calculations to holdings whose market values are readily determined. That would mean excluding things such as rarely traded limited-partnership interests, many of which have fallen in value as real-estate prices have fallen in value as real-estate prices have declined and tax laws have changed.

Investors should also take care in selecting appropriate benchmarks to measure their portfolios against. Mr. Moseson suggests constructing a customized index that represents a hypothetical portfolio with an investment mix similar to that of the investor.

Say, for instance, that in 1989 a family had about 50% of its investment dollars in common stocks, 30% in corporate and government bonds and 20% in money-market funds. Take the total return each category of investment produced last year: for instance, 31.7% for the S&P 500 index, 14.1% for Merrill Lynch & Co.'s corporate and government bond master index and 8.9% for the average taxable money fund, according to the Donoghue Organization, Holliston, Mass.

Then multiply each of those return percentages by the percentage of the portfolio they represent. Add up the results for a weighted average return. In this case the benchmark would be 21.9% (0.5 times 31.7%, plus 0.3 times 14.1%, plus 0.2 times 8.9%).

Source: Excerpted from Karen Slater, ''Portfolio Return Is Tough Figure to Find,'' *The Wall Street Journal,* January 22, 1990, p. C1.

is $324,000. No new additions of capital were made in the portfolio during 1993, although he sold one stock, Dallas National, and used the proceeds to buy another, Florida Southcoast Banks.

Measuring Income

There are two sources of return from a portfolio of common stocks: income and capital gains. Current income is realized from dividends. Current income from a portfolio of bonds is earned in the form of interest. Investors must report taxable dividends and interest on federal and state income tax returns. Companies are required to furnish income reports (Form 1099-DIV for dividends and Form 1099-INT for interest) to stockholders and bondholders. Many investors maintain logs to

TABLE 17.6 Dividend Income on Hathaway's Portfolio (Calendar Year 1990)

Number of Shares	Company	Annual Dividend per Share	Dividends Received
1,000	Bancorp West, Inc.	$1.20	$ 1,200
1,000	Dallas National Corporation*	1.80	900
1,000	Dator Companies, Inc.	1.12	1,120
500	Excelsior Industries	2.00	1,000
2,000	Florida Southcoast Banks**	1.28	1,920
1,000	Maryland-Pacific	1.10	1,100
1,000	Moronson	—	—
500	Northwest Mining and Mfg.	2.05	1,025
1,000	Rawland Petroleum	1.20	1,200
1,000	Vornox	1.47	1,470
	Total		$10,935

*Sold May 7, 1993.

**1,000 shares acquired on May 10, 1993.

keep track of dividend and interest income as received. Table 17.6 lists Mr. Hathaway's dividends for 1993. He received two quarterly dividends of $.45 per share before he sold the Dallas stock, and he received two $.32 per share quarterly dividends on the additional Florida Southcoast Banks shares he acquired. His total dividend income for 1993 was $10,935.

Measuring Capital Gains

Table 17.7 shows the unrealized gains in value for each of the issues in the Hathaway portfolio. The January 1, 1993, and December 31, 1993, values are listed for each issue except the additional shares of Florida Southcoast Banks. The amounts listed for Florida Southcoast Banks reflect the fact that 1,000 additional shares of the stock were acquired on May 10, 1993, at a cost of $32,040. Mr. Hathaway's current holdings had beginning-of-the-year values of $327,040 (including the additional Florida Southcoast Banks shares at the date of purchase) and are worth $356,000 at year-end. During 1993 the portfolio increased in value by 8.9 percent, or $28,960, in unrealized capital gains. In addition, Mr. Hathaway realized a capital gain in 1993 by selling his Dallas National holding. From January 1, 1993, until its sale on May 7, 1993, the Dallas holding rose in value from $29,000 to $32,040. This was the only sale in 1993; thus total *realized* gain was $3,040. During 1993 the portfolio had both a realized gain of $3,040 and an unrealized gain of $28,960. The total gain in value equals the sum of the two: $32,000. Put another way, since no capital was added to or withdrawn from the portfolio over the year, the total capital gain is simply the difference between the year-end market value (of $356,000, from Table 17.7) and the value on January 1 (of $324,000, from Table 17.5). This, of course, amounts to $32,000, of which only $3,040 is considered realized for tax purposes.

TABLE 17.7 Unrealized Gains in Value of Hathaway's Portfolio (January 1, 1993, to December 31, 1993)

Number of Shares	Company	Market Value (1/1/93)	Market Price (12/31/93)	Market Value (12/31/93)	Unrealized Gain (Loss)	Percentage Change
1,000	Bancorp West, Inc.	$ 30,000	$27	$ 27,000	$(3,000)	−10.0%
1,000	Dator Companies, Inc.	27,000	36	36,000	9,000	+33.3
500	Excelsior Industries	27,000	66	33,000	6,000	+22.2
2,000	Florida Southcoast Banks*	62,040	35	70,000	7,960	+12.8
1,000	Maryland-Pacific	26,000	26	26,000	—	—
1,000	Moronson	47,000	55	55,000	8,000	+17.0
500	Northwest Mining and Mfg.	31,000	60	30,000	(1,000)	− 3.2
1,000	Rawland Petroleum	30,000	36	36,000	6,000	+20.0
1,000	Vornox	47,000	43	43,000	(4,000)	− 8.5
	Total	$327,040**		$356,000	$28,960	+ 8.9%

*1,000 additional shares acquired on May 10, 1993, at a cost of $32,040. The value listed is the cost plus the market value of the previously owned shares as of January 1, 1993.

**This total includes the $324,000 market value of the portfolio on January 1, 1993 (from Table 17.5) plus the $3,040 *realized* gain on the sale of the Dallas National Corporation Stock on May 7, 1993. The inclusion of the realized gain in this total is necessary in order to calculate the *unrealized* gain on the portfolio during 1993.

Measuring the Portfolio's Holding Period Return

We use the HPR measurement to measure the total return on the Hathaway portfolio during 1993. The basic one-year HPR formula for portfolios is:

Equation 17.3

$$\text{Holding period return for a portfolio} = \frac{\text{dividends and interest received} + \text{realized gain} + \text{unrealized gain}}{\text{initial equity investment} + \left(\text{new funds} \times \frac{\text{number of months in portfolio}}{12}\right) - \left(\text{withdrawn funds} \times \frac{\text{number of months withdrawn from portfolio}}{12}\right)}$$

Equation 17.3a

$$HPR_p = \frac{C + RG + UG}{E_0 + \left(NF \times \frac{ip}{12}\right) - \left(WF \times \frac{wp}{12}\right)}$$

This formula includes both the realized return (income plus gains) and unrealized yearly gains of the portfolio. Portfolio additions and deletions are time-weighted for the number of months they are in the portfolio.

Table 17.7 analyzes in detail the portfolio's change in value: All the issues that are in the portfolio as of December 31, 1993, are listed and the unrealized gain during the year is calculated. The beginning and year-end values are included for comparison purposes. The crux of the analysis is the HPR calculation for the year, presented in Table 17.8. All the elements of a portfolio's return are included. Dividends total $10,935 (from Table 17.6). The realized gain of $3,040 represents

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TABLE 17.8 Holding Period Return Calculation on Hathaway's Portfolio (January 1, 1993, to December 31, 1993, Holding Period)

DATA

Portfolio value (1/1/93): $324,000
Portfolio value (12/31/93): $356,000
Realized appreciation: $3,040 (1/1/93 to 5/7/93 when Dallas National was sold)
Unrealized appreciation (1/1/90 to 12/31/93): $28,960
Dividends received: $10,935
New funds invested or withdrawn: None

PORTFOLIO HPR CALCULATION

$$\text{HPR} = \frac{\$10{,}935 + \$3{,}040 + \$28{,}960}{\$324{,}000}$$

$$= \underline{\underline{+13.25\%}}$$

the increment in value of the Dallas National holding from January 1, 1993, until its sale. During 1993 the portfolio had a $28,960 unrealized gain (from Table 17.7). There were no additions of new funds and no funds were withdrawn. Utilizing Equation 17.3 for HPR, we find that the portfolio had a total return of 13.25 percent in 1993.

Comparison of Return with Overall Market Measures

The HPR figure derived from the calculation above should be utilized in a risk-adjusted, market-adjusted rate of return comparison. This type of comparative study is useful because it can provide some idea of how the portfolio is doing in comparison to the stock market as a whole. The S&P 500 stock composite index or the NYSE composite index are acceptable indexes for this type of analysis because they are broadly based and appear to represent the stock market as a whole. Assume that during 1993 the return on the S&P 500 index was +10.75 percent; this return includes both dividends and capital gains. The return from Mr. Hathaway's portfolio, as calculated above, was +13.25 percent. This compares very favorably with the broadly based index: The Hathaway portfolio performed about 23 percent better than this broad indicator of stock market return.

While such a comparison tends to factor out the influences of general market movements, it fails to consider risk. Clearly, a raw return figure, like the +13.25 percent above, requires further analysis because an investor needs to know how the portfolio has performed *in relation to other portfolios and in relation to the market in general*. A number of risk-adjusted, market-adjusted rate of return measures are

available for use in assessing portfolio performance. Here we'll discuss three of the most popular—Sharpe's measure, Treynor's measure, and Jensen's measure—and demonstrate their application to Hathaway's portfolio.

Sharpe's measure a measure of portfolio performance, developed by William F. Sharpe, that measures the risk premium of a portfolio per unit of total risk, which is measured by the portfolio's standard deviation of return.

Sharpe's Measure

Sharpe's measure of portfolio performance, developed by William F. Sharpe, compares the risk premium on a portfolio to the portfolio's standard deviation of return. The risk premium on a portfolio is the total portfolio return minus the risk-free rate. Sharpe's measure can be expressed as the following formula:

Equation 17.4

$$\text{Sharpe's measure} = \frac{\text{total portfolio return} - \text{risk-free rate}}{\text{portfolio standard deviation}}$$

Equation 17.4a

$$SM = \frac{r_p - R_F}{s_p}$$

This measure allows the investor to assess the risk premium per unit of total risk, which is measured by the portfolio standard deviation. Assuming the risk-free rate, R_F, is 7.50 percent, the standard deviation of Hathaway's portfolio, s_p, is 16 percent. The total portfolio return, r_p, which is the HPR for Hathaway's portfolio calculated in Table 17.8, is 13.25 percent. Substituting those values into Equation 17.4, we get Sharpe's measure, *SM:*

$$SM = \frac{13.25\% - 7.50\%}{16\%} = \frac{5.75\%}{16\%} = \underline{\underline{.36}}$$

Sharpe's measure is meaningful when compared either to other portfolios or to the market. In general, the higher Sharpe's measure, the better—the higher the risk premium per unit of risk. If we assume the market return, r_m, is currently 10.75 percent and the standard deviation for the market portfolio, s_{p_m}, is 11.25 percent, Sharpe's measure for the market, SM_m, would be:

$$SM_m = \frac{10.75\% - 7.50\%}{11.25\%} = \frac{3.25\%}{11.25\%} = \underline{\underline{.29}}$$

Because Sharpe's measure for Hathaway's portfolio of .36 is greater than the measure of .29 for the market portfolio, Hathaway's portfolio exhibits superior performance—its risk premium per unit of risk is above that of the market. Of course, had Sharpe's measure for Hathaway's portfolio been below that of the market (i.e., below .29), the portfolio's performance would be considered inferior to the market performance.

Treynor's measure a measure of portfolio performance, developed by Jack L. Treynor, that measures the risk premium of a portfolio per unit of diversifiable risk, which is measured by the portfolio's beta.

Treynor's Measure

Jack L. Treynor developed a portfolio performance measure that is similar to Sharpe's measure. Like Sharpe's, **Treynor's measure** measures the risk premium per unit of risk, but it differs in its portfolio risk measure. Treynor's measure uses the portfolio beta to measure risk; Sharpe's uses the portfolio standard deviation. Treynor therefore focuses only on nondiversifiable risk, assuming that the portfolio

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has been built in a fashion that diversifies away all diversifiable risk; Sharpe on the other hand uses total risk. Treynor's measure is calculated as shown in Equation 17.5:

Equation 17.5

$$\text{Treynor's measure} = \frac{\text{total portfolio return} - \text{risk-free rate}}{\text{portfolio beta}}$$

Equation 17.5a

$$TM = \frac{r_p - R_F}{b_p}$$

This measure gives the risk premium per unit of nondiversifiable risk, which is measured by the portfolio beta. Using the data for the Hathaway portfolio presented earlier and assuming that the beta for Hathaway's portfolio, b_p, is 1.20, we can substitute into Equation 17.5 to get Treynor's measure, *TM*, for Hathaway's portfolio:

$$TM = \frac{13.25\% - 7.50\%}{1.20} = \frac{5.75\%}{1.20} = \underline{\underline{4.79\%}}$$

Treynor's measure, like Sharpe's, is useful when compared either to other portfolios or to the market. Generally, the higher the value of Treynor's measure, the better—the greater the risk premium per unit of nondiversifiable risk. Again assuming the market return, r_m, is 10.75 percent, and recognizing that by definition (see Chapter 4) the beta for the market portfolio, *bp*, is 1.00, we can use Equation 17.5 to find Treynor's measure for the market, TM_m:

$$TM_m = \frac{10.75\% - 7.50\%}{1.00} = \frac{3.25\%}{1.00} = \underline{\underline{3.25\%}}$$

The fact that Treynor's measure of 4.79 percent for Hathaway's portfolio is greater than that measure of 3.25 percent for the market portfolio indicates that Hathaway's portfolio exhibits superior performance—its risk premium per unit of nondiversifiable risk is above that of the market. Conversely, had Treynor's measure for Hathaway's portfolio been below that of the market (i.e., below 3.25 percent), the portfolio's performance would be viewed as inferior to that of the market.

Jensen's Measure (Alpha)

Jensen's measure (alpha)
a measure of portfolio performance, developed by Michael C. Jensen, that uses the portfolio's beta and CAPM to calculate its excess return, which can be positive, zero, or negative.

Michael C. Jensen developed a portfolio performance measure that seems quite different from the measures of Sharpe and Treynor yet is theoretically consistent with Treynor's measure. **Jensen's measure,** also called **Jensen's alpha,** is based on the *capital asset pricing model (CAPM),* which was developed in Chapter 4 (see Equation 4.13). It calculates the portfolio's *excess return*—the amount by which the portfolio's actual return deviates from its *required return,* which is determined using its beta and CAPM. The value of the excess return may be positive, zero, or negative. Like Treynor's measure, Jensen's measure focuses on only the nondiversifiable or relevant risk, by using beta and CAPM; it assumes that the portfolio has been adequately diversified. Jensen's measure is calculated as shown in Equation 17.6:

Equation 17.6

$$\text{Jensen's measure} = (\text{total portfolio return} - \text{risk-free rate}) - [\text{portfolio beta} \times (\text{market return} - \text{risk-free rate})]$$

Equation 17.6a

$$JM = (r_p - R_F) - [b_p \times (r_m - R_F)]$$

Jensen's measure indicates the difference between the portfolio's actual return and its required return. Positive values are preferred: they indicate that the portfolio earned a return in excess of its risk-adjusted, market-adjusted required return. A value of zero indicates the portfolio earned exactly its required return; negative values indicate that the portfolio failed to earn its required return.

Using the data for Hathaway's portfolio presented earlier, we can substitute into Equation 17.6 to get Jensen's measure, *JM*, for Hathaway's portfolio:

$$JM = (13.25\% - 7.50\%) - [1.20 \times (10.75\% - 7.50\%)]$$
$$= 5.75\% - (1.20 \times 3.25\%) = 5.75\% - 3.90\% = \underline{1.85\%}$$

The 1.85 percent value for Jensen's measure indicates that Hathaway's portfolio earned an excess return 1.85 percent above its required return, given its nondiversifiable risk as measured by beta. Clearly Hathaway's portfolio has outperformed the market on a risk-adjusted basis. Note that unlike the Sharpe and Treynor measures, Jensen's measure, through its use of CAPM, automatically adjusts for the market return. Therefore there is no need to make a separate market comparison. In general, the higher Jensen's measure, the better the portfolio has performed; only those portfolios with positive Jensen measures have outperformed the market on a risk-adjusted basis. Because of its computational simplicity, its reliance only on nondiversifiable risk, and the fact that it contains both risk and market adjustments, Jensen's measure (alpha) tends to be preferred over those of Sharpe and Treynor when assessing portfolio performance.

Portfolio Revision

In the Hathaway portfolio discussed above, one transaction occurred during 1993. The reason for this transaction was that Mr. Hathaway believed the Florida Southcoast Banks stock had more return potential than the Dallas National stock. An investor should periodically analyze the portfolio with one basic question in mind: "Does this portfolio continue to meet my needs?" In other words, does the portfolio contain those issues that are best suited to the investor's risk-return needs? Investors who systematically study the issues in their portfolios will find an occasional need to sell certain issues and to purchase new securities. This process is commonly called **portfolio revision.** As the economy evolves, certain industries and stocks become either more or less attractive as investments. In today's stock market, timeliness is the essence of profitability.

portfolio revision the process of selling certain issues in a portfolio and of purchasing new ones.

Given the dynamics of the investment world, periodic reallocation and rebalancing of the portfolio are a necessity. Many circumstances require such changes. In Chapter 16 we noted that as an investor nears retirement, the portfolio's emphasis normally evolves from a strategy that emphasizes growth/capital appreciation to one that seeks to preserve capital. For an investor approaching retirement, an appropri-

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ate strategy might be to switch gradually from growth issues into low-risk, high-yield securities. Changing a portfolio's emphasis normally involves an evolutionary process rather than an overnight switch. Individual issues in the portfolio often change in risk-return characteristics. As this occurs, an investor would be wise to eliminate those issues that do not meet his or her objectives. In addition, the need for diversification is a constant one. As issues rise or fall in value, their diversification effect may be lessened. Thus portfolio revision may be needed to maintain diversification in the portfolio.

TIMING TRANSACTIONS

The essence of timing is to "buy low and sell high." This is the dream of all investors. Although there is no tried and true way for achieving such a goal, there are several methods you can utilize to time purchase and sale actions. For one thing, there are formula plans, discussed below. Investors can also use limit and stop-loss orders as a timing aid, follow procedures for warehousing liquidity, and take into consideration other aspects of timing when selling investments.

Formula Plans

formula plans
mechanical methods of portfolio management that try to take advantage of price changes in securities which result from cyclical price movements.

Formula plans are mechanical methods of portfolio management that try to take advantage of price changes in securities which result from cyclical price movements. Formula plans are not set up to provide unusually high returns; rather, they are conservative strategies that are primarily oriented toward investors who do not wish to bear a high level of risk. Four formula plans are discussed here: dollar cost averaging; the constant dollar plan; the constant ratio plan; and the variable ratio plan.



Dollar Cost Averaging

dollar cost averaging
a formula plan for timing investment transactions, in which a fixed dollar amount is invested in a security at fixed intervals.

Dollar cost averaging is a formula plan in which a fixed dollar amount is invested in a security at fixed intervals. In this passive buy-and-hold strategy, a periodic dollar investment is held constant. The investor must have the discipline to invest on a regular basis in order to make the plan work. The hoped-for outcome of a dollar cost averaging program is growth in the value of the security to which the funds are allocated. The price of the investment security will probably fluctuate over time. If the price declines, more shares are purchased per period; conversely, if the price rises, fewer shares are purchased per period.

In the example of dollar cost averaging shown in Table 17.9, the investor is investing $500 per month in the Wolverine Mutual Fund, a growth-oriented, no-load mutual fund. During one year's time the investor has placed $6,000 in the mutual fund shares. This is a no-load fund, so shares are purchased at net asset value. Purchases were made at NAVs ranging from a low of $24.16 to a high of $30.19. At year-end, the investor's holdings in the fund were valued at slightly less than $6,900. Whereas dollar cost averaging is a passive strategy, other formula plans are more active.

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TABLE 17.9 Dollar Cost Averaging ($500 per Month, Wolverine Mutual Fund Shares)

TRANSACTIONS		
Month	**Net Asset Value (NAV), Month End**	**Number of Shares Purchased**
January	$26.00	19.23
February	27.46	18.21
March	27.02	18.50
April	24.19	20.67
May	26.99	18.53
June	25.63	19.51
July	24.70	20.24
August	24.16	20.70
September	25.27	19.79
October	26.15	19.12
November	29.60	16.89
December	30.19	16.56

ANNUAL SUMMARY

Total investment: $6,000.00
Total number of shares purchased: 227.95
Average cost per share: $26.32
Year-end portfolio value: $6,881.81

Constant Dollar Plan

constant dollar plan a formula plan for timing investment transactions, in which the investor establishes a target dollar amount for the speculative portion of the portfolio and transfers funds to or from the conservative portion as needed to maintain the target dollar amount.

A **constant dollar plan** consists of a portfolio that is divided into two parts, speculative and conservative. The speculative portion is invested in securities having high promise of capital gains. The conservative portion consists of low-risk investments such as bonds or a money market account. The target dollar amount for the speculative portion is constant, and the investor establishes trigger points (upward or downward movement in the speculative portion) at which funds are removed from or added to that portion. The constant dollar plan basically skims off profits from the speculative portion of the portfolio if it rises a certain percentage or amount in value. These funds are then added to the conservative portion of the portfolio. If the speculative portion of the portfolio declines by a specific percentage or amount, funds are added to it from the conservative portion.

Table 17.10 is an illustration of a constant dollar plan over time. The beginning $20,000 portfolio consists of $10,000 invested in a high-beta no-load mutual fund and $10,000 deposited in a money market account. The investor has decided to rebalance the portfolio every time the speculative portion is worth $2,000 more or $2,000 less than its initial value of $10,000. If the speculative portion of the portfo-

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TABLE 17.10 Constant Dollar Plan

Mutual Fund NAV	Value of Speculative Portion	Value of Conservative Portion	Total Portfolio Value	Transactions	Number of Shares in Speculative Portion
$10.00	$10,000.00	$10,000.00	$20,000.00		1,000
11.00	11,000.00	10,000.00	21,000.00		1,000
12.00	12,000.00	10,000.00	22,000.00		1,000
→12.00	10,000.00	12,000.00	22,000.00	Sold 166.67 shares	833.33
11.00	9,166.63	12,000.00	21,166.63		833.33
9.50	7,916.64	12,000.00	19,916.64		833.33
→ 9.50	10,000.00	9,916.64	19,916.64	Purchased 219.30 shares	1,052.63
10.00	10,526.30	9,916.64	20,442.94		1,052.63

lio equals or exceeds $12,000, sufficient shares of the fund are sold to bring its value down to $10,000. The proceeds from the sale are added to the conservative portion. If the speculative portion declines in value to $8,000 or less, funds are taken from the conservative portion and used to purchase sufficient shares to raise the value of the speculative portion to $10,000.

Two portfolio rebalancing actions are taken in the time sequence illustrated in Table 17.10. Initially $10,000 is allocated to each portion of the portfolio. Then, when the mutual fund's NAV rises to $12.00, so that the speculative portion is worth $12,000, the investor sells 166.67 shares valued at $2,000 and the proceeds are added to the money market account. Later the mutual fund's NAV declines to $9.50 per share, causing the value of the speculative portion to drop below $8,000. This triggers the purchase of sufficient shares to raise the value of the speculative portion to $10,000. Over the long run, if the speculative investment of the constant dollar plan rises in value, the conservative component of the portfolio will increase in dollar value as profits are transferred into it.

Constant Ratio Plan

constant ratio plan a formula plan for timing investment transactions, in which a desired fixed ratio of the speculative to the conservative portion of the portfolio is established; when the actual ratio differs by a predetermined amount from the desired ratio, transactions are made to rebalance the portfolio.

The **constant ratio plan** is similar to the constant dollar plan except that it establishes a desired fixed *ratio* of the speculative to the conservative portion of the portfolio. When the actual ratio of the two differs by a predetermined amount from the desired ratio, rebalancing occurs. At that point transactions are made in order to bring the actual ratio back to the desired amount. An investor using the constant ratio plan must decide on the appropriate apportionment of the portfolio between speculative and conservative investments. Then, a decision must be made regarding the ratio trigger point at which transactions occur.

A constant ratio plan for an initial portfolio of $20,000 is illustrated in Table 17.11. The investor has decided to allocate 50 percent of the portfolio to the speculative high-beta mutual fund and 50 percent to a money market account. Rebalancing will occur when the ratio of the speculative portion to the conservative portion is greater than or equal to 1.20 or less than or equal to .80. A sequence of net asset

TABLE 17.11 Constant Ratio Plan

Mutual Fund NAV	Value of Speculative Portion	Value of Conservative Portion	Total Portfolio Value	Ratio of Speculative Portion to Conservative Portion	Transactions	Number of Shares in Speculative Portion
$10.00	$10,000.00	$10,000.00	$20,000.00	1.000		1,000
11.00	11,000.00	10,000.00	21,000.00	1.100		1,000
12.00	12,000.00	10,000.00	22,000.00	1.200		1,000
→12.00	11,000.00	11,000.00	22,000.00	1.000	Sold 83.33 shares	916.67
11.00	10,083.00	11,000.00	21,083.00	0.917		916.67
10.00	9,166.70	11,000.00	20,166.70	0.833		916.67
9.00	8,250.00	11,000.00	19,250.00	0.750		916.67
→ 9.00	9,625.00	9,625.00	19,250.00	1.000	Purchased 152.78 shares	1,069.44
10.00	10,694.40	9,625.00	20,319.40	1.110		1,069.44

value changes is listed in Table 17.11. Initially $10,000 is allocated to each portion of the portfolio. When the fund NAV reaches $12, the 1.20 ratio triggers the sale of 83.33 shares. Then, the portfolio is back to its desired 50–50 ratio. Later, the fund NAV declines to $9, lowering the value of the speculative portion to $8,250. The ratio of the speculative portion to the conservative portion is then .75, which is below the .80 trigger point. A total of 152.78 shares is purchased to bring the desired ratio back up to the 50–50 level.

The long-run expectation under a constant ratio plan is that the speculative securities will rise in value. When this occurs, sales of the securities will be undertaken to reapportion the portfolio and increase the value of the conservative portion. This philosophy is similar to the constant dollar plan, except that a *ratio* is utilized as a trigger point.

Variable Ratio Plan

ıriable ratio plan formula plan for ning investment ınsactions, in which e ratio of the spec- ative portion to the tal portfolio varies epending on the ovement in the ılue of the specula- ve securities; when e ratio rises or falls a predetermined nount, the amount ommitted to the eculative portion the portfolio is duced or in- eased, respectively.

The **variable ratio plan** is the most aggressive of these four fairly passive investment strategies. It attempts to capture stock market movements to the investor's advantage by timing the market; that is, it tries to "buy low and sell high." The ratio of the speculative portion to the total portfolio varies depending upon the movement in value of the speculative securities. When the ratio rises a certain predetermined amount, the amount committed to the speculative segment of the portfolio is reduced. Conversely, if the value of the speculative portion declines such that it drops significantly in proportion to the whole portfolio, the percentage of commitment in the speculative vehicle is increased. In implementing the variable ratio plan, an investor has several decisions to make. First, one has to determine the initial allocation between the speculative and conservative portions of the portfolio. Next, trigger points to initiate buy or sell activity are chosen. These points are a function of the ratio between the value of the speculative portion and the value of the *total* portfolio. Finally, the adjustments in that ratio at each trigger point are set.

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TABLE 17.12 Variable Ratio Plan

Mutual Fund NAV	Value of Speculative Portion	Value of Conservative Portion	Total Portfolio Value	Ratio of Speculative Portion to Total Portfolio	Transactions	Number of Shares in Speculative Portion
$10.00	$10,000.00	$10,000.00	$20,000.00	0.50		1,000
15.00	15,000.00	10,000.00	25,000.00	0.60		1,000
→15.00	11,250.00	13,750.00	25,000.00	0.45	Sold 250 shares	750
10.00	7,500.00	13,750.00	21,250.00	0.35		750
→10.00	11,687.50	9,562.50	21,250.00	0.55	Purchased 418.75 shares	1,168.75
12.00	14,025.00	9,562.50	23,587.50	0.41		1,168.75

An example of a variable ratio plan is shown in Table 17.12. Initially the portfolio is divided equally between the speculative and the conservative portions. The former consists of a high-beta (around 2.0) mutual fund, and the latter is a money market account. It was decided that when the speculative portion is 60 percent of the total portfolio, its proportion would be reduced to 45 percent. If the speculative portion of the portfolio dropped to 40 percent of the total portfolio, then its proportion would be raised to 55 percent. The theory behind this strategy is an attempt to time the cyclical movements in the mutual fund's value. When the fund moves up in value, profits are taken and the proportion invested in the no-risk money market account is increased. When the fund declines markedly in value, the proportion of capital committed to it is increased.

A sequence of transactions is depicted in Table 17.12. When the fund NAV climbs to $15, the 60 percent ratio trigger point is reached and 250 shares of the fund are sold. The proceeds are placed in the money market account, which causes the speculative portion to then represent 45 percent of the value of the portfolio. Later the fund NAV declines to $10, causing the speculative portion of the portfolio to drop to 35 percent. This triggers a portfolio rebalancing, and 418.75 shares are purchased, moving the speculative portion to 55 percent. When the fund NAV then moves to $12, the total portfolio is worth in excess of $23,500. In comparison, if the initial investment of $20,000 had been allocated equally and no rebalancing had been done between the mutual fund and the money market account, the portfolio's value at this time would be only $22,000 ($12 × 1,000 = $12,000 in the speculative portion plus $10,000 in a money market account).

Using Limit and Stop-Loss Orders

In Chapter 2 we discussed the market order, the limit order, and the stop-loss order. Here we will see how the limit and stop-loss orders can be employed to rebalance a portfolio. These types of security orders, if properly used, can increase an investor's return by lowering transaction costs.

Limit Order

In review, there are two basic types of security transaction orders. The *market order* instructs the broker to buy or sell securities at the best price available. This often means that buy orders are executed at the market maker's "ask" price and sell orders at the market maker's "bid" price. Limit orders constrain the broker as to the price and the time limit until canceled if unexecuted. A *limit order* specifies the investor's minimum sell price or the maximum price he or she will pay to buy a security. For example, if an order to sell 100 shares of Full Curve Contact Lens at 18 was placed with a broker, the broker would sell those shares only if a price of $18 per share or higher was obtained. Conversely, if a buy order for that security was placed at that price, the order would be executed only if the broker could buy the stock for the customer at $18 per share or less. In addition to the price constraint, a limit order can have a time duration of one day or longer or can be **good 'til canceled (GTC).** A GTC order, often called an "open order," generally remains in effect for six months unless executed, canceled, or renewed. In contrast, a **day order** expires at the end of the trading day it was entered, if it was not executed that day.

good 'til canceled (GTC)
an order to buy or sell securities that generally remains in effect for six months unless executed, canceled, or renewed.

day order
an order to buy or sell securities that expires at the end of the trading day it was entered, if not executed that day.

There are many ways an investor can use limit orders when securities are bought or sold. For instance, if an investor has decided to add a stock to the portfolio, a limit buy order will ensure that the investor buys only at the desired purchase price or below. An investor using a limit GTC order to buy has the broker trying to buy stock until the entire order is filled. The primary risk in using limit instead of market orders is that the order may not be executed. For example, if an investor placed a GTC order to buy 100 shares of State Oil of California at $27 per share and the stock never traded at $27 per share or less, the order would never be executed. Thus an investor must weigh the need for immediate execution (market order) versus the possibility of a better price with a limit order. Limit orders, of course, can increase an investor's return if they enable the investor to buy a security at a lower cost or sell at a higher price. During a typical trading day a stock will fluctuate up and down over a normal trading range. For example, suppose the common shares of Jama Motor traded ten times in the following sequence: 36, 35⅞, 35¾, 35⅞, 35½, 35⅝, 35¾, 36, 36⅛, 36. A market order to sell could have been executed at somewhere between 35½ (the low) and 36⅛ (the high). A limit order to sell at 36 would have been executed at 36. Thus, a half-point per share (50 cents) might have been gained by using a limit order.

Stop-Loss Order

The *stop-loss order* is a type of suspended order that requests the broker to sell a security at the best available price only if it trades at a specific price or lower. In essence a stop-loss order becomes a market order to sell if a stock trades at the trigger price or lower. The order can be used to limit the downside loss exposure of an investment. For example, an investor purchases 500 shares of Easy Work at 26. The investor has set a specific goal to sell the stock if it reaches 32 or drops to 23.

INVESTOR INSIGHTS

Successful Selling Strategies Protect Profits

Figuring out what stock to buy is hard enough, but after you've got it, how do you know when to sell?

That's a question that befuddles many individual investors.

Too often, they answer it by selling their winners and keeping their losers. "That's the worst thing an investor can do," says Michael Metz, chief market strategist for Oppenheimer & Co.

Sometimes, it's simply a matter of not wanting to acknowledge that they made a mistake. Sometimes it's a case of trying to "get even"—waiting until the stock's price comes back up to what they paid for it.

Either way, investors end up with a portfolio of dogs. The sad fact, says Roger Newell, chairman of Newell Associates, a Palo Alto, Calif., investment-management firm, is that "some losing stocks go bankrupt; some get down to a dollar. Then it's impossible to do anything."

Market pros say investors owe it to themselves to be savvy sellers. Decide on some sensible "sell rules," they say, and stick with them. Over time, investors who follow a disciplined selling strategy will be better off than those who try to decide emotionally on each stock case by case, says William J. Breen, a Northwestern University finance professor.

But what rules should you follow?

Sell the losers, says Oppenheimer's Mr. Metz. Not only does it make sense financially, it also can bring emotional satisfaction. "I always feel it's cathartic to sell my losers," he says. If he leaves them in his portfolio, "they keep reproaching me for my stupidity."

Others say there are reasons for getting rid of stocks that haven't clearly fallen into the "losers" category.

One approach is to get rid of a stock when the reason why you purchased it is no longer valid. "When you bought the stock, you had some idea of growth in mind," says John Markese, research director of the American Association of Individual Investors. But in time, he says, maybe you see that the company didn't come through with an expected new product, a merger or spinoff didn't work, or the company's competitive position in its industry has deteriorated.

A.C. Moore, market analyst at Argus Investment Co., says this rule also applies to changes in a "thesis" that compelled you to buy a stock. Say you purchased a construction company stock on the thesis that federal and state governments would spend billions in the near future to repair the crumbling infrastructure. Then the recession comes along, and funds won't be available. That's a disruption in a thesis, he says, and a reason to sell.

Ralph Wanger, portfolio manager of Acorn Fund, a small-stock mutual fund, suggests that whenever you buy a stock, you write down the reason you bought it. "It can be just a

To implement this goal, a GTC stop order to sell is entered with a price limit of 32, and another stop order is entered at a price of 23. If the issue trades at 23 or less, the stop-loss order becomes a market order, and the stock is sold at the best price

couple of lines,'' he says. ''Then when you review your portfolio, check if the reason you bought the stock still holds true. If it doesn't, sell.''

Mr. Breen and Eugene Lerner, another Northwestern finance professor, have tested dozens of sell rules in computer simulations. The one that has worked best over the long run: sell a stock if a company's earnings for any 12-month period decline, compared with the previous 12 months.

''No management likes to report a fall in earnings,'' says Prof. Breen. ''And there are lots of ways to make earnings come out the way management wants them to. But when management reports a fall in earnings, they are telling us that they have run out of options.'' A serious warning indeed.

The Northwestern professors say the earnings-decline rule has worked better than such other mechanical sell rules as selling when a stock's price declines more than 10%, and selling when a stock's price-earnings ratio—the stock price divided by the company's per share profit—rises above the company's annual growth rate.

A more aggressive version of the earnings-decline strategy is to sell a stock when its earnings don't live up to analysts' estimates. Thus, a sale can be triggered if a company shows a 20% increase in quarterly earnings instead of the 30% that Wall Street analysts were counting on.

''When a company reports a negative earnings surprise, that tends to be a good sell signal,'' says Melissa Brown, director of quantitative research for Prudential Securities Inc. Research has shown that it's likely that company will have another negative surprise, says Ms. Brown.

Studies in the mid-1980s by Richard L. Rendleman Jr. and colleagues at the University of North Carolina found that if investors sold stocks based on this rule, they could avoid taking significant losses.

Several Wall Street firms applied the earnings-surprise theory and use it today. ''Earnings estimate revisions [downward] are by far the best variable for picking out stocks that will underperform,'' says Easton Ragsdale, chief quantitative analyst for Kidder, Peabody & Co.

But Prof. Rendleman says the popularity of the earnings-surprise approach may be watering down its effect. ''A number of Wall Street houses and lots of institutional and individual investors use this technique,'' he says.

In light of the attention paid to earnings surprises, Prof. Rendleman says individuals ''should take these numbers seriously but not necessarily build an entire investment strategy around them.'' However, they remain one factor to consider when deciding to sell a stock, he says.

Source: Earl C. Gottschalk, Jr. ''If It's Hard to Decide When to Sell, Here Are a Few Rules of Thumb,'' *The Wall Street Journal,* July 24, 1991, p. C1.

available. Conversely, if the issue trades at 32 or higher, the broker will sell the stock. In the first situation, the investor is trying to reduce his losses, and in the second, he's trying to protect a profit.

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whipsawing
the situation in which a stock drops in price and then bounces back upward.

The principal risk in using stop-loss orders is **whipsawing,** which refers to a situation where a stock temporarily drops in price and then bounces back upward. If Easy Work dropped to 23, then 22½, and then rallied back to 26, the investor who placed the stop-loss at 23 would have been sold out at 22½. For this reason limit orders, including stop-loss orders, require careful analysis before they are placed. An investor must consider the stock's probable fluctuations as well as the need to purchase or sell the stock when choosing between a market, a limit, and a stop-loss order.

Warehousing Liquidity

One recommendation for an efficient portfolio is to keep a portion of it in a low-risk, highly liquid investment. Let us see why and how this works.

A Buffer

Investing in risky stocks or in property offers probable returns in excess of money market accounts or bonds. However, stocks and property are risky investments. So, one reason to invest a portion of a portfolio in a low-risk asset is to protect against total loss. The low-risk asset acts as a buffer against possible investment adversity. A second reason for maintaining funds in a low-risk asset is the possibility of future opportunities. When opportunity strikes, an investor who has the extra cash available will be able to take advantage of the situation. A sudden market dip, a valuable painting available at a low price, or an attractive real estate deal are all examples of situations in which an investor with cash to invest immediately may benefit. An investor who has set aside funds in a highly liquid investment need not disturb the existing portfolio.

Choosing a Liquid Investment

There are two primary media for warehousing liquidity: money market accounts at financial institutions and money market mutual funds. The money market as well as some NOW accounts at banks and savings and loan associations provide relatively easy access to funds and provide returns competitive with (but somewhat lower than) money market mutual funds. Over time, the products offered by financial institutions are expected to become more competitive with those offered by mutual funds and stock brokerage firms. (See Chapter 3 for a detailed discussion of the role and vehicles available for warehousing liquidity.)

Timing Investment Sales

One of the more difficult decisions an investor must make concerns the appropriate time to sell an investment. Knowing when to sell a stock is as important as deciding which stock to buy. The nearby Investor Insights box offers several strategies for timing stock sales. Periodically an investor must review the portfolio and consider possible sales and new purchases. Two items relevant to the sales decision are discussed here: tax consequences and achieving investment goals.

Tax Consequences

Taxes affect nearly all investment actions. There are certain basics that all investors can and should understand. The treatment of capital losses is important: *a maximum of $3,000 of losses in excess of capital gains can be applied in any one year*. If an investor has a loss position in an investment and has concluded it would be wise to sell it, the best time to sell is when a capital gain is available against which the loss can be applied. Clearly, the tax consequences of investment sales should be carefully considered prior to taking action.

Achieving Investment Goals

Every investor would enjoy buying an investment at its lowest price and selling it at its top price. At a more practical level, an investment should be sold when it no longer meets the needs of the portfolio's owner. In particular, if an investment has become either more or less risky than is desired, or if it has not met its return objective, it should be sold. The tax consequences mentioned above help to determine the appropriate time to sell. However, taxes are not the foremost consideration in a sale decision: the dual concepts of risk and return should be the overriding concerns.

Each investment should be examined periodically in light of its return performance and relative risk. If the investment no longer belongs in the portfolio, the investor should sell it and buy vehicles that are more suitable. Finally, an investor should not hold out for every nickel of profit. Very often, those who hold out for the top price watch the value of their holdings plummet downward. If an investment looks ripe to sell, an investor should sell it, take the profit, reinvest it in an appropriate vehicle, and enjoy his or her good fortune. An investor, in sum, should set realistic goals and criteria, and stick with them.

SUMMARY

1. To analyze the performance of individual investments, the investor must gather current market information and stay abreast of international, national, and local economic and market events. Indexes of investment performance such as the Dow Jones Industrial Average (DJIA) and bond market indicators are available for use in assessing market behavior.
2. The performance of individual investment vehicles including stocks, bonds, mutual funds, real estate, and other investment vehicles (options, futures, tangibles) can be measured on both a pretax and an after-tax basis using the holding period return (HPR). HPR measures the total return (income plus change in value) actually earned on the investment during the investment period.
3. To measure portfolio return, the investor must estimate the amount invested, the income earned, and any capital gains—both realized and unrealized—over the relevant current time period. Using these values, along with information about any new funds added or funds withdrawn during the period, the investor can calculate the portfolio's holding period return (HPR) by dividing the total returns by the amount of investment during the period. Comparison of the portfolio's HPR to overall market measures can provide some insight with regard to the portfolio's performance relative to the market.

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4. A risk-adjusted, market-adjusted comparison of a portfolio's return can be made using Sharpe's measure, Treynor's measure, or Jensen's measure. Sharpe's and Treynor's measures find the risk premium per unit of risk, which can be compared to similar market measures to assess the portfolio's performance relative to the market. Jensen's measure, which is theoretically consistent with Treynor's, calculates the portfolio's excess return using beta and CAPM. Because it is relatively easy to calculate and directly makes both risk and market adjustments, Jensen's measure tends to be preferred over Sharpe's and Treynor's. Portfolio revision—reallocation and rebalancing—should take place when returns are unacceptable or when the portfolio fails to meet the investor's objectives.
5. Formula plans are used to time purchase and sale decisions in order to take advantage of price changes that result from cyclical price movements. The four commonly used formula plans are dollar cost averaging, the constant dollar plan, the constant ratio plan, and the variable ratio plan.
6. Limit and stop-loss orders can be used to trigger the rebalancing of a portfolio to contribute toward improved portfolio returns. Low-risk, highly liquid investment vehicles such as money market accounts (and some NOWs) and money market mutual funds can warehouse liquidity. Such liquidity can protect against total loss and allow the investor to quickly seize attractive future investment opportunities. Investment sales should be timed to obtain maximum tax benefits (or minimum tax consequences) and to contribute to the achievement of the investor's goals.

QUESTIONS

1. Why is it important for an investor to continuously manage and control his or her portfolio? Explain.
2. What role does current market information play in analyzing investment returns? How do changes in economic and market activity affect investment returns? Explain.
3. Which indexes can an investor use to compare his or her investment performance to general market returns? Briefly explain each of these indexes.
4. What are bond market indicators and how are they different from stock market indicators? Name three sources of bond yield data.
5. Aside from comparing returns on real estate investment with those of local real estate investors, why would a real estate investor also compare returns with the Consumer Price Index and with the New York Stock Exchange composite index? Explain.
6. Briefly discuss dividend yield and holding period return (HPR) as measures of investment return. Are they equivalent? Explain.
7. Distinguish between the types of dividend distributions mutual funds make. Are these dividends the only source of return from a mutual fund? Explain.
8. What are the two basic components of an investor's return from real estate investment? What is meant by reversion, and how is it calculated? Explain.
9. Under what three conditions would an investment holding be a candidate for sale? What must be true about the expected return on a risky investment when compared with the return on a low-risk investment in order to cause a rational investor to acquire the risky investment? Explain.

10. What is a problem investment? What two questions should be considered when analyzing an investment portfolio? Explain.

11. What is active portfolio management? How does evidence with regard to it conflict with efficient-market arguments? Explain.

12. Describe the steps involved in measuring portfolio return. Explain the role of the portfolio's HPR in this process, and explain why one must differentiate between realized and unrealized gains.

13. Why is it important to utilize a portfolio's HPR in a risk-adjusted, market-adjusted rate of return comparison? Why is comparing a portfolio's return to the return on a broad market index generally inadequate? Explain.

14. Briefly describe each of the following risk-adjusted, market-adjusted return measures available for assessing portfolio performance, and explain how they are used.
    a. Sharpe's measure.
    b. Treynor's measure.
    c. Jensen's measure.

15. How is Jensen's measure similar to Treynor's measure? Why is Jensen's measure (alpha) generally preferred over the measures of Sharpe and Treynor when assessing portfolio performance? Explain.

16. Briefly define and discuss portfolio revision. Explain its role in the process of managing and controlling a portfolio.

17. Explain the role formula plans can play in timing security transactions. Describe the logic underlying the use of these plans.

18. Briefly describe and differentiate among each of the following plans.
    a. Dollar cost averaging.
    b. Constant dollar plan.
    c. Constant ratio plan.
    d. Variable ratio plan.

19. Define and differentiate among each of the following types of orders.
    a. Market order.
    b. Limit order.
    c. Good 'til canceled (GTC).
    d. Day order.
    e. Stop-loss order.

20. Give two reasons why an investor might want to maintain funds in a low-risk, highly liquid investment.

21. Describe the two items an investor should consider before reaching a decision to sell an investment vehicle.

PROBLEMS



1. Mark Smith purchased 100 shares of the Tomco Corporation in December 1992, at a total cost of $1,762. He held the shares for 15 months and then sold them, netting $2,500. During the period he held the stock, the company paid him $200 in cash dividends. How much, if any, was the capital gain realized upon the sale of stock? Calculate Mark's pretax HPR.

2. Jill Clark invested $25,000 in the bonds of Industrial Aromatics, Inc. She held them for 13 months, at the end of which she sold them for $26,746. During the period of ownership she earned $2,000 interest. Calculate the pretax and after-tax HPR on Jill's investment. Assume she is in the 31 percent tax bracket.

3. Charlotte Smidt bought 2,000 shares of the balanced no-load LaJolla Fund exactly one year ago for a NAV of $8.60 per share. During the year the fund distributed investment income dividends of $.32 per share and capital gains dividends of $.38 per share. At the end of the year Charlotte, who is in the 35 percent tax bracket (federal and state combined), realized $8.75 per share on the sale of all 2,000 shares. Calculate Charlotte's pretax and after-tax HPR on this transaction.

4. Peter Hancock bought a parcel of land in Red Woods one year ago for $55,000. He sold the property this year for $63,000, and his reversion from the sale was $61,000 after deducting $2,000 in closing costs and income taxes. Estimate Peter's after-tax holding period return on the investment.

5. Marilyn Gore, who is in a 33 percent tax bracket (federal and state combined), purchased 10 ounces of gold for $4,000 exactly one year ago. Due to the release of a large amount of gold onto the market by the Commonwealth of Independent States, Marilyn netted only $370 per ounce upon the sale of her 10 ounces of gold today. What are Marilyn's pretax and after-tax HPRs on this transaction?

6. On January 1, 1993, Simon Love's portfolio of 15 common stocks, completely equity financed, had a market value of $264,000. At the end of May 1993 Simon sold one of the stocks, which had a beginning-of-year value of $26,300, for $31,500. He did not reinvest those or any other funds in the portfolio during the year. He received total dividends from stocks in his portfolio of $12,500 during the year. On December 31, 1993, Simon's portfolio had a market value of $250,000. Find the HPR on Simon's portfolio during the year ended December 31, 1993. (*Hint:* Measure the amount of withdrawn funds at their beginning-of-year value.)

7. Niki Malone's portfolio earned a return of 11.8 percent during the year just ended. The portfolio's standard deviation of return was 14.1 percent. The risk-free rate is currently 6.2 percent. During the year the return on the market portfolio was 9.0 percent, and its standard deviation was 9.4 percent.

   a. Calculate Sharpe's measure for Niki Malone's portfolio for the year just ended.
   b. Compare the performance of Niki's portfolio found in (a) to that of Hector Smith's portfolio, which has Sharpe's measure of .43. Which portfolio performed better? Why?
   c. Calculate Sharpe's measure for the market portfolio for the year just ended.
   d. Use your findings in (c) to discuss the performance of Niki's portfolio relative to the market during the year just ended.

8. During the year just ended, Anna Schultz's portfolio, which has a beta of .90, earned a return of 8.6 percent. The risk-free rate is currently 7.3 percent, and the return on the market portfolio during the year just ended was 9.2 percent.

   a. Calculate Treynor's measure for Anna's portfolio for the year just ended.
   b. Compare the performance of Anna's portfolio found in (a) to that of Stacey Quant's portfolio which has Treynor's measure of 1.25 percent. Which portfolio performed better? Explain.
   c. Calculate Treynor's measure for the market portfolio for the year just ended.

d. Use your findings in (c) to discuss the performance of Anna's portfolio relative to the market during the year just ended.

9. Chee Chew's portfolio has a beta of 1.3 and earned a return of 12.9 percent during the year just ended. The risk-free rate is currently 7.8 percent, and the return on the market portfolio during the year just ended was 11.0 percent.

a. Calculate Jensen's measure (alpha) for Chee's portfolio for the year just ended.
b. Compare the performance of Chee's portfolio found in (a) to that of Carri Uhl's portfolio which has Jensen's measure of −0.24. Which portfolio performed better? Explain.
c. Use your findings in (a) to discuss the performance of Chee's portfolio relative to the market during the period just ended.

10. The risk-free rate is currently 8.1 percent. Use the data in the following table for the Fio family's portfolio and the market portfolio during the year just ended to answer the questions below.

Data Item	Fio's Portfolio	Market Portfolio
Rate of return	12.8%	11.2%
Standard deviation of return	13.5%	9.6%
Beta	1.10	1.00

a. Calculate Sharpe's measure for the portfolio and the market, compare them, and assess the performance of the Fio's portfolio during the year just ended.
b. Calculate Treynor's measure for the portfolio and the market, compare them, and assess the performance of the Fio's portfolio during the year just ended.
c. Calculate Jensen's measure (alpha), and use it to assess the performance of the Fio's portfolio during the year just ended.
d. Based on your findings in (a), (b), and (c), assess the performance of the Fio's portfolio during the year just ended.

11. Over the past two years Jonas Cone has used a dollar cost averaging formula to purchase $300 worth of FCI common stock each month. The price per share paid each month over the two years is given in the following table. Assume Jonas paid no brokerage commissions on these transactions.

	Price per Share of FCI	
Month	Year 1	Year 2
January	11⅝	11⅜
February	11½	11¾
March	11½	12
April	11	12
May	11¾	12⅛
June	12	12½
July	12⅜	12¾
August	12½	13
September	12¼	13¼
October	12½	13
November	11⅞	13⅜
December	11½	13½

a. How much was Jonas's total investment over the two-year period?
b. How many shares did Jonas purchase over the two-year period?
c. Use your findings in **a** and **b** to calculate Jonas's average cost per share of FCI.
d. What was the value of Jonas's holdings in FCI at the end of the second year?

CFA QUESTION (This question is from the 1986 Level III Exam.)

CFA

Assume that a portfolio of randomly-selected, low-P/E stocks will produce superior risk-adjusted returns over time. List *four* reasons why, even if this assumption is true, a portfolio manager might *not* wish to hold a portfolio of only low-P/E stocks.

(See Appendix C for Guideline Answer to this question.)

CASE PROBLEMS

17.1 Assessing the Stalchecks' Portfolio Performance

The Stalchecks, Mary and Nick, have an investment portfolio containing four vehicles. It was developed to provide them with a balance between current income and capital appreciation. Rather than acquire mutual fund shares or diversify within a given class of investment vehicle, they developed their portfolio with the idea of diversifying across various types of vehicles. The portfolio currently contains common stock, industrial bonds, mutual fund shares, and a real estate investment. They acquired each of these vehicles during the past three years, and they plan to invest in gold and other vehicles sometime in the future.

Currently the Stalchecks are interested in measuring the return on their investment and assessing how well they have done relative to the market. They hope that the return earned over the past calendar year is in excess of what they would have earned by investing in a portfolio consisting of the S&P 500 stock composite index. Their investigation indicates that the risk-free rate was 7.2 percent and the (before-tax) return on the S&P stock portfolio was 10.1 percent during the past year. With the aid of a friend, they were able to estimate the beta of their portfolio, which was 1.20. In their analysis they planned to ignore taxes, since they felt their earnings were adequately sheltered. Since they did not make any portfolio transactions during the past year, the Stalchecks would have to consider only unrealized capital gains, if any. In order to make the necessary calculations, the Stalchecks gathered the following information on each of the four vehicles in their portfolio:

Common stock. They own 400 shares of KJ Enterprises common stock. KJ is a diversified manufacturer of metal pipe and is known for its unbroken stream of dividends. Over the past few years it has entered new markets and as a result has offered moderate capital appreciation potential. Its share price has risen from 17¼ at the start of last calendar year to 18¾ at the end of the year. During the year, quarterly cash dividends of $.20, $.20, $.25, and $.25 were paid.

Industrial bonds. The Stalchecks own 8 Cal Industries bonds. The bonds have a $1,000 par value, a 9¾ percent coupon, and are due in 2003. They are A-rated by Moody's. The bond was quoted at 97 at the beginning of the year and ended the calendar year at 96⅜.

Mutual fund. They hold 500 shares in the Holt Fund, a balanced, no-load mutual fund. The dividend distributions on the fund during the year consisted of $.60 in investment income and $.50 in capital gains. The fund's NAV at the beginning of the calendar year was $19.45, and it ended the year at $20.02.

Real estate. They own a parcel of raw land that had an appraised value of $26,000 at the beginning of the calendar year. Although they did not have it appraised at year-end, they were offered $30,500 for it at that time. Since the offer was made through a realtor, they would have had to pay nearly $1,500 in sales commissions and fees in order to make the sale at that price.

Questions

1. Calculate the holding period return on a before-tax basis for each of the four investment vehicles described above.
2. Assuming that the Stalchecks' ordinary income is currently being taxed at a combined (state and federal) tax rate of 38 percent, determine the after-tax HPR for each of their four investment vehicles.
3. Recognizing that all gains on the Stalchecks' investments were unrealized, calculate the before-tax portfolio HPR for their four-vehicle portfolio during the past calendar year. Evaluate this return relative to its current income and capital gain components.
4. Use the HPR calculated in question 3 to calculate Jensen's measure (alpha) in order to analyze the performance of the Stalcheck's portfolio on a risk-adjusted, market-adjusted basis. Comment on your finding. Is it reasonable to use Jensen's measure to evaluate a four-vehicle portfolio? Why or why not?
5. Based upon your analysis in questions 1, 3, and 4, what, if any, recommendations might you offer the Stalchecks relative to the revision of their portfolio? Explain your recommendations.

17.2 Evaluating Formula Plans: Charles Schultz's Approach

Charles Schultz, a mathematician with Ansco Petroleum Company, wishes to develop a rational basis for timing his portfolio transactions. He currently holds a security portfolio with a market value of nearly $100,000, divided equally between a very conservative low-beta common stock, ConCam United, and a highly speculative high-beta stock, Fleck Enterprises. Based upon his reading of the investments literature, Charles does not believe it is necessary to diversity one's portfolio across 8 to 20 securities. His own feeling, based on his independent mathematical analysis, is that one can achieve the same results by holding a two-security portfolio in which one security is very conservative and the other is highly speculative. His feelings on this point will not be altered; he plans to continue to hold such a two-security portfolio until he finds that his theory does not work. During the past couple of years, he has earned a rate of return in excess of the risk-adjusted, market-adjusted rate expected on such a portfolio.

Charles's current interest centers on investigating and possibly developing his own formula plan for timing portfolio transactions. The current stage of his analysis centers on the evaluation of four commonly used formula plans in order to isolate the desirable features of each. The four plans being considered are (1) dollar cost averaging, (2) the constant dollar plan, (3) the constant ratio plan, and (4) the variable ratio plan. Charles's analysis of the plans will involve the use of two types of data. Since dollar cost averaging is a passive buy-and-hold strategy in which the periodic investment is held constant, whereas the other

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plans are more active in that they involve periodic purchases and sales within the portfolio, differing data are needed to evaluate each of them.

For evaluating the dollar cost averaging plan, Charles decided he would assume the investment of $500 at the end of each 45-day period. He chose to use 45-day time intervals in order to achieve certain brokerage fee savings that would be available by making larger transactions. The $500 per 45 days totaled $4,000 for the year and equaled the total amount Charles invested during the past year. (*Note:* For convenience, the returns earned on the portions of the $4,000 that remain uninvested during the year are ignored.) In evaluating this plan, he would assume that half ($250) was invested in the conservative stock (ConCam United) and the other half in the speculative stock (Fleck Enterprises). The share prices for each of the stocks at the end of the eight 45-day periods when purchases were to be made are given below.

	Price per Share	
Period	**ConCam**	**Fleck**
1	22⅛	22⅛
2	21⅞	24½
3	21⅞	25⅜
4	22	28½
5	22¼	21⅞
6	22⅛	19¼
7	22	21½
8	22¼	23⅝

In order to evaluate the other three plans, Charles planned to begin with a $4,000 portfolio evenly split between the two stocks. He chose to use $4,000, since that amount would correspond to the total amount invested in the two stocks over one year using dollar cost averaging. He planned to use the same eight points in time given earlier in order to assess and make, if required, transfers within the portfolio. For each of the three plans evaluated using these data, he established the triggering points given below.

Constant dollar plan. Each time the speculative portion of the portfolio is worth 13 percent more or less than its initial value of $2,000, the portfolio is rebalanced in order to bring the speculative portion back to its initial $2,000 value.

Constant ratio plan. Each time the ratio of the value of the speculative portion of the portfolio to the value of the conservative portion is greater than or equal to 1.15 or less than or equal to .84, the portfolio is rebalanced through sale or purchase, respectively, in order to bring the ratio back to its initial value of 1.0.

Variable ratio plan. Each time the value of the speculative portion of the portfolio rises above 54 percent of the total value of the portfolio, its proportion would be reduced to 46 percent. Each time the value of the speculative portion of the portfolio drops below 38 percent of the total value of the portfolio, its proportion would be raised to 50 percent of the portfolio value.

Questions



1. Under the dollar cost averaging plan, determine (a) the total number of shares purchased, (b) the average cost per share, and (c) the year-end portfolio value expressed both in dollars and as a percentage of the amount invested for (1) the conservative stock, (2) the speculative stock, and (3) the total portfolio.
2. Using the constant dollar plan, determine the year-end portfolio value expressed both in dollars and as a percentage of the amount initially invested for (1) the conservative portion, (2) the speculative portion, and (3) the total portfolio.
3. Repeat question 2 for the constant ratio plan. Be sure to answer all parts.
4. Repeat question 2 for the variable ratio plan. Be sure to answer all parts.
5. Compare and contrast your results from questions 1 through 4. You may want to summarize them in tabular form. Which plan would appear to have been most beneficial in timing Charles's portfolio activities during the past year? Explain.

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