CHAPTER 3

Security Types

You invest $5,000 in Yahoo! common stock and just months later sell the shares for $7,500, realizing a 50 percent return. Not bad! At the same time, your neighbor invests $5,000 in Yahoo! stock options, which become worth $25,000 at expiration — a 400 percent return. Yahoo! Clearly there is a big difference between stock shares and stock options. Security type matters!

Our goal in this chapter is to introduce you to some of the different types of securities that are routinely bought and sold in financial markets around the world. As we mentioned in Chapter 1, we will be focusing on financial assets such as bonds, stocks, options, and futures in this book, so these are the securities we briefly describe here. The securities we discuss are covered in much greater detail in the chapters ahead, so we touch on only some of their most essential features in this chapter.

For each of the securities we examine, we ask three questions. First, what is its basic nature and what are its distinguishing characteristics? Second, what are the potential gains and losses from owning it? Third, how are its prices quoted in the financial press?

3.1 Classifying Securities

To begin our overview of security types, we first develop a classification scheme for the different securities. As shown in Table 3.1, financial assets can be grouped into three broad categories, and each of these categories can be further subdivided into a few major subtypes. This

classification is not exhaustive, but it covers the major types of financial assets. In the sections that follow, we will describe these assets in the order they appear in Table 3.1.

Table 3.1 Classification of financial assets	
Basic types	Major subtypes
Interest-bearing	Money market instruments
	Fixed-income securities
Equities	Common stock
	Preferred stock
Derivatives	Options
	Futures

When we examine some of these security types in more detail, we will see that the distinctions can become a little blurred, particularly with some more recently created financial instruments, and, as a result, some financial assets are hard to classify. The primary reason is that some instruments are hybrids, meaning that they are combinations of the basic types.

As you may have noticed in our discussion, financial assets, such as bonds and stocks, are often called securities. They are often called financial "instruments" as well. In certain contexts, there are distinctions between these terms, but they are used more or less interchangeably in everyday discussion, so we will stick with common usage.

CHECK THIS

3.1a   What are the three basic types of financial assets?

3.1b   Why are some financial assets hard to classify?

3.2 Interest-Bearing Assets

Broadly speaking, interest-bearing assets (as the name suggests) pay interest. Some pay interest implicitly and some pay it explicitly, but the common denominator is that the value of these assets depends, at least for the most part, on interest rates. The reason that these assets pay interest is that they all begin life as a loan of some sort, so they are all debt obligations of some issuer.

There are many types of interest-bearing assets. They range from the relatively simple to the astoundingly complex. We discuss some basic types and their features next. The more complex types are discussed in later chapters.

Money Market Instruments

For the most part, **money market instruments** are the simplest form of interest-bearing asset. Money market instruments generally have the following two properties:

1. They are essentially IOUs sold by large corporations or governments to borrow money.
2. They mature in less than a year from the time they are sold, meaning that the loan must be repaid within a year.

Most money market instruments trade in very large denominations, and most, but not all, are quite liquid.

(*marg. def.* **money market instrument** Short-term debt obligations of large corporations and governments that mature in a year or less.)

The most familiar example of a money market instrument is a Treasury bill, or T-bill for short. Every week, the U.S. Treasury borrows billions of dollars by selling T-bills to the public. Like many (but not all) money market instruments, T-bills are sold on a *discount basis*. This simply means that

T-bills are sold at a price that is less than their stated face value. In other words, an investor buys a T-bill at one price and later, when the bill matures, receives the full face value. The difference is the interest earned.

U.S. Treasury bills are the most liquid type of money market instrument — that is, the type with the largest and most active market. Other types of money market instruments traded in active markets include bank certificates of deposits (or CD's) and corporate and municipal money market instruments.

The potential gain from buying a money market instrument is fixed because the owner is promised a fixed future payment. The most important risk is the risk of default, which is the possibility that the borrower will not repay the loan as promised. With a T-bill, there is no possibility of default, so, as we saw in Chapter 1, T-bills are essentially risk-free. In fact, most money market instruments have relatively low risk, but there are exceptions and a few spectacular defaults have occurred in the past.

Prices for different money market instruments are quoted in the financial press in different ways. In fact, usually interest rates are quoted, not prices, so some calculation is necessary to convert rates to prices. The procedures are not complicated, but they involve a fair amount of detail, so we save them for another chapter.

Fixed-Income Securities

Fixed-income securities are exactly what the name suggests: securities that promise to make fixed payments according to some preset schedule. The other key characteristic of a fixed-income security is that, like a money market instrument, it begins life as a loan of some sort. Fixed-income securities are therefore debt obligations. They are typically issued by corporations and governments. Unlike money market instruments, fixed-income securities have lives that exceed 12 months at the time they are issued.

> (*marg. def.* **fixed-income securities** Longer-term debt obligations, often of corporations and governments, that promise to make fixed payments according to a preset schedule.)

The words "note" and "bond" are generic terms for fixed-income securities, but "fixed-income" is really more accurate. This term is being used more frequently as securities are increasingly being created that don't fit within traditional note or bond frameworks, but are nonetheless fixed-income securities.

SOME EXAMPLES OF FIXED-INCOME SECURITIES To give one particularly simple example of a fixed-income security, near the end of every month, the U.S. Treasury sells between $10 billion and $20 billion of two-year notes to the public. If you buy a two-year note when it is issued, you will receive a check every six months for two years for a fixed amount, called the bond's *coupon*, and in two years you will receive the face amount on the note.

Suppose you buy $1 million in face amount of a 6 percent, two-year note. The 6 percent is called the *coupon rate*, and it tells you that you will receive 6 percent of the $1 million face value each year, or $60,000, in two $30,000 semiannual "coupon" payments. In two years, in addition to your

final $30,000 coupon payment, you will receive the $1 million face value. The price you would pay

for this note depends on market conditions. United States government security prices are discussed

in detail in Chapter 12.

Example 3.1: A Note-Worthy Investment? Suppose you buy $100,000 in face amount of a just-issued
five-year U.S. Treasury note. If the coupon rate is 5 percent, what will you receive over the next five
years if you hold on to your investment?
        You will receive 5 percent of $100,000, or $5,000, per year, paid in two semiannual coupons
of $2,500. In five years, in addition to the final $2,500 coupon payment, you will receive the
$100,000 face amount.

        To give a slightly different example, suppose you take out a 48-month car loan. Under the

terms of the loan, you promise to make 48 payments of $400 per month. It may not look like it to

you, but in taking out this loan, you have issued a fixed-income security to your bank. In fact, your

bank may turn around and sell your car loan (perhaps bundled with a large number of others) to an

investor. Actually, car loans are not sold all that often, but there is a very active market in student

loans, and student loans are routinely bought and sold in huge quantities.

FIXED-INCOME PRICE QUOTES Prices for fixed-income securities are quoted in different ways,

depending on, among other things, what type of security is being priced. As with money market

instruments, there are various details that are very important (and often overlooked), so we will defer

an extensive discussion of these price quotes to later chapters. However, just to get an idea of how

fixed-income prices look, Figure 3.1 presents an example of *Wall Street Journal* corporate bond

quotes.

Figure 3.1 about here

In Figure 3.1, locate the bond issue labeled "AT&T 7C02." This bond was issued by AT&T, the telecommunications giant. The 7C is the bond's annual coupon rate. If you own $1 million in face amount of these bonds, then you will receive 7C percent (7.125%) per year on the $1 million, or $71,250 per year in two semiannual payments. The 02 tells us that the bond will mature in the year 2002. The next column, labeled "Cur Yld." is the bond's *current yield*. A bond's current yield is its annual coupon divided by its current price; we discuss how to interpret this number in Chapter 9.

The final three columns give us information about trading activity and prices. The column labeled "Vol." is the actual number of bonds that traded that day, 55 in this case. Most corporate bonds have a face value of $1,000 per bond, so 55 bonds represents $55,000 in face value. The next column, labeled "Close," is the closing price for the day. This is simply the last price at which a trade took place that day. Bond prices are quoted as a percentage of face value. In this case, the closing price of 104-3/4 tells that the price was 104.75 percent of face value, or $1,047.50 per bond, assuming a $1,000 face value.

Finally, the column labeled "Net Chg." in Figure 3.1 is the change in the closing price from the previous day's closing price. Here, the -1/4 tells us that the closing price of 104-3/4 is down by one-quarter percentage point from the previous closing price, so this bond decreased in value on this day. The format of price quotes in Figure 3.1 is for corporate bonds only. As we will see, other types of bonds, particularly U.S. government bonds are quoted quite differently.

Example 3.2: Corporate Bond Quotes. In Figure 3.1, which AT&T bond has the longest maturity? Assuming a face value of $1,000 each, how much would you have to pay for 100 of these? Verify that the reported current yield is correct.

The bond with the longest maturity is the AT&T-8℮31, which matures in 2031. Based on the reported closing price, the price you would pay is 112 percent of face value per bond. Assuming a $1,000 face value, this is $1,120 per bond, or $112,000 for 100 bonds. The current yield is the annual coupon divided by the price, which, in this case, would be 8℮/112 = 7.7 percent, the number reported.

The potential gains from owning a fixed-income security come in two forms. First, there are the fixed payments promised and the final payment at maturity. In addition, the prices of most fixed-income securities rise when interest rates fall, so there is the possibility of a gain from a favorable movement in rates. An unfavorable change in interest rates will produce a loss.

Another significant risk for many fixed-income securities is the possibility that the issuer will not make the promised payments. This risk depends on the issuer. It doesn't exist for U.S. government bonds, but for many other issuers the possibility is very real. Finally, unlike most money market instruments, fixed-income securities are often quite illiquid, again depending on the issuer and the specific type.

CHECK THIS!

3.2a   What are the two basic types of interest-bearing assets?

3.2b   What are the two basic features of a fixed-income security?

3.3 Equities

Equities are probably the most familiar type of security. They come in two forms: common stock and preferred stock. Of these, common stock is much more important, so we discuss it first.

Common Stock

Common stock represents ownership in a corporation. If you own 100 shares of IBM, for example, then you own about .00002 percent of IBM (IBM has roughly 500 million shares outstanding). It's really that simple. As a part owner, you are entitled to your pro rata share of anything paid out by IBM, and you have the right to vote on important matters regarding IBM. If IBM were to be sold or liquidated, you would receive your share of whatever was left over after all of IBM's debts and other obligations (such as wages) are paid.

The potential benefits from owning common stock come primarily in two forms. First, many companies (but not all) pay cash dividends to their shareholders. However, neither the timing nor the amount of any dividend is guaranteed. At any time, it can be increased, decreased, or omitted altogether. Dividends are paid strictly at the discretion of a company's board of directors, which is elected by shareholders.

The second potential benefit from owning stock is that the value of your stock may rise because share values in general increase or because the future prospects for your particular company improve (or both). The downside is just the reverse; your shares may lose value if either the economy or your particular company falters. As we saw back in Chapter 1, both the potential rewards and the risks from owning common stock have been substantial, particularly shares of stock in smaller companies.

Preferred Stock

The other type of equity security, preferred stock, differs from common stock in several important ways. First, the dividend on a preferred share is usually fixed at some amount and never changed. Further, in the event of liquidation, preferred shares have a particular face value. The reason preferred stock (or preference stock, as it is sometimes termed) is called "preferred" is that a company must pay the fixed dividend on its preferred stock before any dividends can be paid to common shareholders. In other words, preferred shareholders must be paid first.

The dividend on a preferred stock can be omitted at the discretion of the board of directors, so, unlike a debt obligation, there is no legal requirement that the dividend be paid (as long as the common dividend is also skipped). However, some preferred stock is *cumulative*, meaning that any and all skipped dividends must be paid in full (although without interest) before common shareholders can receive a dividend.

Potential gains from owning preferred stock consist of the promised dividend plus any gains from price increases. The potential losses are just the reverse: the dividend may be skipped, and the value of your preferred shares may decline from either market-wide decreases in value or diminished prospects for your particular company's future business (or both).

Preferred stock issues are not rare, but they are much less frequently encountered than common stock issues. Most preferred stock is issued by large companies, particularly banks and, especially, public utilities.

In many ways, preferred stock resembles a fixed-income security; in fact, it is sometimes classified that way. In particular, preferred stocks usually have a fixed payment and a fixed liquidation

value. The main difference is that preferred stock is not a debt obligation. Also, for accounting and tax purposes, preferred stock is treated as equity.

Having said this, preferred stock is a good example of why it is sometimes difficult to neatly and precisely classify every security type. To further complicate matters, there are preferred stock issues with dividends that are not fixed, so it seems clear that these are not fixed-income securities, but there are also bond issues that do not make fixed payments and allow the issuer to skip payments under certain circumstances. As we mentioned earlier, these are examples of hybrid securities.

To give a more difficult example, consider a convertible bond. Such a bond is an ordinary bond in every way except that it can be exchanged for a fixed number of shares of stock anytime at the bondholder's discretion. Whether this is really a debt or equity instrument is difficult (or even impossible) to say.

> Figure 3.2 about here

Common and Preferred Stock Price Quotes

Unlike fixed-income securities, the price quotes on common and preferred stock are fairly uniform. The part of the stock page from the *Wall Street Journal* seen in Figure 3.2 presents six lines for Chase Manhattan. The first line listed for Chase Manhattan is the common stock; the next five are preferred stock issues. It wouldn't be unusual for a preferred-stock issuing company to have several preferred issues, but for most there would be only one common stock. Also, the only issues listed on a given day were the ones that traded that day; a company may have several preferred issues for which there were no trades, so these would not appear.

In looking at the Chase Manhattan common stock, the first two numbers (labeled "52 weeks Hi and Lo") are the highest and lowest price per share that the stock has sold for over the past 52 weeks. Thus, Chase Manhattan sold for as high as $77.5625 (77-9/16) per share and as low as $40.0625 (40-1/16) per share. The next piece of information is the company name, often abbreviated, followed by the ticker symbol, which is a unique shorthand symbol assigned to each company. The Chase Manhattan ticker symbol is CMB.

Following the ticker symbol is the dividend, labeled "Div," and the dividend yield, labeled "Yld %." Like most dividend-paying companies, Chase Manhattan pays dividends on a quarterly basis; the dividend number reported here, $1.44, is actually four times the most recent quarterly dividend. The dividend yield is this annualized dividend divided by the closing price (discussed just below). Next, the price-earnings ratio, or PE, is reported. This ratio, as the name suggests, is equal to the price per share divided by earnings per share. Earnings per share is calculated as the sum of earnings over the last four quarters. We will discuss dividends, dividend yields, and price-earnings ratios in detail in Chapter 6.

The next piece of information, "Vol," is the trading volume for the day, measured in hundreds. Stocks are usually traded in multiples of 100 called "round lots." Anything that is not a multiple of 100 is called an "odd lot." On this particular day, then, 103 round lots, or about 10,300 shares, were traded.

Finally, the last four columns tell us the high price ("Hi") for the day, the low price ("Lo") for the day, the closing price ("Close"), and the change in the closing price from the previous day ("Net Chg"). Chase Manhattan thus traded between a high of 46-7/16 per share and a low of 43-9/16 per share. It closed at 45-1/2, down 7/8 from the previous trading day.

The information for the five preferred stock issues is interpreted in the same way. For preferred stocks, however, no ticker symbol is given and PE ratios are not reported. The symbol "pf" indicates a preferred issue. When an issuer has more than one preferred issue, a letter is often attached to the pf to uniquely identify a particular issue. Thus, the five Chase Manhattan preferreds have the symbols pfA, pfB pfC,pfG, and pfN and are called the A-, B-, C-, G-, and N-series.

CHECK THIS

3.3a   What are the two types of equity securities?

3.3b   Why is preferred stock sometimes classified as a fixed-income security?

3.4 Derivatives

There is a clear distinction between real assets, which are essentially tangible items, and financial assets, which are pieces of paper describing legal claims. Financial assets can be further subdivided into primary and derivative assets. A **primary asset** (sometimes called a *primitive* asset) is a security that was originally sold by a business or government to raise money, and a primary asset represents a claim on the assets of the issuer. Thus, stocks and bonds are primary financial assets.

(*marg. def.* **primary asset** Security originally sold by a business or government to raise money.)

In contrast, as the name suggests, a **derivative asset** is a financial asset that is derived from an existing primary asset rather than being issued by a business or government to raise capital. As we will see, derivative assets usually represent claims either on other financial assets, such as shares of stock or even other derivative assets, or on the future price of a real asset such as gold. Beyond this,

it is difficult to give a general definition of the term "derivative asset" because there are so many different types, and new ones are created almost every day. On the most basic level, however, any financial asset that is not a primary asset is a derivative asset.

> (*marg. def.* **derivative asset** A financial asset that is derived from an existing traded asset rather than issued by a business or government to raise capital. More generally, any financial asset that is not a primary asset.)

To give a simple example of a derivative asset, imagine that you and a friend buy 1,000 shares of a dividend-paying stock, perhaps the Chase Manhattan stock we discussed. You each put up half the money, and you agree to sell your stock in one year. Furthermore, the two of you agree that you will get all the dividends paid while your friend gets all the gains or absorbs all the losses on the 1,000 shares.

This simple arrangement takes a primary asset, shares of Chase Manhattan stock, and creates two derivative assets, the dividend-only shares that you hold and the no-dividend shares held by your friend. Derivative assets such as these actually exist, and there are many variations on this basic theme.

There are two particularly important types of derivative assets, futures and options. Many other types exist, but they can usually be built up from these two basic types, possibly by combining them with other primary assets. Futures are the simpler of the two, so we discuss them first.

Futures Contracts

In many ways, a futures contract is the simplest of all financial assets. A **futures contract** is just an agreement made today regarding the terms of a trade that will take place later. For example, suppose you know that you will want to buy 100 ounces of gold in six months. One thing you could do is to strike a deal today with a seller in which you promise to pay, say, $400 per ounce in six months for the 100 ounces of gold. In other words, you and the seller agree that six months from now, you will exchange $40,000 for 100 ounces of gold. The agreement that you have created is a futures contract.

(*marg. def.* **futures contract** An agreement made today regarding the terms of a trade that will take place later.)

With your futures contract, you have locked in the price of gold six months from now. Suppose that gold is actually selling for $450 per ounce in six months. If this occurs, then you benefit from having entered into the futures contract because you have to pay only $400 per ounce. However, if gold is selling for $350, you lose because you are forced to pay $400 per ounce. Thus a futures contract is essentially a bet on the future price of whatever is being bought or sold. Notice that with your futures contract, no money changes hands today.

After entering into the futures contract, what happens if you change your mind in, say, four months, and you want out of the contract? The answer is that you can sell your contract to someone else. You would generally have a gain or a loss when you sell. The contract still has two months to run. If market participants generally believe that gold will be worth more than $400 when the contract matures in two months, then your contract is valuable, and you would have a gain if you sold it. If,

on the other hand, market participants think gold will not be worth $400, then you would have a loss

on the contract if you sold it because you would have to pay someone else to take it off your hands.

Futures contracts are traded all over the world on many types of assets, and futures contracts

can be traced back to ancient civilizations. As we discuss in detail in Chapter 16, there are two broad

categories of futures contracts: *financial futures* and *commodity futures*. The difference is that, with

financial futures, the underlying asset is intangible, usually a stock index, bonds, or money market

instruments. With commodity futures, the underlying asset is a real asset, typically either an

agricultural product (such as cattle or wheat) or a natural resource product (such as gold or oil).

Futures Price Quotes

An important feature of traded futures contracts is that they are standardized, meaning that

one contract calls for the purchase of a specific quantity of the underlying asset. Further, the contract

specifies in detail what the underlying asset is and where it is to be delivered. For example, with a

wheat contract, one contract specifies that such-and-such a quantity of a particular type of wheat will

be delivered at one of a few approved locations on a particular date in exchange for the agreed-upon

futures price.

In Figure 3.3, futures price quotations for U.S. Treasury bonds (or T-bonds) are seen as they

appeared in the *Wall Street Journal*. Looking at Figure 3.3, we see these are quotes for delivery of

T-bonds with a total par, or face, value of $100,000. The letters CBT indicate to us where this

contact is traded; in this case it is the Chicago Board of Trade, the largest futures exchange in the

world.

Figure 3.3 about here

The first column in Figure 3.3 tells us the delivery date for the bond specified by the contract. For example, the "Dec" indicates that the first contract listed is for T-bond delivery in December. The second is for delivery the following March, and so on. Following the delivery month, we have a series of prices. In order, we have the open price, the high price, the low price, and the settle price. The open price is the price at the start of trading, the high and low are highest and lowest prices for the day, and the settle is the price on the final trade of the day. The "Change" is the change in the settle price from the previous trading day.

The columns labeled "Lifetime High" and "Lifetime Low" refer to the highest and lowest prices over the life of this contract. Finally, the "Open Interest" tells us how many contracts are currently outstanding.

To get a better idea of how futures contracts work, suppose you buy one December contract at the settle price. What you have done is agree to buy T-bonds with a total par value $100,000 in December at a price of 131-15 per $100 of par value, where the "-15" represents 15/32. Thus 131-15 can also be written as 131-15/32, which represents a price of $131,468.75 per $100,000 par value. No money changes hands today. However, if you take no further action, when December rolls around your T-bond will be delivered and you must pay for them at that time.

Actually, most futures contracts don't result in delivery. Most buyers and sellers close out their contracts before the delivery date. To close out a contract, you take the opposite side. For example, suppose that with your one T-bond contract, you later decide you no longer wish to be in it. To get out, you simply sell one contract, thereby canceling your position.

Gains and Losses on Futures Contracts

Futures contracts have the potential for enormous gains and losses. To see why, let's consider again buying T-bond contracts based on the settle prices in Figure 3.3. To make matters somewhat more interesting, suppose you buy 20 December contracts at the settle price of 131-15/32 per $100 of par value.

One month later, because of falling inflation, the futures price of T-bonds for December delivery rises five dollars to 136-15/32. This may not seem like a huge increase, but it generates a substantial profit for you. You have locked in a price of 131-15/32 per $100 par value. The price has risen to 136-15/32, so you make a profit of $5 per $100 of par value, or $5,000 per $100,000 face value. With 20 contracts, each of which calls for delivery of $100,000 in face value of T-bonds, you make $20 \times \$5,000 = \$100,000$, so your profit is a tidy $100,000. Of course, if the price had decreased by five dollars, you would have lost $100,000 on your 20-contract position.

Example 3.3: Future Shock. Suppose you purchase five Sept 99 contracts at a settle price of 130-04/32. How much will you pay today? Suppose in one month you close your position and the Sept 99 futures price at that time is 125-20/32. Did you make or lose money? How much?
When you purchase the five contracts, you pay nothing today because the transaction is for Sept 99. However, you have agreed to pay 130-04/32 per $100 par value. If, when you close your position in a month, the futures price is 125-20/32, you have a loss of 130-04/32 - 125-20/32 = 4-16/32 per $100 par value, or $4-16/32 \times 1,000 = \$4,500$ per contract. Your total loss is thus $4,500 $\times$ 5 contracts, or $22,500 in all (ouch!).

CHECK THIS

3.4a   What is a futures contract?

3.4b   What are the general types of futures contract?

3.4c   Explain how you make or lose money on a futures contract.

3.5 Option Contracts

An **option contract** is an agreement that gives the owner the right, but not the obligation, to buy or sell (depending on the type of option) a specific asset for a specific price for a specific period of time. The most familiar options are stock options. These are options to buy or sell shares of stock, and they are the focus of our discussion here. Options are a very flexible investment tool, and a great deal is known about them. We present some of the most important concepts here; our detailed coverage begins in Chapter 14.

> (*marg. def.* **option contract** An agreement that gives the owner the right, but not the obligation, to buy or sell a specific asset at a specified price for a set period of time.)

Option Terminology

Options come in two flavors, calls and puts. The owner of a **call option** has the right, but not the obligation, to *buy* an underlying asset at a fixed price for a specified time. The owner of a **put option** has the right, but not the obligation, to *sell* an underlying asset at a fixed price for a specified time.

> (*mar. def.* **call option** An option that gives the owner the right, but not the obligation, to buy an asset.)

> (*mar. def.* **put option** An option that gives the owner the right, but not the obligation, to sell an asset.)

Options occur frequently in everyday life. Suppose, for example, that you are interested in buying a used car. You and the seller agree that the price will be $3,000. You give the seller $100 to hold the car for one week, meaning that you have one week to come up with the $3,000 purchase price, or else you lose your $100.

This agreement is a call option. You paid the seller $100 for the right, but not the obligation, to buy the car for $3,000. If you change your mind because, for example, you find a better deal elsewhere, you can just walk away. You'll lose your $100, but that is the price you paid for the right, but not the obligation, to buy. The price you pay to purchase an option, the $100 in this example, is called the **option premium**.

(*mar. def.* **option premium** The price you pay to buy an option.)

A few other definitions will be useful. First, the specified price at which the underlying asset can be bought or sold with an option contract is called the **strike price**, the *striking price*, or the *exercise price*. Using an option to buy or sell an asset is called *exercising* the option. The last day on which an option can be exercised is the *expiration date* on the option contract. Finally, an *American option* can be exercised anytime up to and including the expiration date, whereas a *European option* can be exercised only on the expiration date.

(*mar. def.* **strike price** The price specified in an option contract at which the underlying asset can be bought (for a call option) or sold (for a put option). Also called the striking price or exercise price.

Options versus Futures

Our discussion thus far illustrates the two crucial differences between an option contract and a futures contract. The first is that the purchaser of a futures contract is *obligated* to buy the underlying asset at the specified price (and the seller of a futures contract is obligated to sell). The owner of a call option is not obligated to buy, however, unless she wishes to do so; she has the right, but not the obligation.

The second important difference is that when you buy a futures contract, you pay no money (and you receive none if you sell). However, if you buy an option contract, you pay the premium; if you sell an option contract, you receive the premium.

Option Price Quotes

Like futures contracts, most option contracts are standardized. In general, one call option contract, for example, gives the owner the right to buy 100 shares (one round lot) of stock. Similarly, one put option contract gives the owner the right to sell 100 shares.

Figure 3.4 presents *Wall Street Journal* quotes for call and put options on Microsoft common stock. The company identifier, "Micsft" appears in the first column. Just below this identifier is the number 109-3/16 repeated over and over. This is simply the most recent closing price on Microsoft common stock.

Figure 3.4 about here

The second column in Figure 3.4 lists various available strike prices. The third column lists expiration months. So, for example, the Microsoft options listing has strike prices ranging from $75 through $140, and expiration months from October through April.

The fourth and fifth columns give trading volume and premium information about call options. Referring to the second line, the Jan 80 options, we see that 10 contracts were traded and the last (closing) price was 31-1/8, or $31.125 per share. Because each contract actualy involves 100 shares, the price per contract is $31.125 \times 100 = \$3,112.5$. Finally, the last two columns give the same information for put options.

Suppose you wanted the right to buy 500 shares of Microsoft for $100 sometime between now and January. What would you buy? Based on the information in Figure 3.4, how much would you have to pay?

You want the right to buy, so you want to purchase call options. Since each contract is for 100 shares, and you want the right to buy 500 shares, you need five contracts. The contract you want would be described as the Microsoft January 100 call contract. Form Figure 3.4, the option premium for the contract with a $100 strike and a January expiration is 15-3/4. This is the premium per share, so one contract would cost $15-3/4 × 100 = $1,575. The cost for five contracts would therefore be 5 × $1,575 = $7,875.

Example 3.4: Put Options. In Figure 3.4, suppose you want the right to sell 200 shares of Microsoft between now and November at a price of $110. What contract should you order? How much will it cost you?

You want the right to sell stock at a fixed price, so you want to buy put options. Specifically, you want to buy two November 110 put contracts. In Figure 3.4, the premium for this contract is given as 6-3/4. Recalling that this is the premium per share, one contract will cost you $675; so two contracts would be $1,350.O

Gains and Losses on Option Contracts

As with futures contracts, option contracts have the potential for large gains and losses. To examine this, let's consider our previous example in which you paid $7,875 for five Microsoft January 100 call contracts. Suppose you hold on to your contracts until January rolls around, and they are just about to expire. What are your gains (or losses) if Microsoft is selling for $130 per share? $90 per share?

If Microsoft is selling for $130 per share, you will profit handsomely. You have the right to buy 500 shares at a price of $100 per share. Since the stock is worth $130, you make $30 per share,

or $15,000 in all. So, you invested $7,875 and ended up with almost double that in just about four

months. Not bad.

If the stock ends up at $90 per share, however, the result is not so pretty. You have the right

to buy the stock for $100 when it is selling for $90, so your call options expire worthless. You lose

the entire $7,875 you originally invested. In fact, if the stock price is anything less than $100, you lose

it all.

Example 3.5: More on Puts. In Example 3.4, you bought two Microsoft November 110 put contracts
for $1,350. Suppose that November arrives, and Microsoft is selling for $90 per share. How did you
do? What's the break-even stock price, that is, the price at which you just make enough to cover your
$1,350 cost?

Your put contracts give you the right to sell 200 shares of Microsoft at a price of $110 per
share. If the stock is worth only $90 per share, your put options are worth $20 per share, or $4,000
in all. To determine the breakeven stock price, notice that you paid $6.75 per share for the option,
so this is what you must make per share to break even. The breakeven stock price is thus $110 -
$6.75 = $103.25. **O**

CHECK THIS

3.5a   What is a call option? A put option?

3.5b   If you buy a call option, what do you hope will happen to the underlying stock? What if you

buy a put option?

3.5c   What are the two key differences between a futures contract and an option contract?

3.6 Summary and Conclusions

This chapter examines the basic types of financial assets. It discusses three broad classes, interest-bearing assets, equities, and derivative assets. Each of these major groups can be further subdivided. Interest-bearing assets include money market instruments and fixed-income securities. The two major equity types are common stock and preferred stock. The two most important types of derivative assets are options and futures.

For each of the major types of financial assets, we cover three topics. We first describe the basic nature of the asset with an emphasis on what the owner of the asset is entitled to receive. We then illustrate how prices are quoted in the financial press, and we show how to interpret information presented in the *Wall Street Journal*. Finally, we indicate, in fairly broad terms, the potential gains and losses from buying and selling the different assets.

Key Terms

money market instrument	**option contract**
fixed-income security	**call option**
primary asset	**put option**
derivative asset	**option premium**
futures contract	**strike price**

Get Real!

This chapter covered the basics of the four main types of financial assets: stocks, bonds, options, and futures. In addition to discussing basic features, we alerted you to some of the risks associated with these instruments. We particularly stressed the large potential gains and losses possible with derivative assets. How should you, as an investor or investment manager, put this information to work?

Following up on our previous chapter, you need to execute each of the possible transaction types suggested by this chapter in a simulated brokerage account. Your goal is to experience some of the large gains (and losses) to understand them on a personal level. Try to do at least the following:

1.   Buy a corporate or government bond,
2.   Buy put and call option contracts,
3.   Sell put and call contracts,
4.   Buy agriculture, natural resource, and financial futures contracts,
5.   Sell agriculture, natural resource, and financial futures contracts.

In each case, once you have created the position, be sure to monitor it regularly by checking prices, trading activity, and relevant news using *The Wall Street Journal* or an on-line information service to understand why it changes in value.

One thing you will discover if you execute these trades is that some of these investments carry relatively low risk and some relatively high risk. Which are which? Under what circumstances is each of these investments appropriate? We will have more to say about these investments later, but you'll get a lot more out of our discussion (and have some fun stories to tell) if you already have some personal experience. As always, it's better to become educated about these things with play money before you commit real money.

STOCK-TRAK FAST TRACK

TRADING DIFFERENT SECURITY TYPES WITH STOCK-TRAK

Stock-Trak supports trading for a wide range of security types. In facy, most of the security types discussed in this chapter can be traded through your Stock-Trak account. You should consult the Stock-Trak website (www.stocktrak.com) for a complete list of all security types available.

Corporate bonds:	Stock-Trak supports trading for a limited number of corporate bonds. In general, these are bond issues from large corporations which trade on the New York Stock Exchange. Corporate bond trading through Stock-Trak is discussed in Chapter 11.
Common stocks:	Almost all common stocks traded on the New York Stock Exchange and Nasdaq can be traded through your Stock-Trak account. Common stock trading through Stock-Trak was discussed in Chapter 2.
Stock options:	Stock-Trak supports trading for almost all stock options traded on the Chicago Board Options Exchange. Stock options trading through Stock-Trak is discussed in Chapter 14.
Futures contracts:	Most futures contracts traded on the Chicago Board of Trade can be traded through Stock-Trak. Futures contract trading trading through Stock-Trak is discussed in Chapter 16.

STOCK-TRAK EXERCISES

1.   Look up stock ticker symbols for these mutual funds: Templeton Foreign Equity Fund, Strong Growth Fund, T. Rowe Price Blue Chip Growth Fund.

Chapter 3
Security Types
Questions and problems

Review Problems and Self-Test

1.   **Corporate Bond Quotes**   In Figure 3.1, locate the AT&T bond that matures in the year 2000. What is the coupon rate on this issue? Suppose you purchase $100,000 in face value. How much will this cost? Assuming semiannual payments, what will you receive in coupon payments? Verify the reported current yield.

2.   **Call Options**   In Figure 3.4, locate the Microsoft January 115 call option. If you buy 10 contracts, how much will you pay? Suppose that in January, just as the option is about to expire, Microsoft is selling for $125 per share. What are your options worth? What is your net profit?

Answers to Self-Test Problems

1.   Based on Figure 3.1, the AT&T issue that matures in 2000 (shown as 00) has a 6 percent coupon rate. The price, as a percentage of face value, is 100-1/8, or 100.125 percent. If you buy $100,000 in face value, you would thus pay $100,125. You will receive 6 percent of $100,000, or $6,000, in coupon payments every year, paid in two $3,000 semiannual installments. Finally, the current yield is the coupon rate divided by the price, or 6/100.125 = 6.0 percent, the number shown.

2.   From Figure 3.4, the January 115 call premium is 7-7/8, or $7.875. Because one contract involves 100 shares, the cost of a contract is $787.50, and 10 contacts would cost $7,875. In January, if Microsoft is selling for $125, then you have the right to buy 10 contracts × 100 shares = 1,000 shares at $115. Your contracts are thus worth $125 - $115 = $10 per share, or $10,000 total. Since they cost you $7,875, your net profit is $2,125.

Test Your IQ (Investment Quotient)

1. **Money Market Securities** Which of the following is not a common characteristic of money market securities?

   a. sold on a discount basis
   b. mature in less than one year
   c. most important risk is default risk
   d. all of the above are characteristics

2. **Money Market Securities** Which of the following money market securities is the most liquid?

   a. U.S. Treasury bills
   b. bank Certificates of Deposit
   c. corporate money market debt
   d. municipality money market debt

3. **Fixed-Income Securities** On what basis do we normally distinguish money market securities from fixed-income securities?

   a. issuer
   b. interest rate
   c. maturity
   d. tax status

4. **Fixed-Income Securities** Your friend told you she just received her semi-annual coupon payment on a U.S. Treasury note with a $100,000 face value that pays a 6 percent annual coupon. How much money did she receive from this coupon payment?

   a. $3,000
   b. $6,000
   c. $30,000
   d. $60,000

5. **Common Stock** A corporation with common stock issued to the public pays dividends

   a. at the discretion of management, who are elected by the shareholders
   b. at the discretion of shareholders, since they own the corporation
   c. at the discretion of the company's board of directors, who are elected by shareholders
   d. at the discretion of the company's board of directors, who are appointed by management

6.   **Preferred Stock**   A dividend payment on preferred stock

      a.   can never be omitted if the company is earning a profit
      b.   is automatically omitted if the company realizes a loss from operations
      c.   can be omitted at the discretion of the board of directors
      d.   can not be omitted at the discretion of the board of directors

7.   **Futures Contracts**   You buy (go long) five copper futures contracts at 100 cents per pound, where the contract size is 25,000 pounds. At contract maturity, copper is selling for 102 cents per pound. What is your profit (+) or loss (-) on the transaction?

      a.   -$2,500
      b.   +$2,500
      c.   -$25,000
      d.   +$25,000

8.   **Futures Contracts**   You sell (go short) 10 gold futures contracts at $400 per ounce, where the contract size is 100 ounces. At contract maturity, gold is selling for $410 per ounce. What is your profit (+) or loss (-) on the transaction?

      a.   -$1,000
      b.   +$1,000
      c.   -$10,000
      d.   +$10,000

9.   **Option Contracts**   You buy 10 SPX call options with a strike price of 950 at a quoted price of $10. The contract size for SPX options is 100 times the S&P 500 index. At option expiration, the S&P 500 is at 970. What is your net profit on the transaction?

      a. $2,000
      b. $5,000
      c. $10,000
      d. $20,000

10.   **Option Contracts**   You buy 10 SPX put options with a strike price of 920 at a quoted price of $8. The contract size for SPX options is 100 times the S&P 500 index. At option expiration, the S&P 500 is at 910. What is your net profit on the transaction?

      a. $200
      b. $1,000
      c. $2,000
      d. $10,000

Questions and Problems

<u>Core Questions</u>

1. **Money Market Instruments**   What are the distinguishing features of a money market instrument?

2. **Preferred Stock**   Why is preferred stock "preferred"**?**

3. *WSJ* **Stock Quotes**   What is the PE ratio reported for stocks in *The Wall Street Journal*? In particular, how is it computed?

4. **Yields**   The current yield on a bond is very similar to what number reported for common and preferred stocks?

5. **Stock Quotations**   You found the following stock quote for DRK Enterprises, Inc., in the financial pages of today's newspaper. What was the closing price for this stock that appeared in yesterday's paper? How many round lots of stock were traded yesterday?

52 Weeks											
Hi	Lo	Stock	Sym	Div	Yld %	PE	Vol 100s	Hi	Lo	Close	Net Chg
117	$52^1/_2$	DRK	DRK	3.60	4.6	16	7295	$81^3/_4$	76	??	$-^3/_8$

6. **Stock Quotations**   In the previous problem, assume the company has 5 million shares of stock outstanding. What was net income for the most recent four quarters?

7. **Dividend Yields**   The following stock quote for Ehrhardt-Daves Corporation (EDC) appeared in the financial press:

52 Weeks											
Hi	Lo	Stock	Sym	Div	Yld %	PE	Vol 100s	Hi	Lo	Close	Net Chg
77	$62^1/_2$	EDC	EDC	??	4.6	26	295	$71^3/_4$	66	67	$-^3/_8$

What was the last quarterly dividend paid for EDC?

8. **Volume Quotations**   Explain how volume is quoted for stocks, corporate bonds, futures, and options.

9. Futures Contracts   Changes in what price lead to gains and/or losses in futures contracts?

10. Futures Contracts   What is the open interest on a futures contract? What do you think will usually happen to open interest as maturity approaches?

<u>Intermediate Questions</u>

11. Stock Quotations You found the following stock quotes for Gigantus Corporation in today's newspaper. Which preferred stock issue of the company has the largest dividend yield? Which one was the most actively traded yesterday? Which one has traded at the highest dividend yield over the past year?

| 52 Weeks | | | | | Yld | | Vol | | | | Net |
Hi	Lo	Stock	Sym	Div	%	P/E	100s	Hi	Lo	Close	Chg
92	$50^3/4$	Gigan	GIG	2.50	4.2	22	12690	$60^3/4$	60	60	$-^1/8$
13	$10^1/2$	Gigan pfA		1.20	??	...	59	$11^3/4$	$11^1/2$	$11^5/8$	...
34	$30^1/2$	Gigan pfB		3.00	??	...	85	32	$31^1/2$	32	$+^1/8$

12. Bond Quotations Suppose the following bond quote for ISU Corporation appears in the financial pages of today's newspaper. If this bond has a face value of $1,000, what closing price appeared in yesterday's newspaper?

Bonds	Cur Yld	Vol	Close	Net Chg
ISU $7^7/8$s11	8.7	10	??	$+^1/2$

13. Bond Quotations In the previous problem, in what year does the bond mature? If you currently own 25 of these bonds, how much money will you receive on the next coupon payment date?

14. **Futures Quotations** The following quotations for the cotton futures trading on the New York Cotton Exchange appear in today's newspaper. How many of the March 1996 contracts are currently open? How many of these contracts should you sell if you wish to hedge 400,000 pounds of cotton for March delivery? If you actually make delivery, how much will you receive?

COTTON (CTN) — 50,000 lbs.; cents per lb.

	Open	High	Low	Settle	Change	Lifetime High	Lifetime Low	Open Interest
Oct95	83.75	85.90	81.16	83.19	+0.85	99.54	58.72	30,129
Dec	85.00	87.30	83.02	85.22	+1.00	99.24	60.19	42,522
Mar96	84.15	86.75	82.35	84.00	+1.25	98.75	61.30	18,752
May	83.42	84.55	82.16	83.68	+0.66	87.67	74.14	8,616
Jul	79.77	80.83	78.48	79.44	+0.39	81.23	75.25	3,456

Est vol 19,000; vol Wed 11,313; open int 103,475, +255

15. **Futures Quotations** In the previous problem, approximately how many cotton futures contracts of all maturities were traded yesterday? The day before yesterday?

16. **Using Futures Quotations** In Problem 14, suppose you buy 15 of the December 1995 cotton futures contracts. One month from now, the futures price of this contract is 89.55, and you close out your position. Calculate your dollar profit on this investment.

17. **Options Quotations** Suppose the following stock options quotations for GNR, Inc., appear in today's financial pages. What was the closing share price of the underlying stock? If you wanted to purchase the right to sell 1,500 shares of GNR stock in December at a strike price of $40 per share, how much would this cost you?

Option/Strike		Exp.	—Call— Vol.	—Call— Last	—Put— Vol.	—Put— Last
GNR	30	Sep	49	$9 7/8$	...	...
$39 7/8$	35	Sep	228	5	69	$1/4$
$39 7/8$	35	Dec	5	7	...	...
$39 7/8$	40	Sep	707	$1 3/8$	142	$1 1/2$
$39 7/8$	40	Oct	598	$2 7/8$	30	$2 7/16$
$39 7/8$	40	Dec	47	$3 5/8$	25	$3 3/8$
$39 7/8$	45	Sep	645	$5/16$	33	$5 1/8$
$39 7/8$	45	Oct	584	1	20	6
$39 7/8$	50	Dec	43	$1 1/2$	5	13

18. **Options Quotations** In the previous problem, which put contract sells for the lowest price? Which one sells for the highest price? Explain why these respective options trade at such extreme prices.

19. **Using Options Quotations** In Problem 17, suppose GNR stock sells for $32 per share in December immediately prior to your options' expiration. What is the rate of return on your investment? What is your rate of return if the stock sells for $42 per share (think about it)? Assume your holding period for this investment is exactly three months.

20. **Options versus Stock**   You've located the following option quote for Eric-Cartman, Inc. (ECI):

Option/Strike		Exp.	—Call— Vol.	Last	—Put— Vol.	Last
ECI	10	Sep	29	$5^7/8$	...	...
$20^1/8$	15	Sep	333	7	69	$1^1/4$
$20^1/8$	25	Dec	5	2	...	...
$20^1/8$	30	Sep	76	$1^3/8$	188	$11^1/2$
$20^1/8$	35	Oct	89	$7/8$	...	...

One of the premiums shown can't possibly be correct. Which one? Why?

Chapter 3
Security Types
Answers and solutions

Answers to Multiple Choice Questions

1. **D**
2. **A**
3. **C**
4. **A**
5. **C**
6. **C**
7. **B**
8. **C**
9. **C**
10. **C**

Answers to Questions and Problems

Core Questions

1. The two distinguishing characteristics are: (1) all money market instruments are debt instruments (i.e., IOUs), and (2) all have less than 12 months to maturity when originally issued.

2. Preferred stockholders have a dividend preference and a liquidation preference. The dividend preference requires that preferred stockholders be paid before common stockholders. The liquidation preference means that, in the event of liquidation, the preferred stockholders will receive a fixed face value per share before the common stockholders receive anything.

3. The PE ratio is the price per share divided by annual earnings per share (EPS). EPS is the sum of the most recent four quarters' earnings.

4. The current yield on a bond is very similar in concept to the dividend yield on common and preferred stock.

5. Dividend yield = .046 = $3.60/P_0$; P_0 = 3.60/.046 = \$78.26 $\approx$ 78 1/4
    Stock closed down 3/8, so yesterday's closing price = 78 1/4 + 3/8 = 78 5/8
    7,295 round lots of stock were traded.

6. PE = 16; EPS = P_0 / 16 = \$4.89 = NI/shares ; NI = \$4.89(5,000,000) = \$24.450M

7. Dividend yield is 4.6%, so annualized dividend is .046($67) = $3.082. This is just four times the last quarterly dividend, which is thus $.3082/4 = $.7705/share.

8. Volume in stocks is quoted in round lots (multiples of 100). Volume in corporate bonds is the actual number of bonds. Volume options is reported in contracts, where each contract represents the right to buy or sell 100 shares. Finally, volume in futures contracts is reported in contracts, where each contract represents a fixed amount of the underlying asset.

9. You make or lose money on a futures contract when the *futures* price changes, not the current price for immediate delivery (although the two may be related).

10. Open interest is the number of outstanding contracts. Since most contracts will be closed, it will usually shrink as maturity approaches.

Intermediate Questions

11. Preferred A: dividend yield = $1.20/$11.625 = 10.3%
Preferred B: dividend yield = $3.00/$32 = 9.4% ; A has the highest dividend yield.
B was more actively traded than A, 8,500 shares compared to A's 5,900.
Preferred A: maximum dividend yield = $1.20/$10.5 = 11.4%
Preferred B: maximum dividend yield = $3.00/$30.5 = 9.8%
A has traded at the highest dividend yield over the past 52 weeks.

12. Current yield = .087 = $78.75/$P_0$; P_0 = $78.75/.087 = $905.17 = 90.52% of par ≈ 90 1/2
Bond closed up 1/2, so yesterday's closing price = 90

13. The bond matures in the year 2011. Next payment = 25(.07875/2)($1,000) = $984.38

14. Open interest in the March 1996 contract is 18,752 contracts.
Since the standard contract size is 50,000 lbs., sell 400,000/50,000 = 8 contracts
You'll deliver 8(50,000) = 400,000 pounds of cotton and receive 8(50,000)($0.84) = $336,000

15. Trading volume yesterday in all open contracts was approximately 19,000.
The day before yesterday, 11,313 contracts were traded.

16. Initial value of position = 15(50,000)($.8522) = $639,150
Final value of position = 15(50,000)($.8955) = $671,625
Dollar profit = $671,625 – $639,150 = $32,475

17. Shares of GNR stock sell for 39 7/8. The right to sell shares is a put option on the stock; the December put with a strike price of $40 closed at 3 3/8. Since each stock option contract is on 100 shares of stock, you're looking at 1,500/100 = 15 option contracts. Thus, the cost of purchasing this right is 15(3.375)(100) = $5,062.50

18. The cheapest put contract (that traded on this particular day) is the September 35 put. The most expensive option is the December 50 put. The first option is cheap because it has little time left to maturity, yet is out-of-the-money. The latter option is expensive because it has a relatively long time to maturity and is currently deep-in-the-money.

19. Case 1: Payoff = \$40 – \$32 = \$8/share. Dollar return=\$8(15)(100)–\$5,062.50 = \$6,937.50
Return on investment per 3 months = \$6,937.50/\$5,062.50 = 137.04%
Annualized return on investment = $(1+1.3704)^4 - 1 = 3,157\%$
Case 2: The option finishes out-of-the-money, so payoff = \$0. Dollar return = –\$5,062.50
Return on investment = –100% over all time periods.

20. The very first call option listed has a strike price of 10 and a quoted premium of $5^7/8$. This can't be right because you could buy a option for \$$5^7/8$ and immediately exercise it for another \$10. You can then sell the stock for its current price of about \$20, earning a large, riskless profit. To prevent this kind of easy money, the option premium must be at least \$10.

Figure 3.1. NYSE Bond Trading

NEW YORK EXCHANGE BONDS

Quotations as of 4 p.m. Eastern Time
Tuesday, September 22, 1998

CORPORATION BONDS

Bonds	Cur Yld.	Vol.	Close	Net Chg.
ATT 4⅜99	4.4	6	99⁵/₃₂	+ ⁷/₃₂
ATT 6s00	6.0	67	100⅛	− ⅛
ATT 5⅛01	5.2	88	99⅜	...
ATT 7⅛02	6.8	55	104¾	− ¼
ATT 6¾04	6.3	40	106½	− ⅞
ATT 7s05	6.5	146	107¾	+ ¼
ATT 8.2s05	7.9	20	103⅞	− 1
ATT 7¾07	6.9	25	113	...
ATT 8⅛22	7.5	28	108	+ ⅛
ATT 8⅛24	7.5	45	108⅜	+ ⅜
ATT 8⅝31	7.7	16	112	+ ¼

Figure 3.2. NYSE Trading

NEW YORK STOCK EXCHANGE COMPOSITE TRANSACTIONS

52 Weeks Hi	Lo	Stock	Sym	Div	Yld %	PE	Vol 100s	Hi	Lo	Close	Net Chg
77⅑₆	40⅛₆	ChaseManh	CMB	1.44	3.2	11	100103	46⅞₆	43⅞₆	45½	− ⅞
28⅞	24¹⁵⁄₁₆	ChaseManh	pfA	2.63	10.5	...	28	25	24¹⁵⁄₁₆	25	...
28⁵⁄₁₆	26⁷⁄₁₆	ChaseManh	pfB	2.44	9.2	...	59	26¾	26⁹⁄₁₆	26⁹⁄₁₆	− ⅛
31⁹⁄₁₆	29⁹⁄₁₆	ChaseManh	pfC	2.71	9.1	...	67	29¾	29⅝	29¹¹⁄₁₆	+ ⅛₆
30⅞	27¹³⁄₁₆	ChaseManh	pfG	2.74	9.7	...	26	28⅜	28¼	28⅜	+ ⅛
25⅜	23¹⁵⁄₁₆	ChaseManh	pfN	1.30e	5.3	...	24	24⅝	24⅜	24⅝	...

Figure 3.3. Futures Trading

FUTURES PRICES

INTEREST RATE

TREASURY BONDS (CBT)-$100,000; pts. 32nds of 100%

	Open	High	Low	Settle	Change	Lifetime High	Lifetime Low	Open Interest
Dec	130-13	131-16	130-09	131-15	+ 45	131-16	103-13	701,589
Mr99	130-02	131-05	129-30	131-04	+ 45	131-05	103-04	74,643
Sept	129-26	130-03	129-25	130-03	+ 45	130-03	115-11	4,017

Est vol 525,000; vol Tue 321,376; open int 781,064, −9,913.

Figure 3.4. Options Trading

LISTED OPTIONS QUOTATIONS

Tuesday, September 22, 1998

Composite volume and close for actively traded equity and LEAPS, or long-term options, with results for the corresponding put or call contract. Volume figures are unofficial. Open interest is total outstanding for all exchanges and reflects previous trading day. Close when possible is shown for the underlying stock on primary market. **CB**-Chicago Board Options Exchange. **AM**-American Stock Exchange. **PB**-Philadelphia Stock Exchange. **PC**-Pacific Stock Exchange. **NY**-New York Stock Exchange. **XC**-Composite. **p**-Put.

Option/Strike		Exp.	—Call— Vol.	Last	—Put— Vol.	Last
Micsft	75	Oct	...	...	300	¼
109³/₁₆	80	Jan	10	31⅛	535	1⅛
109³/₁₆	85	Oct	190	24¼	210	⁷/₁₆
109³/₁₆	90	Oct	16	20	275	⅝
109³/₁₆	90	Apr	1792	26	1600	4⅛
109³/₁₆	95	Oct	111	15½	3809	¹³/₁₆
109³/₁₆	100	Oct	2063	11	2911	1⅝
109³/₁₆	100	Jan	317	15¾	246	5
109³/₁₆	105	Oct	1074	7⅛	607	3⅛
109³/₁₆	105	Nov	10	9⅜	519	5⅛
109³/₁₆	105	Jan	112	12⅛	258	6¾
109³/₁₆	110	Oct	4361	4⅜	117	4⅞
109³/₁₆	110	Nov	443	6⅞	8	6¾
109³/₁₆	110	Jan	602	10	20	9⅝
109³/₁₆	115	Oct	4031	2¼	60	8¼
109³/₁₆	115	Nov	1020	5	80	9⅝
109³/₁₆	115	Jan	275	7⅞	22	11¼
109³/₁₆	120	Oct	3598	1¹/₁₆	3	11¼
109³/₁₆	120	Nov	219	3¼	...	¹/₁₂₈
109³/₁₆	120	Jan	208	5¾	...	...
109³/₁₆	125	Oct	507	⁷/₁₆	...	...
109³/₁₆	125	Jan	219	4½	...	...
109³/₁₆	130	Nov	331	1¼	...	¹/₁₂₈
109³/₁₆	130	Jan	312	3⅛	6	22⅛
109³/₁₆	140	Jan	209	1¾	...	...