

CHAPTER 11

Corporate Bonds

A corporation issues bonds intending to meet all required payments of interest and repayment of principal. Investors buy bonds believing that the corporation intends to fulfill its debt obligation in a timely manner. Although defaults can and do occur, the market for corporate bonds exists only because corporations are able to convince investors of their original intent to avoid default. Reaching this state of trust is not a trivial process, and it normally requires elaborate contractual arrangements.

Almost all corporations issue notes and bonds to raise money to finance investment projects. Indeed, for many corporations, the value of notes and bonds outstanding can exceed the value of common stock shares outstanding. Nevertheless, most investors do not think of corporate bonds when they think about investing. This is because corporate bonds represent specialized investment instruments which are usually bought by financial institutions like insurance companies and pension funds. For professional money managers at these institutions, a knowledge of corporate bonds is absolutely essential. This chapter introduces you to the specialized knowledge that these money managers possess.

11.1 Corporate Bond Basics

Corporate bonds represent the debt of a corporation owed to its bondholders. More specifically, a corporate bond is a security issued by a corporation that represents a promise to pay to its bondholders a fixed sum of money at a future maturity date, along with periodic payments of

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interest. The fixed sum paid at maturity is the bond's *principal*, also called its par or face value. The periodic interest payments are called *coupons*.

From an investor's point of view, corporate bonds represent an investment quite distinct from common stock. The three most fundamental differences are these:

1. Common stock represents an ownership claim on the corporation, whereas bonds represent a creditor's claim on the corporation.
2. Promised cash flows - that is, coupons and principal - to be paid to bondholders are stated in advance when the bond is issued. By contrast, the amount and timing of dividends paid to common stockholders may change at any time.
3. Most corporate bonds are issued as callable bonds, which means that the bond issuer has the right to buy back outstanding bonds before the maturity date of the bond issue. When a bond issue is called, coupon payments stop and the bondholders are forced to surrender their bonds to the issuer in exchange for the cash payment of a specified call price. By contrast, common stock is almost never callable.

The corporate bond market is large, with several trillion dollars of corporate bonds outstanding in the United States. The sheer size of the corporate bond market prompts an important inquiry. Who owns corporate bonds, and why? The answer is that most corporate bond investors belong to only a few distinct categories. The single largest group of corporate bond investors is life insurance companies, which hold about a third of all outstanding corporate bonds. Remaining

ownership shares are roughly equally balanced among individual investors, pension funds, banks, and foreign investors.

The pattern of corporate bond ownership is largely explained by the fact that corporate bonds provide a source of predictable cash flows. While individual bonds occasionally default on their promised cash payments, large institutional investors can diversify away most default risk by including a large number of different bond issues in their portfolios. For this reason, life insurance companies and pension funds find that corporate bonds are a natural investment vehicle to provide for future payments of retirement and death benefits, since both the timing and amount of these benefit payments can be matched with bond cash flows. These institutions can eliminate much of their financial risk by matching the timing of cash flows received from a bond portfolio to the timing of cash flows needed to make benefit payments - a strategy called cash flow matching. For this reason, life insurance companies and pension funds together own more than half of all outstanding corporate bonds. For similar reasons, individual investors might own corporate bonds as a source of steady cash income. However, since individual investors cannot easily diversify default risk, they should normally invest only in bonds with higher credit quality.

Table 11.1: Software Iz Us 5-Year Note Issue

Issue amount	\$20 million	Note issue total face value is \$20 million
Issue date	12/15/98	Notes offered to the public in December 1998
Maturity date	12/31/03	Remaining principal due December 31, 2003
Face value	\$1,000	Face value denomination is \$1,000 per note
Coupon interest	\$100 per annum	Annual coupons are \$100 per note
Coupon dates	6/30, 12/31	Coupons are paid semi-annually.
Offering price	100	Offer price is 100 percent of face value
Yield to maturity	10%	Based on stated offer price
Call provision	Not callable	Notes may not be paid off before maturity
Security	None	Notes are unsecured
Rating	Not rated	Privately placed note issue

(*margin. def.* **plain vanilla bonds** Bonds issued with a relatively standard set of features.)

Every corporate bond issue has a specific set of issue terms associated with it. The issue terms associated with any particular bond can range from a relatively simple arrangement, where the bond is little more than an IOU of the corporation, to a complex contract specifying in great detail what the issuer can and cannot do with respect to its obligations to bondholders. Bonds issued with a standard, relatively simple set of features are popularly called **plain vanilla bonds**.

As an illustration of a plain vanilla corporate debt issue, Table 11.1 summarizes the issue terms for a note issue by Software Iz Us, the software company you took public in Chapter 5 (Section 5.2). Referring to Table 11.1, we see that the Software Iz Us notes were issued in December 1998 and mature five years later in December 2003. Each individual note has a face value

denomination of \$1,000. Since the total issue amount is \$20 million, the entire issue contains 20,000 notes. Each note pays a \$100 annual coupon, which is equal to 10 percent of its face value. The annual coupon is split between two semiannual \$50 payments made each June and December. Based on the original offer price of 100, which means 100 percent of the \$1,000 face value, the notes have a yield to maturity of 10 percent. The notes are not callable, which means that the debt may not be paid off before maturity.

*(marg. def. **unsecured debt** Bonds, notes, or other debt issued with no specific collateral pledged as security for the bond issue.)*

The Software Iz Us notes are **unsecured debt**, which means that no specific collateral has been pledged as security for the notes. In the event that the issuer defaults on its promised payments, the noteholders may take legal action to acquire sufficient assets of the company to settle their claims as creditors.

When issued, the Software Iz Us notes were not reviewed by a rating agency like Moody's or Standard and Poor's. Thus the notes are unrated. If the notes were to be assigned a credit rating, they would probably be rated as "junk grade." The term "junk," commonly used for high-risk debt issues, is unduly pejorative. After all, your company must repay the debt. However, the high-risk character of the software industry portends an above-average probability that your company may have difficulty paying off the debt in a timely manner.

Reflecting their below-average credit quality, the Software Iz Us notes were not issued to the general public. Instead, the notes were privately placed with two insurance companies. Such private placements are common among relatively small debt issues. Private placements will be discussed in greater detail later in this chapter.

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*(marg. def. **debentures** Unsecured bonds issued by a corporation.)*

*(marg. def. **mortgage bond** Debt secured with a property lien.)*

*(marg. def. **collateral trust bond** Debt secured with financial collateral.)*

*(marg. def. **equipment trust certificate** Shares in a trust with income from a lease contract.)*

11.2 Types of Corporate Bonds

Debentures are the most frequently issued type of corporate bond. Debenture bonds represent an unsecured debt of a corporation. Debenture bondholders have a legal claim as general creditors of the corporation. In the event of a default by the issuing corporation, the bondholders' claim extends to all corporate assets. However, they may have to share this claim with other creditors who have an equal legal claim or yield to creditors with a higher legal claim.

In addition to debentures, there are three other basic types of corporate bonds: mortgage bonds, collateral trust bonds, and equipment trust certificates. **Mortgage bonds** represent debt issued with a lien on specific property, usually real estate, pledged as security for the bonds. A mortgage lien gives bondholders the legal right to foreclose property pledged by the issuer to satisfy an unpaid debt obligation. However, in actual practice, foreclosure and sale of mortgaged property following a default may not be the most desirable strategy for bondholders. Instead, it is common for a corporation in financial distress to reorganize itself and negotiate a new debt contract with bondholders. In these negotiations, a mortgage lien can be an important bargaining tool for the trustee representing the bondholders.

Collateral trust bonds are characterized by a pledge of financial assets as security for the bond issue. Collateral trust bonds are commonly issued by holding companies which may pledge the

stocks, bonds, or other securities issued by their subsidiaries as collateral for their own bond issue. The legal arrangement for pledging collateral securities is similar to that for a mortgage lien. In the event of an issuer's default on contractual obligations to bondholders, the bondholders have a legal right to foreclose on collateralized securities in the amount necessary to settle an outstanding debt obligation.

Equipment trust certificates represent debt issued by a trustee to purchase heavy industrial equipment that is leased and used by railroads, airlines, and other companies with a demand for heavy equipment. Under this financial arrangement, investors purchase equipment trust certificates and the proceeds from this sale are used to purchase equipment. Formal ownership of the equipment remains with a trustee appointed to represent the certificate holders. The trustee then leases the equipment to a company. In return, the company promises to make a series of scheduled lease payments over a specified leasing period. The trustee collects the lease payments and distributes all revenues, less expenses, as dividends to the certificate holders. These distributions are conventionally called dividends because they are generated as income from a trust. The lease arrangement usually ends after a specified number of years when the leasing company makes a final lease payment and may take possession of the used equipment. From the certificate holders' point of view, this financial arrangement is superior to a mortgage lien since they actually own the equipment during the leasing period. Thus if the leasing corporation defaults, the equipment can be sold without the effort and expense of a formal foreclosure process. Since the underlying equipment for this type of financing is typically built according to an industry standard, the equipment can usually be quickly sold or leased to another company in the same line of business.

Figure 11.1 about here.

Figure 11.1 is a *Wall Street Journal* bond announcement for an aircraft equipment trust for Northwest Airlines. Notice that the \$243 million issue is split into two parts: \$177 million of senior notes paying 8.26 percent interest and \$66 million of subordinated notes paying 9.36 percent interest. The senior notes have a first claim on the aircraft in the event of a default by the airline, while the subordinated notes have a secondary claim. In the event of a default, investment losses for the trust will primarily be absorbed by the subordinated noteholders. For this reason the subordinated notes are riskier, and therefore pay a higher interest rate. Of course, if no default actually occurs, it would turn out that the subordinated notes were actually a better investment. However, there is no way of knowing this in advance.

CHECK THIS

- 11.2a Given that a bond issue is one of the four basic types discussed in this section, how would the specific bond type affect the credit quality of the bond?
- 11.2b Why might some bond types be more or less risky with respect to the risk of default?
- 11.2c Given that a default has occurred, why might the trustee's job of representing the financial interests of the bondholders be easier for some bond types than for others?

(*margin. def.* **indenture summary** Description of the contractual terms of a new bond issue, included in a bond's **prospectus**.)

(*margin. def.* **prospectus** Document prepared as part of a security offering detailing information about a company's financial position, its operations, and investment plans.)

11.3 Bond Indentures

A bond indenture is a formal written agreement between the corporation and the bondholders. It is an important legal document that spells out in detail the mutual rights and obligations of the corporation and the bondholders with respect to the bond issue. Indenture contracts are often quite long, sometimes several hundred pages, and make for very tedious reading. In fact, very few bond investors ever read the original indenture but instead might refer to an **indenture summary** provided in the **prospectus** that was circulated when the bond issue was originally sold to the public. Alternatively, a summary of the most important features of an indenture is published by debt rating agencies.

The Trust Indenture Act of 1939 requires that any bond issue subject to regulation by the Securities and Exchange Commission (SEC), which includes most corporate bond and note issues sold to the general public, must have a trustee appointed to represent the interests of the bondholders. Also, all responsibilities of a duly appointed trustee must be specified in detail in the indenture. Some corporations maintain a *blanket* or *open-ended* indenture that applies to all currently outstanding bonds and any new bonds that are issued, while other corporations write a new indenture contract for each new bond issue sold to the public.

Descriptions of the most important provisions frequently specified in a bond indenture agreement are presented next.

Bond Seniority Provisions

A corporation may have several different bond issues outstanding; these issues normally can be differentiated according to the seniority of their claims on the firm's assets. Seniority usually is specified in the indenture contract. Consider a corporation with two outstanding bond issues: (1) A mortgage bond issue with certain real estate assets pledged as security, and (2) a debenture bond issue with no specific assets pledged as security. In this case, the mortgage bond issue has a senior claim on the pledged assets but no specific claim on other corporate assets. The debenture bond has a claim on all corporate assets not specifically pledged as security for the mortgage bond, but it would have only a residual claim on assets pledged as security for the mortgage bond issue. This residual claim would apply only after all obligations to the mortgage bondholders have been satisfied.

*(marg. def. **senior debentures** Bonds that have a higher claim on the firm's assets than other bonds.)*

*(marg. def. **subordinated debentures** Bonds that have a claim on the firm's assets after those with a higher claim have been specified.)*

As another example, suppose a corporation has two outstanding debenture issues. In this case, seniority is normally assigned to the bonds first issued by the corporation. The bonds issued earliest have a senior claim on the pledged assets, and are called **senior debentures**. The bonds issued later have a junior or subordinate claim, and they are called **subordinated debentures**.

*(marg. def. **negative pledge clause** Bond indenture provision that prohibits new debt from being issued with seniority over an existing issue.)*

The seniority of an existing debt issue is usually protected by a **negative pledge clause** in the bond indenture. A negative pledge clause prohibits a new issue of debt with seniority over a currently outstanding issue. However, it may allow a new debt issue to share equally in the seniority of an

existing issue. A negative pledge clause is part of the indenture agreement of most senior debenture bonds.

*(marg. def. **bond refunding** Process of calling an outstanding bond issue and refinancing it by a new bond issue.)*

Call Provisions

Most corporate bond issues have a call provision allowing the issuer to buy back all or part of its outstanding bonds at a specified call price sometime before the bonds mature. The most frequently cited motive for a corporation to call outstanding bonds is to take advantage of a general fall in market interest rates. Lower interest rates allow the corporation to replace currently outstanding high-coupon bonds with a new issue of bonds paying lower coupons. Replacing existing bonds with new bonds is called **bond refunding**.

From an investor's point of view, a call provision has a distinct disadvantage. For example, suppose an investor is currently holding bonds paying 10 percent coupons. Further suppose that, after a fall in market interest rates, the corporation is able to issue new bonds that only pay 8 percent coupons. By calling existing 10 percent coupon bonds, the issuer forces bondholders to surrender their bonds in exchange for the call price. But this happens at a time when the bondholders can reinvest funds only at lower interest rates. If instead the bonds were noncallable, the bondholders would continue to receive the original 10 percent coupons. For this reason, callable bonds are less attractive to investors than noncallable bonds. Consequently, a callable bond will sell at a lower price than a comparable noncallable bond.

Despite their lower prices, corporations generally prefer to issue callable bonds. However, to reduce the price gap between callable and noncallable bonds issuers typically allow the indenture

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contract to specify certain restrictions on their ability to call an outstanding bond issue. Three features are commonly used to restrict an issuer's call privilege:

1. Callable bonds usually have a *deferred call provision* which provides a *call protection period* during which a bond issue cannot be called. For example, a bond may be call-protected for a period of five years after its issue date.
2. A call price often includes a **call premium** over par value. A standard arrangement stipulates a call premium equal to one-year's coupon payments for a call occurring at the earliest possible call date. Over time, the call premium is gradually reduced until it is eliminated entirely. After some future date, the bonds become callable at par value.
3. Some indentures specifically prohibit an issuer from calling outstanding bonds for the purpose of refunding at a lower coupon rate, but still allow a call for other reasons. This **refunding provision** prevents the corporation from calling an outstanding bond issue solely as a response to falling market interest rates. However, the corporation can still pay off its bond debt ahead of schedule by using funds acquired from, say, earnings or funds obtained from the sale of newly issued common stock.

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11.3a After a call protection period has elapsed, why is the call price an effective ceiling on the market price of a callable bond?

Graphical Analysis of Callable Bond Prices

After a bond's call protection period has elapsed, a rational investor would be unwilling to pay much more than the call price for the bond since the issuer might call the bond at any time and pay only the call price for the bond. Consequently, a bond's call price serves as an effective ceiling on its market price. It is important for bond investors to understand how the existence of a price ceiling for callable bonds alters the standard price-yield relationship for bonds.

Figure 11.2 about here.

The relationship between interest rates and prices for comparable callable and noncallable bonds is illustrated in Figure 11.2. In this example, the vertical axis measures bond prices and the horizontal axis measures bond yields. In this two-bond example, both bonds pay an 8 percent coupon and are alike in all respects except that one of the bonds is callable any time at par value.

As shown, the noncallable bond has the standard *convex price-yield relationship*, where the price-yield curve is bowed toward the origin. When the price-yield curve is bowed to the origin this is called *positive convexity*. In contrast, the callable bond has a convex or bowed price-yield relationship in the region of high yields, but is bowed away from the origin in the region of low yields. This is called *negative convexity*. The important lesson here is that no matter how low market interest rates might fall, the maximum price of an unprotected callable bond is generally bounded above by its call price.

(*marg. def.* **put bonds** A bond that can be sold back to the issuer at a prespecified price on any of a sequence of prespecified dates Also called *extendible bonds*.)

Put Provisions

A bond issue with a put provision grants bondholders the right to sell their bonds back to the issuer at a special *put price*, normally set at par value. These so-called **put bonds** are “puttable” on each of a series of designated *put dates*. These are often scheduled to occur annually but sometimes occur at more frequent intervals. At each put date, the bondholder decides whether to sell the bond back to the issuer or continue to hold the bond until the next put date. For this reason, put bonds are often called *extendible bonds* because the bond holder has the option of extending the maturity of the bond at each put date.

Notice that by granting bondholders an option to sell their bonds back to the corporation at par value the put feature provides an effective floor on the market price of the bond. Thus the put feature offers protection to bondholders from rising interest rates and the associated fall in bond prices.

A put feature also helps protect bondholders from acts of the corporation that might cause a deterioration of the bond's credit quality. However, this protection is not granted without a cost to bond investors, since a puttable bond will command a higher market price than a comparable nonputtable bond.

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- 11.3b Using Figure 11.2 as a guide, what would the price-yield relationship look like for a noncallable bond puttable at par value?
- 11.3c Under what conditions would a put feature not yield an effective floor for the market price of a put bond? (Hint: Think about default risk.)

(*marg. def.* **convertible bonds** Bonds that bondholders can exchange for common stock according to a prespecified conversion ratio.)

Bond-to-Stock Conversion Provisions

Some bonds have a valuable bond-to-stock conversion feature. These bonds are called convertible bonds. **Convertible bonds** grant bondholders the right to exchange each bond for a designated number of common stock shares of the issuing firm. To avoid confusion in a discussion of convertible bonds, it is important to understand some basic terminology.

1. The number of common stock shares acquired in exchange for each converted bond is called the *conversion ratio*.

Conversion ratio = Number of stock shares acquired by conversion

2. The par value of a convertible bond divided by its conversion ratio is called the bond's *conversion price*.

Conversion price = Bond par value / Conversion ratio

3. The market price per share of common stock acquired by conversion times the bond's conversion ratio is called the bond's *conversion value*.

$$\text{Conversion value} = \text{Price per share of stock} \times \text{Conversion ratio}$$

For example, suppose a convertible bond with a par value of \$1,000 can be converted into 20 shares of the issuing firm's common stock. In this case, the conversion price is $\$1,000 / 20 = \50 . Continuing this example, suppose the firm's common stock has a market price of \$40 per share, then the conversion value of a single bond is $20 \times \$40 = \800 .

Figure 11.3 about here.

Figure 11.3 is the *Wall Street Journal* announcement of an issue of convertible subordinated notes by Advanced Micro Devices (AMD). The notes pay a 6 percent coupon rate and mature in 2005. The conversion price for this note issue is \$37 per share, which implies a conversion ratio of 27.027 shares of common stock for each \$1,000 face value note.

From an investor's perspective, the conversion privilege of convertible bonds has the distinct advantage that bondholders can receive a share of any increase in common stock value. However, the conversion option has a price. A corporation can sell convertible bonds at par value with a coupon rate substantially less than the coupon rate of comparable nonconvertible bonds. This forgone coupon interest represents the price of the bond's conversion option.

When convertible bonds are originally issued, their conversion ratio is customarily set to yield a conversion value 10 percent to 20 percent less than par value. For example, suppose the common stock of a company has a price of \$30 per share and the company issues convertible bonds with a par

value of \$1,000 per bond. To set the original conversion value at \$900 per bond, the company would set a conversion ratio of 30 stock shares per bond. Thereafter, the conversion ratio is fixed, but each bond's conversion value becomes linked to the firm's stock price, which may rise or fall in value. The price of a convertible bond reflects the conversion value of the bond. In general, the higher the conversion value the higher is the bond price, and vice versa.

Investing in convertible bonds is more complicated than owning nonconvertible bonds, because the conversion privilege presents convertible bondholders with an important timing decision. When is the best time to exercise a bond's conversion option and exchange the bond for shares of common stock? The answer is that investors should normally postpone conversion as long as possible, because while they hold the bonds they continue to receive coupon payments. After converting to common stock they lose all subsequent coupons. In general, unless the total dividend payments on stock acquired by conversion are somewhat greater than the forgone bond coupon payments, investors should hold on to their convertible bonds to continue to receive coupon payments.

The rational decision of convertible bondholders to postpone conversion as long as possible is limited, however, since convertible bonds are almost always callable. Firms customarily call outstanding convertible bonds when their conversion value has risen by 10 percent to 15 percent above bond par value, although there are many exceptions to this rule. When a convertible bond issue is called by the issuer, bondholders are forced to make an immediate decision whether to convert to common stock shares or accept a cash payment of the call price. Fortunately, the decision is simple - convertible bondholders should choose whichever is more valuable, the call price or the conversion value.

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11.3d Describe the conversion decision that convertible bondholders must make when the bonds mature.



Graphical Analysis of Convertible Bond Prices

The price of a convertible bond is closely linked to the value of the underlying common stock shares that can be acquired by conversion. A higher stock price implies a higher bond price, and conversely a lower stock price yields a lower bond price.

The relationship between the price of a convertible bond and the price of the firm's common stock is depicted in Figure 11.4. In this example, the convertible bond's price is measured on the vertical axis and the stock price is measured along the horizontal axis. The straight, upward-sloping line is the bond's conversion value; the slope of the line is the conversion ratio. The horizontal line represents the price of a comparable nonconvertible bond with the same coupon rate, maturity, and credit quality.

*(marg. def. **in-the-money bond** A convertible bond whose conversion value is greater than its call price.)*

A convertible bond is said to be an **in-the-money bond** when its conversion value is greater than its call price. If an in-the-money convertible bond is called, rational bondholders will convert their bonds into common stock. When the conversion value is less than the call price, a convertible bond is said to be *out of the money*. If an out-of-the-money bond is called, rational bondholders will

accept the call price and forgo the conversion option. In practice, however, convertible bonds are seldom called when they are out of the money.

*(marg. def. **intrinsic bond value** The price below which a convertible bond cannot fall, equal to the value of a comparable nonconvertible bond. Also called *investment value*.)*

The curved line in Figure 11.4 graphs the relationship between a convertible bond's price and the underlying stock price. As shown, there are two lower bounds on the value of a convertible bond. First, a convertible bond's price can never fall below its **intrinsic bond value**, also commonly called its *investment value* or *straight bond value*. This value is what the bond would be worth if it was not convertible, but otherwise identical in terms of coupon, maturity, and credit quality. Second, a convertible bond can never sell for less than its *conversion value* because, if it did, investors could simply buy the bond and convert, thereby realizing an immediate, riskless profit.

Thus, the *floor value* of a convertible bond is its intrinsic bond value or its conversion value, whichever is larger. As shown in Figure 11.4, however, a convertible bond will generally sell for more than this floor value. This extra is the amount that investors are willing to pay for the right, but not the obligation, to convert the bond at a future date at a potentially much higher stock price.

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11.3e For nonconvertible bonds, the call price is a ceiling on the market price of the bond. Why might the call price not be an effective ceiling on the price of a convertible bond?

*(marg. def. **exchangeable bonds** Bonds that can be converted into common stock shares of a company other than the issuer's.)*

An interesting variation of a bond-to-stock conversion feature occurs when the company issuing the bonds is different from the company whose stock is acquired by the conversion. In this case, the bonds are called **exchangeable bonds**. Figure 11.5 presents a *Wall Street Journal* announcement of an issue of exchangeable subordinated debentures by the McKesson Corporation. These debentures are exchangeable for common stock shares of Armor All Products Corporation. McKesson is a retail distributor and Armor All markets consumer chemical products. Exchangeable bonds, while not unusual, are less common than convertible bonds.

Figure 11.5 about here.

(*margin. def.* **term bonds** Bonds issued with a single maturity date.)

Bond Maturity and Principal Payment Provisions

Term bonds represent the most common corporate bond maturity structure. A term bond issue has a single maturity date. On this date, all outstanding bond principal must be paid off. The indenture contract for a term bond issue normally stipulates the creation of a *sinking fund*, an account established to repay bondholders through a series of *fractional redemptions* before the bond reaches maturity. Thus at maturity only a fraction of the original bond issue will still be outstanding. Sinking fund provisions are discussed in more detail later.

(*margin. def.* **serial bonds** Bonds issued with a regular sequence of maturity dates.)

An alternative maturity structure is provided by **serial bonds**, where a fraction of an entire bond issue is scheduled to mature in each year over a specified period. Essentially, a serial bond issue represents a collection of subissues with sequential maturities. As an example, a serial bond issue may stipulate that one-tenth of an entire bond issue must be redeemed in each year over a 10-year period,

with the last fraction redeemed at maturity. Serial bonds generally do not have a call provision, whereas term bonds usually do have a call provision.

Investment Updates: Disney-Coke Century Bonds

When originally issued, most corporate bonds have maturities of 30 years or less. However, in recent years some companies have issued bonds with 40- and 50-year maturities. In 1993, Walt Disney Company made headlines in the financial press when it sold \$300 million of 100-year maturity bonds. This bond issue became popularly known as “Sleeping Beauty Bonds” after the classic Disney movie. However, the prince might arrive early for these bonds since they are callable after 30 years. Nevertheless, this was the first time since 1954 that 100-year bonds were sold by any borrower in the United States. Only days later, however, Coca-Cola issued \$150 million of 100-year maturity bonds. Both the Disney and Coke bond issues locked in the unusually low interest rates prevailing in 1993. *Wall Street Journal* articles covering the Disney and Coke century bond issues are reproduced in the accompanying Investment Update boxes.

(*margin. def.* **sinking fund** An account used to provide for scheduled redemptions of outstanding bonds.)

Sinking Fund Provisions

The indentures of most term bonds include a **sinking fund** provision that requires the corporation to make periodic payments into a trustee-managed account. Account reserves are then used to provide for scheduled redemptions of outstanding bonds. The existence of a sinking fund is an important consideration for bond investors mainly for two reasons:

1. A *sinking fund* provides a degree of security to bondholders, since payments into the sinking fund can be used only to pay off outstanding obligations to bondholders.
2. A sinking fund provision requires fractional bond issue redemptions according to a preset schedule. Therefore, some bondholders will be repaid their invested principal before the stated maturity for their bonds whether they want repayment or not.

As part of a *scheduled sinking fund redemption*, some bondholders may be forced to surrender their bonds in exchange for cash payment of a special *sinking fund call price*. For this reason, not all bondholders may be able to hold their bonds until maturity, even though the entire bond issue has not been called according to a general call provision. For example, the indenture for a 25-year maturity bond issue may require that one-twentieth of the bond issue be retired annually, beginning immediately after an initial 5-year call protection period.

Typically, when a redemption is due, the sinking fund trustee will select bonds by lottery. Selected bonds are then called, and the affected bondholders receive the call price, which for sinking fund redemptions is usually par value. However, the issuer normally has a valuable option to buy back the required number of bonds in the open market and deliver them to the sinking fund trustee instead of delivering the cash required for a par value redemption. Issuers naturally prefer to exercise this option when bonds can be repurchased in the open market at less than par value.

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11.3f For bond investors, what are some of the advantages and disadvantages of a sinking fund provision?

Coupon Payment Provisions

Coupon rates are stated on an annual basis. For example, an 8 percent coupon rate indicates that the issuer promises to pay 8 percent of a bond's face value to the bondholder each year. However, splitting an annual coupon into two semi-annual payments is an almost universal practice in the United States. An exact schedule of coupon payment dates is specified in the bond indenture when the bonds are originally issued.

If a company suspends payment of coupon interest, it is said to be in default. Default is a serious matter. In general, bondholders have an unconditional right to the timely payment of interest and principal. They also have a right to bring legal action to enforce such payments. Upon suspension of coupon payments, the bondholders could, for example, demand an acceleration of principal repayment along with all past-due interest. However, a corporation in financial distress has a right to seek protection in bankruptcy court from inflexible demands by bondholders. As a practical matter, it is often in the best interests of both the bondholders and the corporation to negotiate a new debt contract. Indeed, bankruptcy courts normally encourage a settlement that minimizes any intervention on their part.

(*marg. def.* **protective covenants** Restrictions in a bond indenture designed to protect bondholders.)

11.4 Protective Covenants

In addition to the provisions already discussed, a bond indenture is likely to contain a number of **protective covenants**. These agreements are designed to protect bondholders by restricting the actions of a corporation that might cause a deterioration in the credit quality of a bond issue. Protective covenants can be classified into two types: negative covenants and positive, or affirmative, covenants.

A *negative covenant* is a "thou shalt not" for the corporation. Here are some examples of negative covenants that might be found in an indenture agreement:

1. The firm cannot pay dividends to stockholders in excess of what is allowed by a formula based on the firm's earnings.
2. The firm cannot issue new bonds that are senior to currently outstanding bonds. Also, the amount of a new bond issue cannot exceed an amount specified by a formula based on the firm's net worth.
3. The firm cannot refund an existing bond issue with new bonds paying a lower coupon rate than the currently outstanding bond issue it would replace.
4. The firm cannot buy bonds issued by other companies, nor can it guarantee the debt of any other company.

A *positive covenant* is a "thou shalt." It specifies things that a corporation must do, or conditions that it must abide by. Here are some common examples of positive covenants:

1. Proceeds from the sale of assets must be used either to acquire other assets of equal value or to redeem outstanding bonds.
2. In the event of a merger, acquisition, or spinoff, the firm must give bondholders the right to redeem their bonds at par value.
3. The firm must maintain the good condition of all assets pledged as security for an outstanding bond issue.
4. The firm must periodically supply audited financial information to bondholders.

CHECK THIS

11.4a Why would a corporation voluntarily include protective covenants in its bond indenture contract?

(*marg. def.* **event risk** The possibility that the issuing corporation will experience a significant change in its bond credit quality.)

11.5 Event Risk

Protective covenants in a bond indenture help shield bondholders from event risk. **Event risk** is broadly defined as the possibility that some structural or financial change to the corporation will cause a significant deterioration in the credit quality of a bond issue, thereby causing the affected bonds to lose substantial market value.

A classic example of event risk, and what could happen to bondholders without adequate covenant protection, is provided by an incident involving Marriott Corporation, best known for its

chain of hotels and resorts. In October 1992, Marriott announced its intention to spin off part of the company. The spinoff, called Host Marriott, would acquire most of the parent company's debt and its poorly performing real estate holdings. The parent, Marriott International, would be left relatively debt-free with possession of most of the better performing properties, including its hotel management division.

On the announcement date, the affected Marriott bonds fell in value by about 30 percent, reflecting severe concern about the impact of the spinoff on the credit quality of the bonds. On the same day, Marriott stock rose in value by about 30 percent, reflecting a large wealth transfer from bondholders to stockholders. A subsequent bondholder legal challenge was unsuccessful. Standard and Poor's later announced that it was formally revising its credit ratings on Marriott bonds to recognize the impact of the spinoff (Credit ratings are discussed in detail in a later section). Debt remaining with Marriott International would have an investment grade rating, while bonds assigned to Host Marriott would have junk bond status. The *Wall Street Journal* report covering the story is reproduced in the nearby Investment Updates box.

Investment Updates: Marriott

CHECK THIS

11.5a What are some possible protective covenants that would have protected Marriott bondholders from the adverse impact of the spinoff described here?

(*marg. def.* **private placement** A new bond issue sold to one or more parties in private transactions not available to the public.)

11.6 Bonds Without Indentures

The Trust Indenture Act of 1939 does not require an indenture when a bond issue is not sold to the general public. For example, the bonds may be sold only to one or more financial institutions in what is called a **private placement**. Private placements are exempt from registration requirements with the SEC. Nevertheless, even privately placed debt issues often have a formal indenture contract.

When a corporation issues debt without an indenture, it makes an unconditional promise to pay interest and principal according to a simple debt contract. Debt issued without an indenture is basically a simple IOU of the corporation. Bond analysts sometimes reserve the designation "bonds" to mean corporate debt subject to an indenture and refer to corporate debt not subject to an indenture as "notes." However, it is more common to distinguish between bonds and notes on the basis of maturity, where bonds designate relatively long maturities, say, 10 years or longer, and notes designate maturities less than 10 years. Both definitions overlap since most long-term debt is issued subject to an indenture, and most privately placed short-term debt is issued as a simple IOU. In between, however, privately placed intermediate-maturity debt may or may not be issued subject to an indenture, and therefore might be referred to as either a bond or a note irrespective of the existence of an indenture. As in any profession, the jargon of investments is sometimes ambiguous.

(*marg. def.* **preferred stock** A security with a claim to dividend payments that is senior to common stock.)

11.7 Preferred Stock

Preferred stock has some of the features of both bonds and common stock. Preferred stockholders have a claim to dividend payments that is senior to the claim of common stockholders - hence the term "preferred stock." However, their claim is subordinate to the claims of bondholders and other creditors. A typical preferred stock issue has the following characteristics:

1. Preferred stockholders do not normally participate with common stockholders in the election of a board of directors. However, a few preferred stock issues do grant voting rights to their holders.
2. Preferred stockholders are promised a stream of fixed dividend payments. Thus, preferred dividends resemble bond coupons.
3. Preferred stock normally has no specified maturity, but it is often callable by the issuer.
4. Management can suspend payment of preferred dividends without setting off a bankruptcy process, but only after suspending payment of all common stock dividends.
5. If preferred dividends have been suspended, all unpaid preferred dividends normally become a cumulative debt that must be paid in full before the corporation can resume any payment of common stock dividends. Preferred stock with this feature is termed *cumulative preferred*.

6. Some preferred stock issues have a conversion feature similar to convertible bonds. These are called *convertible preferred stock*.



Figure 11.6 about here.

Figure 11.6 is a *Wall Street Journal* announcement for an issue of convertible preferred stock by Omnipoint Corporation. Actually it is an issue of depository shares, where each depository share represents a claim on one-twentieth of the underlying convertible preferred shares. The preferred shares may be converted at any time at a conversion price of \$31.115 per depository share.

All else equal, preferred stock normally pays a lower interest rate to investors than do corporate bonds. This is because when most investors buy preferred stock, the dividends received are taxed at the same rate as bond interest payments. However, if a business corporation buys preferred stock, it can usually exclude at least 70 percent of the preferred dividends from income taxation. As a result, most preferred stock is owned by corporations that can take advantage of the preferential tax treatment of preferred dividends. However, companies that issue preferred stock must treat preferred dividends the same as common stock dividends for tax purposes, and therefore cannot deduct preferred dividends from their taxable income.

CHECK THIS

11.7a From the perspective of common stockholders and management, what are some of the advantages of issuing preferred stock instead of bonds or new shares of common stock?

(*marg. def.* **adjustable rate bonds** Securities that pay coupons that change according to a prespecified rule. Also called *floating-rate bonds* or simply *floaters*.)

11.8 Adjustable Rate Bonds and Adjustable Rate Preferred Stock

Many bond, note, and preferred stock issues have allow the issuer to adjust the annual coupon according to a rule or formula based on current market interest rates. These securities are called **adjustable rate bonds**; they are also sometimes called *floating-rate bonds* or *floaters*. For example, a typical adjustment rule might specify that the coupon rate be reset annually to be equal to the current rate on 180-day maturity U.S. Treasury bills, plus 2 percent. Alternatively, a more flexible rule might specify that the coupon rate on a bond issue cannot be set below 105 percent of the yield to maturity of newly issued five-year Treasury notes. Thus if 5-year Treasury notes have recently been sold to yield 6 percent, the minimum allowable coupon rate is $1.05 \times 6\% = 6.3\%$.

Adjustable rate bonds and notes are often putable at par value. For this reason, an issuer may set a coupon rate above an allowable minimum to discourage bondholders from selling their bonds back to the corporation.

CHECK THIS

11.8a How does an adjustable coupon rate feature affect the interest rate risk of a bond?

11.8b How might bondholders respond if the coupon rate on an adjustable-rate puttable bond was set below market interest rates?

(*marg. def.* **credit ratings** An assessment of the credit quality of a bond issue based on the issuer's financial condition.)

11.9 Corporate Bond Credit Ratings

When a corporation sells a new bond issue to investors, it usually subscribes to several bond rating agencies for a credit evaluation of the bond issue. Each contracted rating agency then provides a **credit rating** - an assessment of the credit quality of the bond issue based on the issuer's financial condition. Rating agencies will normally provide a credit rating only if it is requested by an issuer and will charge a fee for this service. As part of the contractual arrangement between the bond issuer and the rating agency, the issuer agrees to allow a continuing review of its credit rating even if the rating deteriorates. Without a credit rating a new bond issue would be very difficult to sell to the public, which is why almost all bond issues originally sold to the general public have a credit rating assigned at the time of issuance. Also, most public bond issues have ratings assigned by several rating agencies.

Established rating agencies in the United States include Duff and Phelps, Inc. (D&P), Fitch Investors Service (Fitch), McCarthy, Crisanti and Maffei (MCM), Moody's Investors Service (Moody's), and Standard and Poor's Corporation (S&P). Of these, the two best known rating agencies are Moody's and Standard and Poor's. These companies publish regularly updated credit ratings for thousands of domestic and international bond issues.

It is important to realize that corporate bond ratings are assigned to particular bond issues, and not to the issuer of those bonds. For example, a senior bond issue is likely to have a higher credit rating than a subordinated issue even if both are issued by the same corporation. Similarly, a corporation with two bond issues outstanding may have a higher credit rating assigned to one issue because that issue has stronger covenant protection specified in the bond's indenture contract.

Seniority and covenant protection are not the only things affecting bond ratings. Bond rating agencies consider a number of factors before assigning a credit rating, including an appraisal of the financial strength of the issuer, the caliber of the issuer's management, and the issuer's position in an industry as well as the industry's position in the economy. In general, a bond rating is intended to be a comparative indicator of overall credit quality for a particular bond issue. The rating in itself is not a recommendation to buy or sell a bond.

Table 11.2 summarizes corporate bond rating symbols and definitions used by Moody's (first column), Duff and Phelps (second column), and Standard and Poor's (third column). As shown, bond credit ratings fall into three broad categories: investment grade, speculative grade, and extremely speculative grade.

CHECK THIS

11.9a Does a low credit rating necessarily imply that a bond is a bad investment?

11.9b What factors beside the credit rating might be important in deciding whether a particular bond is a worthwhile investment?

Table 11.2 Corporate Bond Credit Rating Symbols			
Rating Agency			Credit Rating Description
Moody's	Duff & Phelps	Standard & Poor's	
Investment Grade Bond Ratings			
Aaa Aa1	1 2	AAA AA+	Highest credit rating, maximum safety.
Aa2 Aa3 A1	3 4 5	AA AA- A+	High credit quality, investment-grade bonds.
A2 A3 Baa1	6 7 8	A A- BBB+	Upper-medium quality, investment-grade bonds.
Baa2 Baa3	9 10	BBB BBB-	Lower-medium quality, investment-grade bonds.
Speculative Grade Bond Ratings			
Ba1 Ba2 Ba3	11 12 13	BB+ BB BB-	Low credit quality, speculative-grade bonds.
B1 B2 B3	14 15 16	B+ B B-	Very low credit quality, speculative-grade bonds.
Extremely Speculative Grade Bond Ratings.			
Caa	17	CCC+ CCC CCC-	Extremely low credit standing, high-risk bonds.
Ca C		CC C D	Extremely speculative Bonds in default.

Why Bond Ratings Are Important

Bond credit ratings assigned by independent rating agencies are quite important to bond market participants. Only a few institutional investors have the resources and expertise necessary to properly evaluate a bond's credit quality on their own. Bond ratings provide investors with reliable, professional evaluations of bond issues at a reasonable cost. This information is indispensable for assessing the economic value of a bond.

(marg. def. prudent investment guidelines Restrictions on investment portfolios stipulating that securities purchased must meet a certain level of safety.)

Furthermore, many financial institutions have **prudent investment guidelines** stipulating that only securities with a certain level of investment safety may be included in their portfolios. For example, bond investments for many pension funds are limited to investment grade bonds rated at least *Baa* by Moody's or at least *BBB* by Standard and Poor's. Bond ratings provide a convenient measure to monitor implementation of these guidelines.

Individual investors investing in bonds also find published bond ratings useful. Individual investors generally do not have the ability to diversify as extensively as do large institutions. With limited diversification opportunities, an individual should invest only in bonds with the highest credit ratings.

(*marg. def.* **high-yield bonds** Bonds with a speculative credit rating that is offset by a *yield premium* offered to compensate for higher credit risk. Also called *junk bonds*.)

11.9 Junk Bonds

Bonds with a speculative or low-grade rating - that is, those rated Ba or lower by Moody's or BB or lower by Standard and Poor's - are commonly called **high-yield bonds**, or, more colorfully, *junk bonds*. The designation "junk" is somewhat misleading and often unduly pejorative, since junk bonds have economic value. Junk bonds simply represent debt with a higher than average credit risk. To put the term in perspective, one should realize that most consumer debt and small business debt represents higher than average credit risk. Yet it is generally considered desirable from an economic and social perspective that credit be available to consumers and small businesses.

Junk bonds that were originally issued with an investment-grade credit rating that subsequently fell to speculative grade because of unforeseen economic events are called *fallen angels*. Another type called *original-issue junk* is defined as bonds originally issued with a speculative grade rating.

Junk bonds are attractive investments for many institutional investors with well-diversified portfolios. The logic of junk bond investing revolves around the possibility that the *yield premium* for junk bonds might be high enough to justify accepting the higher default rates of junk bonds. As an example of this logic, consider the following back-of-the-envelope calculations.

Suppose that the average yield on junk bonds is 10 percent when U.S. Treasury bonds yield 7 percent. In this case, the yield premium of junk bonds over default-free Treasury bonds is 3 percent. Further suppose that an investor expects about 4 percent of all outstanding junk bonds to default each year, and experience suggests that when junk bonds default bondholders on average receive 50 cents

for each dollar of bond face value. Based on these rough assumptions, diversified junk bond investors expect to lose 2 percent ($.04 \times .50$) of their portfolio value each year through defaults. But with a junk bond yield premium of 3 percent, the junk bond portfolio is expected to outperform U.S. Treasury bonds by 1 percent per year. It is true that a junk bond portfolio is much more expensive to manage than a Treasury bond portfolio. However, for a \$1 billion bond portfolio, a junk bond yield premium of 1 percent represents \$10 million of additional interest income per year.

Of course, actual default rates could turn out to be much different than expected. History suggests that the major determinant of aggregate bond default rates is the state of economic activity. During an expansionary economic period, bond default rates are usually low. But in a recession, default rates can rise dramatically. For this reason, the investment performance of a junk bond portfolio largely depends on the health of the economy.

Prices and yields of selected junk bonds are published regularly in the *Wall Street Journal* in its “High Yield Bonds” report. A sample report is displayed in Figure 11.7. Information reported for individual issues includes the name of the issuer, the type of bond and the current Standard and Poor's credit rating, the coupon rate and maturity of the bond, a dealer bid price and the change in the bid price from the previous day, and the bond's yield. The reported yield is either a *yield to maturity* or a *yield to call*, whichever is lower. Yield to call is calculated assuming that the bond issue will be called at the earliest possible call date, while the yield to maturity is calculated assuming that the bonds will not be called before maturity.

CHECK THIS

11.10a Can junk bond default risk be completely diversified away by large institutional bond investors?

11.10b From an investor's perspective, is there any importance in distinguishing between fallen angels and original-issue junk?

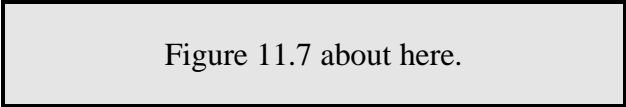


Figure 11.7 about here.

11.11 Bond Market Trading

Consistent with the need to hold bonds for predictable cash flows, most corporate bond investors buy and hold bonds until they mature. However, many investors need to liquidate some bonds before they mature and others wish to purchase outstanding bonds originally issued by a particular corporation several years earlier. For these and many other reasons, the existence of an active secondary market for corporate bonds is important for most bond investors. Fortunately, an active secondary market with a substantial volume of bond trading does exist to satisfy most of the liquidity needs of investors.

Almost as many different bond issues are listed on the New York Stock Exchange (NYSE) as there are different common stock issues. These NYSE-traded bond issues represent the most actively traded bonds of large corporations. However, there are many more thousands of different corporate debt issues outstanding. Most of these less actively traded debt issues trade in the over-the-counter (OTC) market. In fact, it is estimated that less than 1 percent of all corporate bond trading actually takes place on the New York Stock Exchange. While some bond trading activity occurs on

the American Stock Exchange and other regional exchanges, corporate bond trading is characteristically an OTC activity. Nevertheless, bond trading on the New York Stock Exchange is watched by bond investors and traders throughout the world.

Every business day, the *Wall Street Journal* publishes an overview of corporate bond trading in its “New York Exchange Bonds” report. Figure 11.8 presents a partial sample daily report. As shown, part of this report is a summary of the prior day's bond trading activity, including data on trading volume, number of issues traded, and summary statistics describing general bond price movements. The remainder of the daily bond report lists information regarding trading of individual bond issues, including bond identification, current yield, trading volume, closing price, and the change in price from the previous day.

Figure 11.8 about here.

In Figure 11.8, bond identification is listed in the first column. Identification includes an abbreviated name of the issuer, the bond's coupon rate and maturity. For example, several AT&T (ticker symbol ATT) bond issues are listed first. The longest maturity AT&T bond pays an 8-5/8 percent coupon and matures in 2031. A bond dealer might refer to these bonds as "ATT 8-5/8s of 31."

When referring to the “New York Exchange Bonds” report notice that corporate bond prices are conventionally stated as a percentage of par value. Thus a quoted price of 97 indicates that a bond with a face value of \$1,000 has a price of \$970. Also notice that for corporate bonds, price fractions are true fractions. Thus a price of 101-5/8 means that \$10,000 of face value has a price of $\$10,000 \times 101\text{-}5/8\% = \$10,162.50$.

As we saw in Chapter 10, current yield is defined as a bond's annual coupon payments divided by its current market price. Notice that current yields are not reported for those bonds where a current yield value is uninformative. This includes convertible bonds, indicated by cv in the current yield column, and floating rate bonds and zero coupon bonds, indicated by f and zr, respectively, in the bond identification column.

CHECK THIS

11.11a All else equal, is an actively traded bond more or less risky as an investment than a thinly traded bond? (Hint: Is liquidity a good or a bad thing for a bond?)

11.11b Why might a current yield for a convertible bond be uninformative for the purpose of making a comparison between two or more bonds?

11.12 Summary and Conclusions

This chapter covers the important topic of corporate bonds, a major source of capital used by corporations. In this chapter we saw that:

1. A corporate bond represents a corporation's promise to pay bondholders a fixed sum of money at maturity, along with periodic payments of interest. The sum paid at maturity is the bond's principal, and the periodic interest payments are coupons. Most bonds pay fixed coupons, but some pay floating coupon rates adjusted regularly according to prevailing market interest rates.
2. Corporate bonds are usually callable, which means that the issuer has the right to buy back outstanding bonds before maturity. When a bond issue is called, bondholders surrender their bonds in exchange for a prespecified call price.

40 Chapter 11

3. The largest category of corporate bond investors is life insurance companies, which own about a third of all outstanding corporate bonds. Remaining ownership shares are roughly equally distributed among individual investors, pension funds, banks and foreign investors.
4. Debentures are the most common type of corporate bond. Debenture bonds represent the unsecured debt of a corporation. Mortgage bonds represent debt issued with a lien on specific property pledged as security for the bonds. Collateral trust bonds are characterized by a pledge of financial assets as security for a bond issue. Equipment trust certificates are issued according to a lease form of financing, where investors purchase equipment trust certificates and the proceeds from this sale are used to purchase equipment that is leased to a corporation.
5. A bond indenture is a formal agreement between the corporation and bondholders that spells out the legal rights and obligations of both parties with respect to a bond issue. An indenture typically specifies the seniority of a bond issue, along with any call provisions, put provisions, bond-to-stock conversion provisions, and sinking fund provisions.
6. When a corporation sells a new bond issue to the public, it usually has a credit rating assigned by several independent bond rating agencies. Without a credit rating a new bond issue would be difficult to sell, which is why almost all bond issues sold to the public have credit ratings assigned.
7. Bonds with a speculative or lower grade rating, commonly called high-yield bonds, or junk bonds, represent corporate debt with higher than average credit risk. Credit ratings for junk bonds are frequently revised to reflect changing financial conditions.
8. The existence of an active secondary market for corporate bonds is important to most bond investors. More than 2,300 different bond issues are listed on the NYSE. These represent the most actively traded issues of large corporations. Many more thousands of different corporate debt issues trade in the OTC market. Indeed, the greatest total volume of bond trading occurs in the OTC market.

Key terms

plain vanilla bonds

debentures

collateral trust bond

equipment trust certificate

protective covenants

event risk

senior debentures

subordinated debentures

negative pledge clause

credit ratings

convertible bonds

exchangeable bonds

intrinsic bond value

in-the-money bond

unsecured debt

mortgage bond

term bonds

serial bonds

indenture summary

private placement

adjustable rate bonds

put bonds

bond refunding

prudent investment guidelines

high yield bonds

preferred stock

sinking fund

Get Real!

This chapter explored corporate bonds, an important type of investment for institutions, such as life insurance companies and for individuals. It also covered convertible bonds and preferred stock. How should you put this information to work?

Now that you understand the most important features of corporate bonds, you need to buy a variety of them to experience the real-world gains and losses that come with managing a bond portfolio. So, with a simulated brokerage account (such as Stock-Trak), try putting equal (or approximately equal) dollar amounts in four or five different corporate issues. Be sure to include a range of credit ratings, including some junk bonds. To better understand the bonds you purchase, you should hit the library and look them up in a bond guide such as those published by Moody's and S&P. There you will find a brief description of the most important features.

As you monitor the prices of your bonds, notice how interest rates influence their values. You will also find, however, that for the lower quality issues, the stock price of the issuing company is an important influence. Why is this so?

You should also buy a couple of convertible bonds and several different preferred stocks. Once again, be sure to include a range of credit ratings.

With the convertible issues, the price will definitely be influenced by the underlying stock value, but the impact depends on whether the conversion feature is in the money or not, among other things. Once again, at the library, you can get the important features of the issue, including the conversion ratio. Find out whether your issues are in the money or not.

STOCK-TRAK FAST TRACK***TRADING CORPORATE BONDS WITH STOCK-TRAK***

Stock-Trak supports trading in a select number of corporate bond issues. These bonds trade in sufficient volume for Stock-Trak to obtain timely price quotes. The list of available bonds changes from time to time so you should consult the Stock-Trak website (www.stocktrak.com) for the most recent list. Ticker symbols for these bonds are not necessary, as Stock-Trak lists the bonds by issuer name, coupon, and maturity. These 5 bonds are shown as they were listed by Stock-Trak:

AT&T 8 1/8 22
 Ann Taylr 8 3/4 10
 Borden 8 3/8 16
 Chase M 6 1/8 06
 Converse 7s 04

Following standard practice, corporate bonds available for Stock-Trak trading have a face value denomination of \$1,000 per bond.

STOCK-TRAK EXERCISES

1. Buy two different corporate bonds with maturities of at least 10 years. One bond should have a low coupon rate (but not a zero coupon) and the other should have a high coupon rate. Compare the two bonds by keeping a record of their weekly price changes.
2. Stock-Trak corporate bonds typically include several zero coupon issues. Two such bonds issued by Motorola and Office Depot were listed by Stock-Trak as

Motrln zr 13

Off Dep zr 08

Buy two zero coupon bonds and compare their performance by keeping a record of their weekly price changes.

Chapter 11

Corporate Bonds

End of Chapter Questions and Problems

Review Problems and Self-Test

- 1. Callable Bonds** A particular bond matures in 30 years. It is callable in 10 years at 110. The call price is cut by 1 percent of par each year until the call price reaches par. If the bond is called in 12 years, how much will you receive? Assume a \$1,000 face value.
- 2. Convertible Bonds** A convertible bond features a conversion ratio of 50. What is the conversion price? If the stock sells for \$30 per share, what is the conversion value?
- 3. Convertible Bonds** A convertible bond has an 8 percent coupon, paid semiannually, and will mature in 15 years. If the bond were not convertible, it would be priced to yield 9 percent. The conversion ratio on the bond is 40, and the stock is currently selling for \$24 per share. What is the minimum value of this bond?

Answers to Self-Test Problems

- 1.** The call price will be $110\% - 2 \times 1\% = 108\%$ of face value, or \$1,080.
- 2.** The conversion price is face value divided by the conversion ratio, $\$1,000/50 = \20 . The conversion value is what the bond is worth on a converted basis, $50 \times \$30 = \$1,500$.
- 3.** The minimum value is the larger of the conversion value and the intrinsic bond value. The conversion value is $40 \times \$24 = \960 . To calculate the intrinsic bond value, note that we have a face value of \$1,000 (by assumption), a semiannual coupon of \$40, an annual yield of 9 percent (4.5 percent per half-year), and 15 years to maturity (30 half-years). Using the standard bond pricing formula from our previous chapter, the bond's price (be sure to verify this) if it were not convertible is \$918.56. This convertible bond thus will sell for more than \$960.

Test Your IQ (Investment Quotient)

1. **Trust certificates** An airline elects to finance the purchase of some new airplanes using equipment trust certificates. Under the legal arrangement associated with such certificates, the airplanes are pledged as collateral, but which other factor applies? *(1990 CFA exam)*
 - a. the airline still has legal title to the planes
 - b. legal title to the planes resides with the manufacturer
 - c. the airline does not get legal title to the planes until the manufacturer is paid off
 - d. legal title to the planes resides with a third party who then leases the planes to the airline

2. **Callable bonds** What does the call feature of a bond mean?: *(1988 CFA exam)*
 - a. investor can call for payment on demand
 - b. investor can only call if the firm defaults on an interest payment
 - c. issuer can call the bond issue prior to the maturity date
 - d. issuer can call the issue during the first three years

3. **Callable bonds** Who benefits from a call provision on a corporate bond? *(1989 CFA exam)*
 - a. the issuer
 - b. the bondholders
 - c. the trustee
 - d. the government regulators

4. **Callable bonds** Which of the following describes a bond with a call feature? *(1990 CFA exam)*
 - a. it is attractive, because the immediate receipt of principal plus premium produces a high return
 - b. it is more likely to be called when interest rates are high, because the interest savings will be greater
 - c. it would usually have a higher yield than a similar noncallable bond
 - d. it generally has a higher credit rating than a similar noncallable bond

5. **Convexity** What does positive convexity on a bond imply? *(1991 CFA exam)*
 - a. the direction of change in yield is directly related to the change in price
 - b. prices increase at a faster rate as yields drop, than they decrease as yields rise
 - c. price changes are the same for both increases and decreases in yields
 - d. prices increase and decrease at a faster rate than the change in yield

- 6. Indentures** Which of the following is not a responsibility of a corporate trustee with regard to a bond's trust indenture? (1992 CFA exam)
- a. checking compliance
 - b. authenticating the bonds issued
 - c. negotiating the terms
 - d. declaring defaults
- 7. Refundings** The refunding provision of an indenture allows bonds to be retired unless: (1989 CFA exam)
- a. they are replaced with a new issue having a lower interest cost
 - b. the remaining time to maturity is less than five years
 - c. the stated time period in the indenture has not passed
 - d. the stated time period in the indenture has passed
- 8. Debentures** Holders of unsecured debentures with a negative pledge clause can claim which of the following assurances? (1990 CFA exam)
- a. no additional secured debt will be issued in the future
 - b. if any secured debt is issued in the future, the unsecured debentures must be redeemed at par
 - c. the debentures will be secured, but to a lesser degree than any secured debt issued in the future
 - d. the debentures will be secured at least equally with any secured debt issued in the future
- 9. Preferred stock** Nonconvertible preferred stock has which of the following in comparison to common stock? (1990 CFA exam)
- a. preferential claim on a company's earnings
 - b. a predetermined dividend rate
 - c. preferential voting rights
 - d. all of the above
- 10. Preferred stock** A preferred stock that is entitled to dividends in arrears is known as: (1988 CFA exam)
- a. convertible
 - b. cumulative
 - c. extendible
 - d. participating

- 11. Preferred stock** Why does a firm's preferred stock often sell at yields below its bond's?
(1994 CFA exam)
- a. preferred stock generally carries a higher agency rating
 - b. owners of preferred stock have a prior claim on the firm's earnings
 - c. owners of preferred stock have a prior claim on the firm's assets in a liquidation
 - d. corporations owning stock may exclude from income taxes most of the dividend income they receive
- 12. Convertible bonds** Which one of the following statements about convertible bonds is true?
(1991 CFA exam)
- a. The longer the call protection on a convertible, the less the security is worth
 - b. The more volatile the underlying stock, the greater the value of the conversion feature
 - c. The smaller the spread between the dividend yield on the stock and the yield to maturity on the bond, the more the convertible is worth
 - d. The collateral that is used to secure a convertible bond is one reason convertibles are more attractive than the underlying common stocks
- 13. Convertible bonds** Which one of the following statements about convertible bonds is false?
(1993 CFA exam)
- a. The yield on the convertible will typically be higher than the yield on the underlying common stock
 - b. The convertible bond will likely participate in a major upward movement in the price of the underlying common stock
 - c. Convertible bonds are typically secured by specific assets of the issuing company
 - d. A convertible bond can be valued as a straight bond with an attached option

14. Convertible bonds Consider the possible advantages of convertible bonds for investors: (1991 CFA exam)

- I. the conversion feature enables the convertible to participate in major upward moves in the price of the underlying common stock
- II the bonds are typically secured by specific assets of the issuing company
- III. investors may redeem their bonds at the stated conversion price any time during the life of the issue
- IV. the yield on the convertible will almost always be higher than the yield on the underlying common stock

Which are true?

- a. I and II only
- b. II and III only
- c. I and III only
- d. I and IV only

15. Convertible bonds A convertible bond sells at \$1,000 par with a conversion ratio of 40 and an accompanying stock price of \$20 per share. The conversion price and conversion value are, respectively (1994 CFA exam)

- a. \$20 and \$1,000
- b. \$20 and \$800
- c. \$25 and \$1,000
- d. \$25 and \$800

*Questions and Problems*Core Questions

1. **Bond Types** What are the four main types of corporate bonds?
2. **Bond Features** What is a bond refunding? Is it the same thing as a call?
3. **Callable Bonds** With regard to the call feature, what are call protection and the call premium? What typically happens to the call premium through time?
4. **Put Bonds** What is a put bond? Is the put feature desirable from the investor's perspective? The issuer's?
5. **Bond Yields** What is the impact on a bond's coupon rate from:
 - a. a call feature?
 - b. a put feature?
6. **Convertible Bonds** A convertible bond has a \$1,000 face value and a conversion ratio of 40. What is the conversion price?
7. **Convertible Bonds** A convertible bond has a \$1,000 face value and a conversion ratio of 80. If the stock sells for \$10 per share, what is the conversion value?
8. **Exchangeable Bonds** What is the difference between an exchangeable bond and a convertible bond?
9. **Event Risk** What is event risk? In addition to protective covenants, what bond feature do you think best reduces or eliminates such risk?
10. **Floater** From the bondholder's perspective, what are the potential advantages and disadvantages of floating coupons?

Intermediate Questions

11. **Put Bonds** What is the difference between put bonds and extendible bonds?
12. **Callable Bonds** All else the same, callable bonds have less interest rate sensitivity than noncallable bonds. Why? Is this a good thing?

- 13. Convertible Bonds** A convertible bond has a 6 percent coupon, paid semiannually, and will mature in 8 years. If the bond were not convertible, it would be priced to yield 9 percent. The conversion ratio on the bond is 20, and the stock is currently selling for \$30 per share. What is the minimum value of this bond?
- 14. Convertible Bonds** You own a convertible bond with a conversion ratio of 40. The stock is currently selling for \$30 per share. The issuer of the bond has announced a call; the call price is 105. What are your options here? What should you do?
- 15. Sinking Fund** Does the decision to include a sinking fund increase or decrease the coupon rate on a newly issued bond? Does your answer depend on the issuer?
- 16. Inverse Floaters** An “inverse floater” is a bond with a coupon that is adjusted down when interest rates rise and up when rates fall. What is the impact of the floating coupon on the bond’s price volatility?

Chapter 11
Corporate Bonds
Answers and solutions

Answers to Multiple Choice Questions

1. D
2. C
3. A
4. C
5. B
6. C
7. A
8. D
9. B
10. B
11. D
12. B
13. C
14. C
15. D

Answers to Questions and ProblemsCore Questions

1. The four main types are debentures, mortgage bonds, collateral trust bonds, and equipment trust certificates.
2. A bond refunding is a call in which an outstanding issue is replaced with a lower coupon issue. The point is simply to replace a relatively high coupon issue with a lower coupon issue. All bond refundings involve a call, but not all calls involve refunding. For example, an issue may be called, but not replaced.
3. Call protection refers to the period during which the bond is not callable, typically five to ten years for a corporate bond. The call premium is the amount above par the issuer must pay to call the bond; it generally declines to zero through time.
4. A put bond gives the owner the right to force the issuer to buy the bond back, typically either at face value or according to a preset price schedule. Obviously, the put feature is very desirable from the owner's perspective, but not the issuer's.

5. All else the same, a callable bond will have a higher coupon rate (because buyers don't like call features and therefore demand a higher coupon); a puttable bond will have a lower coupon rate (because buyers like put features).
6. The conversion price is $\$1,000/20 = \50 .
7. The conversion value is $80 \times \$10 = \800 .
8. A convertible bond converts into the issuer's stock. An exchangeable bond converts into the stock of some other entity. Typically, with an exchangeable bond, the issuer already owns the stock into which the issue can be converted.
9. Event risk refers to a sudden decline in credit quality resulting from a significant structural or financial change. The put feature is intended to protect holders against event risk; it works great as long as the issuer has the financial strength to fulfill its obligation to buy back the issue on demand.
10. The advantage is that the coupon adjusts up when interest rates rise, so the bond's price won't fall (at least not nearly as much as it would have). It cuts both ways, however. The coupon will fall if interest rates decline, so the owner will not experience the gains that otherwise would have occurred.

Intermediate Questions

11. Conceptually, they are the same thing. A put bond gives the owner the right to force the issuer to buy the bond back, typically at face value. An extendible bond gives the owner the right to receive face value on the extension date or receive another bond. In both cases, the owner can have either face value or a bond. In practice, put bonds can be put on multiple dates (usually the coupon dates) whereas an extendible bond may only have one extension date. Also, if an extendible bond is extended, the new bond may not have the same coupon.
12. Because of the negative convexity effect, callable bonds cannot rise in value as far as noncallable bonds, so they do have less interest rate sensitivity. Also, a callable bond may "mature" sooner than an otherwise identical noncallable issue (because it is called), so this shorter effective maturity also means less interest rate sensitivity. Unfortunately, the smaller interest rate sensitivity is almost all on the upside, so it is not a good thing.
13. The minimum value is the larger of the conversion value and the intrinsic bond value. The conversion value is $20 \times \$30 = \600 . To calculate the intrinsic bond value, note that we have a face value of \$1,000 (by assumption), a semiannual coupon of \$30, an annual yield of 9 percent (4.5 percent per half-year), and 8 years to maturity (16 half-years). Using the standard bond pricing formula from our previous chapter, the bond's price if it were not convertible is \$831.49. Thus, this convertible bond will sell for more than \$831.49.

- 14.** You can convert or tender the bond (i.e., surrender the bond in exchange for the call price). If you convert, you get stock worth $40 \times \$30 = \$1,200$. If you tender, you get \$1050 (105 percent of par). It's a no-brainer: convert.
- 15.** A sinking fund is good in that reduces the probability of default at maturity, but it is bad in that some bondholders may experience adverse calls to satisfy the sinking fund requirement. For a low quality bond, the security issue is more important; however, for a high quality issue, a sinking fund might actually increase the coupon rate. Thus, highly-rated issues often don't have sinking funds.
- 16.** The floating coupon in this case acts like a rocket booster, magnifying the gains and losses that occur from changes in interest rates.

Figure 11.1. Equipment Trust Notes Issue

These securities have not been registered under the Securities Act of 1933 and may not be offered or sold in the United States or to U.S. persons except in accordance with the resale restrictions applicable thereto. These securities having been previously sold, this announcement appears as a matter of record only.

\$243,000,000

NWA Trust No. 1

\$177,000,000 8.26% Class A Senior Aircraft Notes

\$66,000,000 9.36% Class B Subordinated Aircraft Notes



The 8.26% Class A Senior Aircraft Notes and the 9.36% Class B Subordinated Aircraft Notes are secured by, among other things, a security interest in certain aircraft sold by Northwest Airlines, Inc. ("Northwest") to an owner trust for a purchase price of \$443 million and the lease relating to such Aircraft, including the right to receive amounts payable by Northwest under such lease. The Noteholders also have the benefit of a liquidity facility, initially provided by General Electric Capital Corporation, to support certain payments of interest on the Notes.

Lehman Brothers

BT Securities Corporation

Figure 11.2 Callable and noncallable bonds

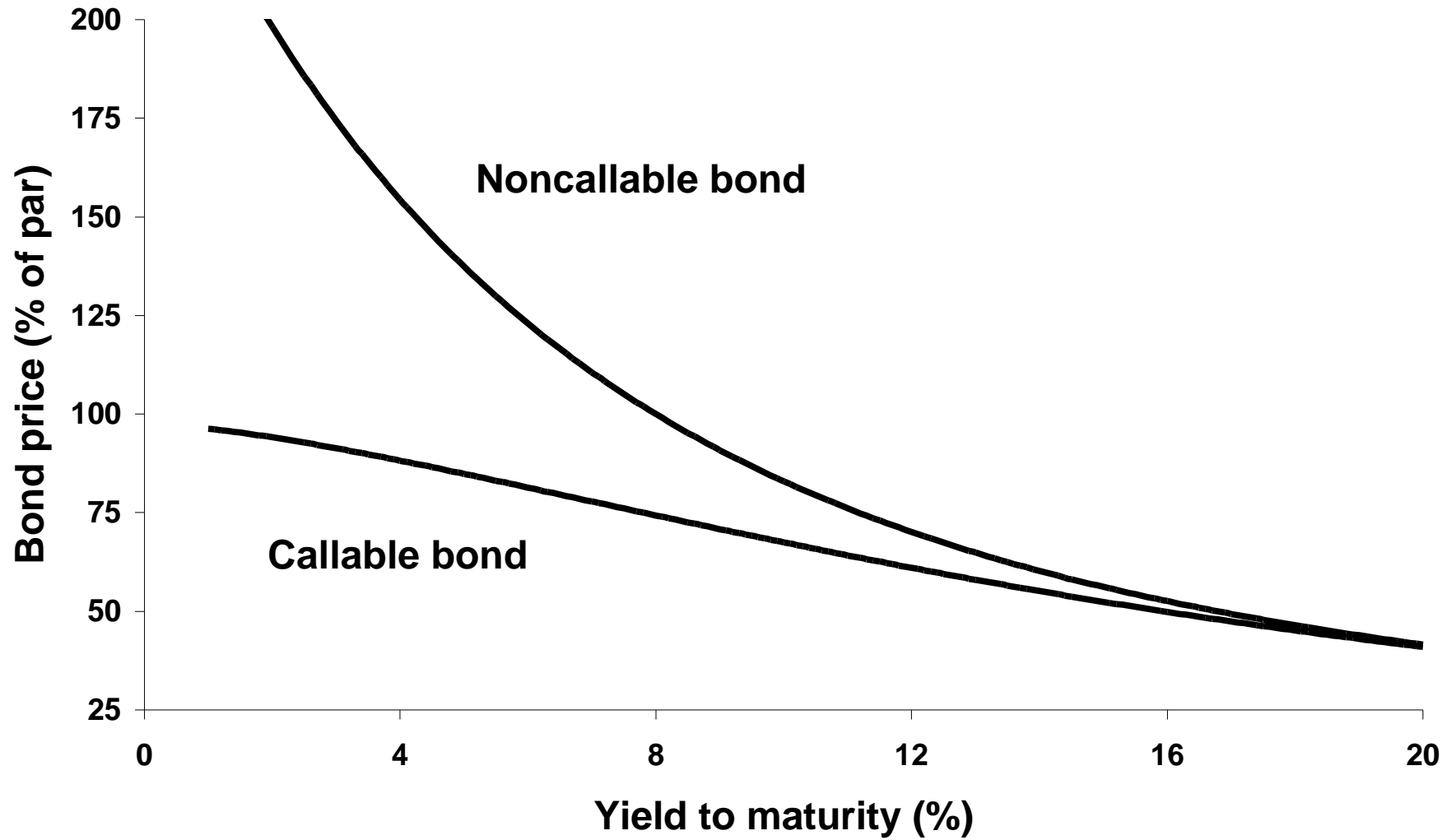


Figure 11.3 Convertible Notes Issue

*This announcement is neither an offer to sell, nor a solicitation of an offer to buy, any of these securities.
The offer is made only by the Prospectus and related Prospectus Supplement.*

\$517,500,000

AMD 

Advanced Micro Devices, Inc.

6% Convertible Subordinated Notes due 2005

The 6% Convertible Subordinated Notes due 2005 (the "Notes") will be convertible at the option of the holder into shares of common stock, par value \$.01 per share (the "Common Stock"), of Advanced Micro Devices, Inc. (the "Company") at any time at or prior to maturity, unless previously redeemed or repurchased, at a conversion price of \$37.00 per share (equivalent to a conversion rate of 27.027 shares per \$1,000 principal amount of Notes), subject to adjustment in certain events.

Price 100%

Copies of the Prospectus and related Prospectus Supplement may be obtained in any State from such of the undersigned as may legally offer these securities in compliance with the securities laws of such State.

Donaldson, Lufkin & Jenrette
Securities Corporation

Salomon Smith Barney

Figure 11.4 Convertible bond prices

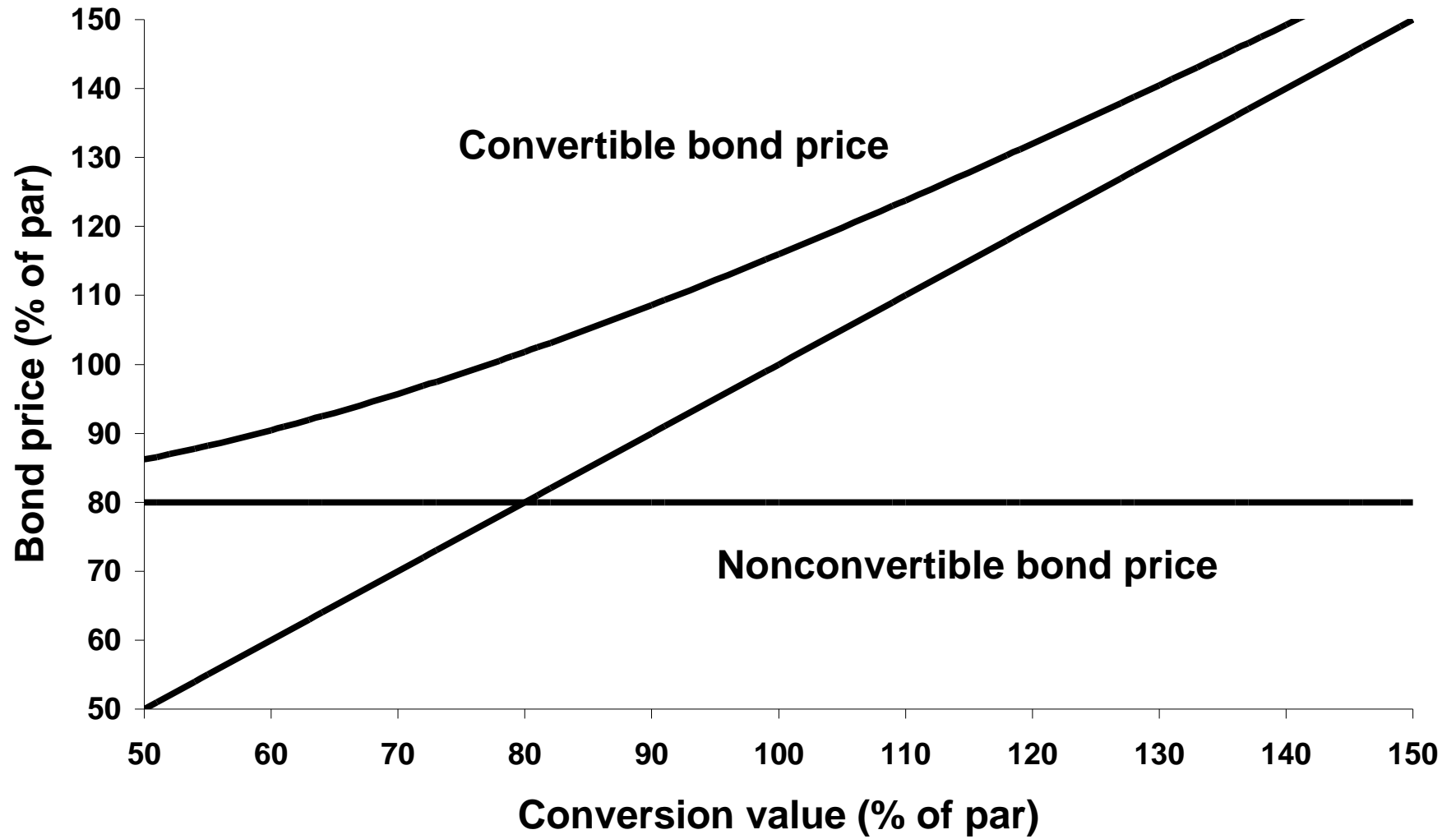


Figure 11.5. Exchangeable Debentures Issue



*This announcement is neither an offer to sell nor a solicitation of an offer to buy any of these Securities.
The offer is made only by the Prospectus.*

\$180,000,000

McKesson Corporation

***4½% Exchangeable Subordinated Debentures
Due 2004***

***Exchangeable for Shares of Common Stock of
Armor All Products Corporation***

Interest Payable March 1 and September 1

Price 100% and Accrued Interest, if any

*Copies of the Prospectus may be obtained in any State from only such
of the undersigned as may legally offer these Securities in
compliance with the securities laws of such State.*

MORGAN STANLEY & CO.
Incorporated

MONTGOMERY SECURITIES

MONNESS, CRESPI, HARDT & CO. INC.

WHEAT FIRST BUTCHER & SINGER
Capital Markets

Investment Updates (7/21/93)

Disney Amazes Investors With Sale of 100-Year Bonds

CREDIT

MARKETS

By THOMAS T. VOGEL JR.

Staff Reporter of THE WALL STREET JOURNAL

NEW YORK — The corporate race to lock in low credit costs hit a fever pitch as Walt Disney Co. began marketing the first 100-year bonds to be sold by any borrower since 1954.

Bond traders were stunned to hear that the entertainment concern is expecting to sell \$150 million of 100-year bonds at a yield of only about 7.5%, barely 0.95 percentage point above 30-year U.S. Treasury bonds.

"It's crazy," said William Gross, head of fixed-income investments at Pacific Investment Management Co. Noting the ups and down of the entertainment industry, he said: "Look at the path of Coney Island over the last 50 years and see what happens to amusement parks."

"Obviously we're going through a

phase in the market where everyone is pushing the envelope where they can," said Glenn Murphy, chief investment officer of Travelers Asset Management Inc. The Disney issue will turn out to be a "historic artifact, a curiosity," he said.

Disney's bond issue may not really be around for a century. It can be called away from investors by the company after 30 years. But demand for the issue is said to be brisk and there is even some talk that the offering size might be increased.

The 100-year buyers are expected to be the usual flock of pension funds, insurers and financial advisers, according to Mark Seigel, head of corporate underwriting at Morgan Stanley & Co., which will lead the underwriting. Merrill Lynch & Co. will co-manage the deal.

While 100-year bonds are rare, they seem a fitting climax to a recent flurry of very long-dated corporate bonds. So far this year, five companies have sold 50-year bonds for a total of \$1.13 billion. Last year

one company sold 50-year bonds, and before that, none had sold such long-dated securities in decades.

Demand for such long-dated bond issues has grown in recent months because investors, sick of measly returns, are becoming more willing to shoulder greater risks in return for higher yields, even marginally higher ones as in the case of the Disney bonds.

Investment Updates (7/23/93)

Coca-Cola Joins Disney With Sale of 100-Year Bonds

By THOMAS D. LAURICELLA
And CONSTANCE MITCHELL

Staff Reporters of THE WALL STREET JOURNAL

NEW YORK — Coca-Cola Co. became the second company this week to stretch the meaning of "long-term bond" by selling \$150 million of bonds that mature 100 years from now.

Walt Disney Co. sold \$300 million of 100-year bonds on Tuesday, becoming the first company to issue a bond with such a long maturity since 1954. Coca-Cola's offering, which was underwritten by Merrill Lynch & Co., was priced to yield 7.455%, just 0.80 percentage point higher than the yield on 30-year Treasury bonds.

Federal Reserve Chairman Alan Greenspan commented on the 100-year bond offerings during the continuation of his semiannual report to Congress yesterday, saying they are "one of the more important indicators that the longer-term inflation expectations which have so bedeviled our economy and financial markets seem to be receding, and that's a very good sign."

Investment Updates (7/26/93)

Marriott to Split, Making 2 Firms

By JYOTI THOTTAM

Staff Reporter of THE WALL STREET JOURNAL

WASHINGTON—Marriott Corp. shareholders approved a plan to split the company into a real-estate concern, with most of Marriott's debt, and a high-growth hotel-management company.

The split, approved by 85% of the shares voted, was the main issue at Marriott's annual meeting Friday. Under the plan, which is expected to take effect in September, stockholders will receive a share of Marriott International Inc., the hotel-management operation, for each Marriott share they own. Then Marriott Corp. will be renamed Host Marriott Corp., an entity that will operate the real-estate side of the business.

The plan stunned bondholders when it was announced in October. They argued that the financial support of their debt was being undermined, and a suit by some of the bondholders is still pending.

Marriott shares have risen 60% since the plan's announcement. In New York Stock Exchange trading Friday, Marriott closed at \$27.785, up 12.5 cents. The stock has traded as low as \$15.50 in the past year.

The Marriott family controls more than 25% of the 100.8 million shares outstanding as of Jan. 1.

Marriott's directors set a distribution date for the split dividend of Sept. 10 for shares of record Sept. 1.

J.W. Marriott, 61 years old and currently chairman and president of the company, will be chairman, president and chief executive officer of Marriott International, while his brother, Richard E. Marriott, 54, will be chairman of Host Marriott. Richard Marriott is currently vice chairman and executive vice president of the company.

In addition to the bondholders' lawsuit seeking to block the reorganization, Marri-

ott had faced a suit by holders of preferred stock. Marriott said that the holders have agreed to dismiss their case and convert their preferred shares into common stock.

The suit by the group of bondholders, representing about a dozen institutional investors, is still pending, however. Under the reorganization plan, holders of about \$1.5 billion in Marriott bonds would have the option to swap their notes for new notes of a unit of the new real-estate entity. The company will retain \$2.1 billion of Marriott's \$3 billion long-term debt and will own 139 hotels and other real-estate assets.

Larry Kill, attorney for the bondholders, said the suit would proceed despite the shareholder vote. "This was a very unfair transaction," he said.

As a separate company, Host Marriott would have had about \$1.2 billion in sales in 1992, according to the company's estimates. Marriott International Inc., the new hotel concern, will operate more than 760 hotels through Marriott's four hotel-management units and related management services. Marriott International would have had \$7.8 billion in sales last year, the company estimates.

In 1992, Marriott had net income of \$85 million, or 64 cents a share, on sales of \$8.72 billion. It had about \$3 billion in long-term debt as of Jan. 1.

Moody's Investors Service Inc. downgraded its ratings on the senior unsecured debt of Marriott Corp., affecting about \$2.3 billion in debt, to Ba-2 from single-B-2. Moody's said the bond-exchange plan will leave a Host Marriott unit highly leveraged "with modest debt protection." Moody's said it expects only gradual improvement in operating earnings, given the sluggish economy and glut of hotel rooms. Moody's said, however, that the Host Marriott unit will be well-positioned for increased earnings when the recovery hits full speed.

Figure 11.6. Convertible Preferred Shares Issue

These securities have not been registered under the Securities Act of 1933 and may not be offered or sold in the United States or to U.S. persons absent registration or an applicable exemption from the registration requirements. These securities having been previously sold, this announcement appears as a matter of record only.

\$325,000,000



6,500,000 Shares

**Depositary Shares Each Representing $\frac{1}{20}$ of a Share of
7% Cumulative Convertible Preferred Stock
(Liquidation Preference equivalent to \$50 per Depositary Share)**

Each of the 6,500,000 Depositary Shares offered hereby (the "Offering") represents ownership of $\frac{1}{20}$ of a share of 7% Cumulative Convertible Preferred Stock (the "Preferred Stock") of Omnipoint Corporation, a Delaware corporation (the "Company"), deposited with the Depositary and entitles the holder to all proportional rights and preferences of the Preferred Stock (including dividend, voting, conversion, redemption and liquidation rights and preferences). The proportionate Liquidation Preference of each Depositary Share is \$50. The Depositary Shares are being offered hereby by the Initial Purchasers to qualified institutional buyers in reliance on Rule 144A under the Securities Act of 1933, as amended (the "Securities Act"). The Preferred Stock will be convertible at the option of the holder thereof into shares of Common Stock, par value \$.01 per share, of the Company ("Common Stock"), at any time unless previously redeemed at a Conversion Price of \$31.115 per Depositary Share subject to adjustment under certain circumstances.

The undersigned privately placed these securities with qualified institutional buyers pursuant to Rule 144A and outside the United States under the Securities Act of 1933.

Donaldson, Lufkin & Jenrette
Securities Corporation

BancAmerica Robertson Stephens

Bear, Stearns & Co. Inc.

Salomon Smith Barney

Allen & Company
Incorporated

Lehman Brothers

Raymond James & Associates, Inc.

Credit Suisse First Boston

Cowen & Company

Figure 11.8. NYSE Bond Trading

NEW YORK EXCHANGE BONDS

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

Volume \$13,398,000

SALES SINCE JANUARY 1
(000 omitted)

1998	1997	1996
\$2,770,439	\$3,922,178	\$4,193,425

Issues Traded	Domestic		All Issues	
	Tue.	Mon.	Tue.	Mon.
Advances	88	81	91	82
Declines	74	56	75	61
Unchanged	28	32	30	34
New highs	17	23	17	23
New lows	9	13	9	14

Dow Jones Bond Averages

-1997-		-1998-		-1998-		-1997-	
High	Low	High	Low	Close	Chg.	%Yld	Close
105.13	101.09	106.08	104.42	106.00	c-0.08	6.70	104.12
102.89	97.64	103.61	102.02	103.61	+0.16	6.76	101.85
107.49	104.54	108.71	106.43	108.39	c-0.32	6.63	106.39
20 Bonds		10 Utilities		10 Industrials			

CORPORATION BONDS

Volume, \$12,832,000

Bonds	Cur Yld.	Vol.	Close	Net Chg.
ATT 4 3/8 99	4.4	6	99 3/32	+ 7/32
ATT 6 5/8 00	6.0	67	100 1/8	- 1/8
ATT 5 1/8 01	5.2	88	99 3/8	- 1/8
ATT 7 1/8 02	6.8	55	104 3/4	- 1/4
ATT 6 3/4 04	6.3	40	106 1/2	- 3/8
ATT 7 5/8 05	6.5	146	107 3/4	+ 1/4
ATT 8 2 5/8 05	7.9	20	103 7/8	- 1
ATT 7 3/4 07	6.9	25	113	...
ATT 8 1/2 22	7.5	28	108	+ 3/8
ATT 8 1/2 24	7.5	45	108 3/8	+ 3/8
ATT 8 3/4 31	7.7	16	112	+ 1/4
Alcoa 12 1/2 02	13.0	10	96	- 1/8
Aldic zr 2000	...	15	90 1/8	- 1/8
Alza 5 5/8 04	cv 75	120 1/4	- 1 1/2	...
Alza zr 14	...	5	50	- 4 1/2
Amresco 8 3/8 99	9.0	95	97	+ 1/2
Amresco 10 5/8 03	12.2	65	82	+ 3
Amresco 10 5/8 04	11.8	222	84 7/8	+ 12
Anhr 8 1/8 16	8.3	6	103 1/2	+ 1
AnnTavlr 8 3/4 00	8.7	30	101 1/8	+ 3/8
Argosy 12 5/8 01	cv 30	30	93 1/4	...
Argosy 12 1/4 04	12.7	28	104 1/4	+ 1/4
BkrHigh zr 08	...	12	64	+ 3/8
BellPa 7 1/8 12	7.1	11	101	...
BellPa 7 1/8 13	7.4	10	101 7/8	...
BellTel 6 1/4 03	6.0	15	104 3/8	+ 3/8
BellTel 8 1/4 32	7.3	16	112 3/8	- 3/8
BellTel 7 1/2 33	6.9	5	108 3/8	+ 1/8
BellTel 6 3/4 33	6.6	143	102 3/8	+ 1/8
BSBuy 8 3/8 00	8.4	50	102 1/2	+ 5/32
BethSt 8 3/8 01	8.4	15	99 7/8	- 1/8
BethSt 8 4 5/8 05	8.5	30	99 7/8	- 1/8
Beverly 9 5/8 06	9.1	275	99 7/8	- 1/8
Bluegrn 8 1/2 12	cv 10	104
Burdin 8 1/8 16	8.4	25	100 1/8	- 1 1/8
BosCelts 6 5/8 38	10.2	104	58 7/8	+ 3/8
CalEgy 10 1/4 04	9.7	10	105 1/2	- 1/4
Caterpinc 9 5/8 00	8.9	10	105 1/2	- 3/4
Caterpinc 8 5/8 23	7.0	5	114	+ 7 3/8
ChaseM 8 5/8 04	7.8	30	102	- 1/8
ChaseM 7 3/4 04	7.7	20	102 1/4	+ 1/4
ChaseM 6 3/8 08	6.1	10	100 3/8	- 1 1/8
CPolM 7 1/2 12	7.2	16	104 3/4	- 1/2
CPoV 7 1/2 12	7.2	4	100 7/8	- 1/2
ChespKc 9 1/8 06	10.1	10	90 3/8	- 2 1/8
ChckFul 7 5/12	cv 25	94 3/4	+ 5/8	...
Clardge 11 1/4 02f	...	23	80	...
Coeur 6 3/4 04	cv 21	66
CmclFid 7 9/8 06	8.0	20	100	- 1/2
CmwE 8 5/8 03	7.9	1	101 1/8	...
CmwE 7 5/8 03J	7.6	4	101	+ 1/4
CompUSA 9 1/2 00	9.4	24	101 1/2	+ 1/4
CompMgt 8 5/8 03	cv 80	23	- 1	...
CompMgt 9 5/8 03	cv 16	24 1/2	+ 5 1/4	...
CnNG 8 1/8 11	8.4	10	102 1/2	+ 1/4
ConPort 10 5/8 06	17.2	121	58	+ 3
Convrse 7 5/8 04	cv 40	46 3/8	- 1 1/4	...
Dole 7 5/8 03	6.8	41	103 1/8	- 1/4
DukeEn 7 5/8 05	6.7	50	104 3/8	- 3/8
DukeEn 7 3/4 23	7.2	25	103 1/8	+ 1
DukeEn 6 3/4 23	6.7	10	102	+ 3/8
DukeEn 6 1/2 25	6.7	30	100 7/8	+ 3/8
DukeEn 7 3/8 33	6.9	3	101 3/8	...
Florsch 12 1/2 02	12.3	9	104	- 1/8
GBCB 8 3/8 07	8.4	45	100 1/4	- 1/8
Gannett 5 8 5/8 00	5.8	10	100	- 5/8
GMA 9 5/8 00	9.1	10	105 1/2	- 1 1/8
GMA 6 3/8 01	6.7	50	103 1/8	+ 1 1/2
GMA 7 5/8 02	6.7	100	103 3/4	+ 3/8
GMA 6 3/8 02	6.4	74	103 3/8	+ 1/2
GMA zr 12	...	13	383 1/4	+ 3/8
GMA zr 15	...	95	327 3/8	+ 1 1/8
GasPw 6 1/2 02	6.8	20	100 3/4	+ 3/8
HRFT 7 1/2 03	cv 10	100	- 1	...
Hills 12 1/2 03	30.5	314	41	- 7/8
Hilton 5 5/8 06	cv 76	89	+ 1/8	...
Hollnrg 8 5/8 05	8.4	27	103	+ 2
Hollnrg 9 1/4 07	9.1	35	102	...
HomeDpt 3 1/4 01	cv 1	177	- 3 1/4	...
IRT Pr 7 3/8 03	cv 5	93 3/4	- 1 1/4	...
ITT 8 1/2 03	8.5	5	104 3/8	+ 1/2
IBM 6 3/8 00	6.3	25	101 3/4	...
IBM 7 1/2 02	6.8	10	106 3/4	+ 1/4

Bonds	Cur Yld.	Vol.	Close	Net Chg.
IBM 8 3/8 19	7.0	20	120 1/8	- 1 1/8
IBM 7 5/8 25	6.4	3	109 1/4	...
IBM 6 1/2 28	6.3	2	103 1/8	...
IPap dc 5 1/2 12	5.9	5	86 1/2	+ 1/2
JCPL 7 1/4 04	6.9	10	102 3/8	+ 1/4
KaufB 9 3/8 03	9.2	40	101 1/2	+ 1/4
KaufB 9 5/8 06	9.2	25	104 3/4	+ 1/4
KentE 4 1/2 04	cv 46	74	+ 2	...
LehmnBr 8 3/4 02	8.5	6	103 1/8	...
LibPrp 8 5/8 01	cv 25	116	+ 7 7/8	...
Loews 3 1/8 07	cv 260	78 1/2	+ 1/4	...
LouN 3 3/8 03F	3.8	2	88	...
MDC Hid 8 3/8 08	8.7	2	96	- 1/2
Malan 9 1/2 04	cv 28	100	+ 1	...
Maro 7 5/8 02	6.9	8	101 1/8	+ 3/4
Mascotch 03	cv 25	84	+ 1	...
McDnl 7 3/8 02	7.3	5	101 1/8	...
MichB 7 3/4 11	7.6	13	101 1/8	- 3/8
MPAC 5 5/4 5f	...	10	62	- 1/2
Mofria zr 13	...	13	69 1/4	- 1/2
NSH 8 3/8 06	8.6	25	98	+ 1/2
Natnsbk 8 1/2 07	7.6	5	112 1/2	+ 1/8
NETTel 4 5/8 99	4.7	5	99 1/8	+ 1/4
NETTel 8 1/8 01	7.8	10	110 3/4	+ 3 1/2
NETTel 7 3/8 07	7.3	35	101	...
NETTel 6 3/8 08	6.4	15	100 1/8	- 3/8
NYTel 4 1/2 00	4.3	5	97 1/2	+ 1/8
NYTel 7 5/8 25	6.8	5	103 3/8	+ 3/4
NYTel 7 5/8 33	6.8	31	102 7/8	...
Novacr 5 1/2 2000	cv 881	89 1/4	- 4 1/4	...
Occip 10 1/8 09	8.1	7	124 1/2	- 1 7/8
Occip 11 1/8 19	10.3	32	108 1/4	...
OffDep zr 08	...	11	63 1/4	...
OhBIT 7 1/8 13	7.7	3	102 1/8	- 1/4
OreSt 11 5/8 03	10.7	55	103 1/8	+ 1
Oryx 7 1/2 14	cv 75	93 1/4	- 1 3/4	...
PacBell 6 1/4 05	6.0	37	104 1/4	- 1/8
PacBell 6 3/4 23	6.7	22	102 1/4	+ 3/8
PacBell 7 1/2 33	7.1	28	105 1/8	+ 1/4
PacBell 6 3/4 34	6.7	6	99 3/8	+ 1/8
ParkEic 5 1/2 06	cv 22	74	- 1/2	...
ParkerD 5 1/2 04	cv 137	75	- 1/2	...
PennTr 9 5/8 05	58.8	30	16 3/8	+ 1/8
Pennzl 4 1/2 04	...	10	132	- 5
Pennzl 4 9/8 08	cv 17	100	+ 2	...
PhilEl 7 5/8 01	7.2	20	102 1/2	+ 1 3/8
PhilEl 6 3/4 03	6.4	25	99 7/8	+ 1 1/2
PhilEl 7 3/4 23	7.5	22	103 1/2	+ 1/4
PhilEl 7 1/2 24	7.2	1	101 3/8	+ 1/8
PHILP 7 1/2 28	7.1	20	100	- 3/4
PotEl 5 5/8 02	cv 4	95 1/2	- 1/8	...
Pride 6 1/4 06	cv 10	94	- 1 1/2	...
PrmHsp 9 1/4 06	9.2	30	101	+ 3
PSEG 6 5/8 00	6.0	10	100 3/4	+ 1/8
PSEG 6 1/2 04	6.3	2	104	+ 2
PSEG 6 1/2 24	6.8	25	102 3/8	- 1/2
Quamx 6 8 5/8 07	cv 9	90 1/2	+ 1 1/2	...
RJR Nb 7 5/8 03	7.6	125	100 3/4	- 1 1/8
RJR Nb 9 1/4 13	8.9	210	104	+ 1/8
RJR Nb 8 3/4 04	8.5	60	102 3/8	+ 1/8
Rafly 9 7/8 00	11.9	35	83	+ 1
RalsP 8 1/2 23	7.5	21	109	- 3
RelGrp 9 5/8 00	8.7	140	103 3/8	+ 1/8
RelGrp 9 3/4 03	9.4	245	103 1/4	- 1/2
Revl 9 1/2 99	9.5	30	100 1/2	- 1/8
RobMyr 63	cv 105	100

EXPLANATORY NOTES
(For New York and American Bonds)
Yield is Current yield.
cv-convertible bond, cf-Certificates.
cd-Called, dc-Deep discount, ec-Euro-
pean currency units, f-Dealt in flat.
il-Italian lire, kd-Danish kroner, m-Ma-
tured bonds, negotiability impaired by
maturity, na-No accrual, r-Registered.
rp-Reduced principal, st, sd-Stamped.
f-Floating rate, wd-When distributed.
ww-With warrants, x-Ex interest.
xw-Without warrants, zr-Zero coupon.
vi-in bankruptcy or receivership or
being reorganized under the Bankruptcy
Act, or securities assumed by such
companies.

Bonds	Cur Yld.	Vol.	Close	Net Chg.
Safwy 9.35 99	9.2	50	101 1/4	+ 1 1/2
Safwy 9 7/8 07	8.4	50	118	+ 3/4
Sears 9 1/2 99	9.3	25	102 1/4	+ 3/8
Sequa 9 5/8 99	9.5	1	101 1/2	- 3/4
SvcMer 9 5/8 04	15.0	149	60 1/8	...
SPacFd 6 1/2 06	cv 12	25 1/8	+ 4 7/8	...
StdCml 07	cv 97	73 1/2
StoneCn 11 1/2 98	11.9	340	99 1/2	+ 1 1/2
StoneCn 11 5/8 99	11.1	310	99 1/2	- 3/32
StoneC 9 1/8 01	10.5	996	93 7/8	- 3/4
StoneC 10 1/2 02A	11.8	711	90 7/8	- 1
StoneC 10 1/2 02O	10.7	50	100 1/4	+ 1/4
StoneC 11 1/2 04	11.9	343	97	- 3/8
StoneCn 6 1/4 07	cv 41	72 7/8	+ 5/8	...
TVA 6 1/8 03	6.0	53	101 3/8	- 1/8
TVA 8.05 24	7.9	63	101 3/8	...
TVA 8 3/8 29	8.0	56	108 1/2	...
TVA 8 1/4 34	8.1	62	101 7/8	- 3/8
TVA 7 1/4 43	6.9	50	104 1/8	- 1/4
TVA 6 1/2 43	6.7	3	103 1/4	- 1/4
Texco 9 5/8 9D	8.7	5	103 3/8	...
Texti 8 1/2 99f	...	3	60 1/2	+ 1 1/2
TmeWar 7.95 00				