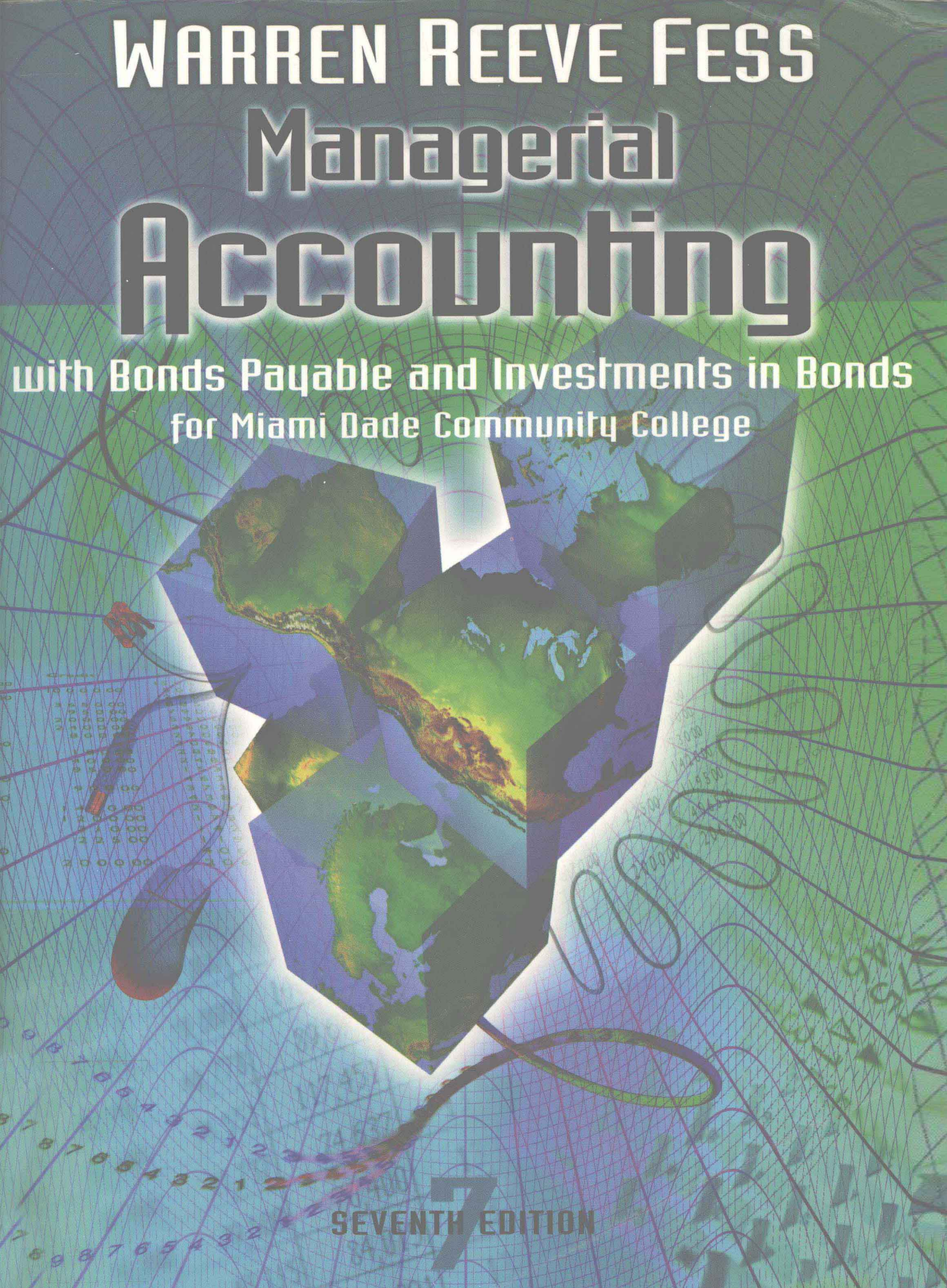
Warren Reeve Fess

Managerial Accounting

with Bonds Payable and Investments in Bonds

for Miami Dade Community College



SEVENTH EDITION

Managerial Accounting with Bonds Payable and Investments in Bonds

for Miami Dade Community College

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Bonds Payable and Investments in Bonds

objectives

After studying this chapter, you should be able to:

1. Compute the potential impact of long-term borrowing on the earnings per share of a corporation.
2. Describe the characteristics of bonds.
3. Compute the present value of bonds payable.
4. Journalize entries for bonds payable.
5. Describe bond sinking funds.
6. Journalize entries for bond redemptions.
7. Journalize entries for the purchase, interest, discount and premium amortization, and sale of bond investments.
8. Prepare a corporation balance sheet.
9. Compute and interpret the number of times interest charges are earned.

Setting the Stage

You have just inherited $50,000 from a distant relative, and you are considering some options for investing the money. Some of your friends have suggested that you invest it in long-term bonds. As a result, you have scanned *The Wall Street Journal's* November 16, 2000 listing of New York Exchange Bonds. You've identified the following two listings as possible bond investments:

- AT&T (American Telephone & Telegraph) 7¾% Bonds, maturing in 2007
- HewlPkd (Hewlett-Packard) Zero, maturing in 2017

The AT&T bonds are selling for 100½, while the Hewlett-Packard bonds are selling for only 55. The AT&T bonds are selling for over one and one-half times the price of the Hewlett-Packard bonds. Does this mean that the Hewlett-Packard bonds are a better buy? Does the 7¾% mean that if you buy the AT&T bonds you can actually earn 7¾% interest? What does the "zero" mean? Does it have anything to do with the fact that the Hewlett-Packard bonds are selling for only 55?

In this chapter, we will answer each of these questions. We first discuss the advantages and disadvantages of financing a corporation's operations by issuing debt rather than equity. We then discuss the accounting principles related to issuing long-term debt. Finally, we discuss the accounting for investments in bonds.

Financing Corporations

objective 1

Compute the potential impact of long-term borrowing on the earnings per share of a corporation.

Most of you have financed (purchased on credit) an automobile, a home, or a computer. Similarly, corporations often finance their operations by purchasing on credit and issuing notes or bonds. We have discussed accounts payable and notes payable in earlier chapters. A **bond** is simply a form of an interest-bearing note. Like a note, a bond requires periodic interest payments, and the face amount must be repaid at the maturity date. Bondholders are creditors of the issuing corporation, and their claims on the assets of the corporation rank ahead of stockholders.

One of the many factors that influence the decision to issue debt or equity is the effect of each alternative on earnings per share. To illustrate the possible effects, assume that a corporation's board of directors is considering the following alternative plans for financing a $4,000,000 company:

Plan 1: 100% financing from issuing common stock, $10 par

Plan 2: 50% financing from issuing preferred 9% stock, $50 par
50% financing from issuing common stock, $10 par

Plan 3: 50% financing from issuing 12% bonds
25% financing from issuing preferred 9% stock, $50 par
25% financing from issuing common stock, $10 par

Point of Interest

Bonds of major corporations are actively traded on bond exchanges. You can purchase bonds through a financial services firm, such as **Merrill Lynch** or **A. G. Edwards & Sons.**

In each case, we assume that the stocks or bonds are issued at their par or face amount. The corporation is expecting to earn $800,000 annually, before deducting interest on the bonds and income taxes estimated at 40% of income. Exhibit 1 shows the effect of the three plans on the income of the corporation and the earnings per share on common stock.

Exhibit 1 indicates that Plan 3 yields the highest earnings per share on common stock and is thus the most attractive for common stockholders. If the estimated earnings are more than $800,000, the difference between the earnings per share to com-

Exhibit 1 Effect of Alternative Financing Plans—$800,000 Earnings

	Plan 1	Plan 2	Plan 3
12% bonds	—	—	$2,000,000
Preferred 9% stock, $50 par	—	$2,000,000	1,000,000
Common stock, $10 par	$4,000,000	2,000,000	1,000,000
Total	$4,000,000	$4,000,000	$4,000,000
Earnings before interest and income tax	$ 800,000	$ 800,000	$ 800,000
Deduct interest on bonds	—	—	240,000
Income before income tax	$ 800,000	$ 800,000	$ 560,000
Deduct income tax	320,000	320,000	224,000
Net income	$ 480,000	$ 480,000	$ 336,000
Dividends on preferred stock	—	180,000	90,000
Available for dividends on common stock	$ 480,000	$ 300,000	$ 246,000
Shares of common stock outstanding	÷ 400,000	÷ 200,000	÷ 100,000
Earnings per share on common stock	$ 1.20	$ 1.50	$ 2.46

mon stockholders under Plan 1 and Plan 3 is even greater.[1] However, if smaller earnings occur, Plans 2 and 3 become less attractive to common stockholders. To illustrate, the effect of earnings of $440,000 rather than $800,000 is shown in Exhibit 2.

Exhibit 2 Effect of Alternative Financing Plans—$440,000 Earnings

	Plan 1	Plan 2	Plan 3
12% bonds	—	—	$2,000,000
Preferred 9% stock, $50 par	—	$2,000,000	1,000,000
Common stock, $10 par	$4,000,000	2,000,000	1,000,000
Total	$4,000,000	$4,000,000	$4,000,000
Earnings before interest and income tax	$ 440,000	$ 440,000	$ 440,000
Deduct interest on bonds	—	—	240,000
Income before income tax	$ 440,000	$ 440,000	$ 200,000
Deduct income tax	176,000	176,000	80,000
Net income	$ 264,000	$ 264,000	$ 120,000
Dividends on preferred stock	—	180,000	90,000
Available for dividends on common stock	$ 264,000	$ 84,000	$ 30,000
Shares of common stock outstanding	÷ 400,000	÷ 200,000	÷ 100,000
Earnings per share on common stock	$ 0.66	$ 0.42	$ 0.30

When interest rates are low, corporations usually finance their operations with debt. For example, as interest rates fell in the early 1990s, corporations rushed to issue new debt. In one day alone, more than $4.5 billion of debt was issued.

In addition to the effect on earnings per share, the board of directors should consider other factors in deciding whether to issue debt or equity. For example, once bonds are issued, periodic interest payments and repayment of the face value of the bonds are beyond the control of the corporation. That is, if these payments are not made, the bondholders could seek court action and could force the company into bankruptcy. In contrast, a corporation is not legally obligated to pay dividends.

[1] The higher earnings per share under Plan 1 is due to a finance concept known as **leverage**. This concept is discussed further in a later chapter.

Characteristics of Bonds Payable

objective 2

Describe the characteristics of bonds.

A corporation that issues bonds enters into a contract, called a **bond indenture** or **trust indenture**, with the bondholders. A bond issue is normally divided into a number of individual bonds. Usually, the face value of each bond, called the **principal**, is $1,000 or a multiple of $1,000. The interest on bonds may be payable annually, semiannually, or quarterly. Most bonds pay interest semiannually.

The prices of bonds are quoted as a percentage of the bonds' face value. Thus, investors could purchase or sell **TimeWarner** bonds quoted at 109⅞ for $1,098.75. Likewise, bonds quoted at 109 could be purchased or sold for $1,090.

When all bonds of an issue mature at the same time, they are called **term bonds**. If the maturities are spread over several dates, they are called **serial bonds**. For example, one-tenth of an issue of $1,000,000 bonds, or $100,000, may mature 16 years from the issue date, another $100,000 in the 17th year, and so on until the final $100,000 matures in the 25th year.

Bonds that may be exchanged for other securities, such as common stock, are called **convertible bonds**. Bonds that a corporation reserves the right to redeem before their maturity are called **callable bonds**. Bonds issued on the basis of the general credit of the corporation are called **debenture bonds**.

AT&T 7½% bonds maturing in 2006 were listed as selling for 100½ on September 7, 2000.

BUSINESS ON STAGE

Bond Ratings

Bonds are rated as to their riskiness as investments by such independent financial reporting services as **Moody's (www.moodys.com)** and **Standard and Poor's (www.standardandpoors.com)**. These services rely heavily on analysis of the financial statements and the terms of the bond indenture in setting the credit rating. This credit rating, in turn, influences how much the bonds will sell for in the marketplace. Moody's and Standard and Poor's rate bonds slightly differently. The following table shows all but the lowest ratings and their accompanying interpretation.

Moody's Rating	Standard and Poor's Rating	Interpretation
AAA	Aaa	Highest rating; ability to pay interest and principal is very secure.
AA	Aa	High quality; differs from highest-rated bonds only to a small degree.
A	A	Upper-medium quality; interest and principal may be in jeopardy if a long, deep economic downturn (recession) occurs.
BBB	Baa	Medium grade; adequate ability to pay interest and principal in normal economic conditions.
BB	Ba	Quite risky; modest ability to pay interest and principal.
B	B	Poor investment; highly speculative; ability to pay interest and principal over a long period is small.

Moody's will use a "+" sign or "−" sign to indicate the relative strength of a bond within a general rating category. For example, AAA+ indicates that a bond is at the high end of the AAA category.

Instead of using a "+" or "−" sign to indicate relative strength within a rating category, Standard & Poor's uses 1, 2, and 3. For example, Aaa1 indicates that a bond is in the upper third of the Aaa category, while Aaa3 indicates that a bond is in the bottom third. ■

The Present-Value Concept and Bonds Payable

objective 3

Compute the present value of bonds payable.

When a corporation issues bonds, the price that buyers are willing to pay for the bonds depends upon the following three factors:

1. The face amount of the bonds, which is the amount due at the maturity date.
2. The periodic interest to be paid on the bonds.
3. The market rate of interest.

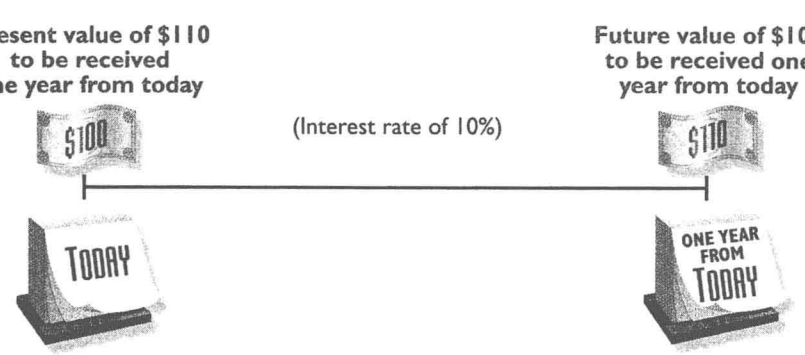
The face amount and the periodic interest to be paid on the bonds are identified in the bond indenture. The periodic interest is expressed as a percentage of the face amount of the bond. This percentage or rate of interest is called the contract rate or **coupon rate**.

The **market** or effective rate of interest is determined by transactions between buyers and sellers of similar bonds. The market rate of interest is affected by a variety of factors, including investors' assessment of current economic conditions as well as future expectations.

If the contract rate of interest equals the market rate of interest, the bonds will sell at their face amount. If the market rate is higher than the contract rate, the bonds will sell at a **discount**, or less than their face amount. Why is this the case? Buyers are not willing to pay the face amount for bonds whose contract rate is lower than the market rate. The discount, in effect, represents the amount necessary to make up for the difference in the market and the contract interest rates. In contrast, if the market rate is lower than the contract rate, the bonds will sell at a **premium**, or more than their face amount. In this case, buyers are willing to pay more than the face amount for bonds whose contract rate is higher than the market rate.

The face amount of the bonds and the periodic interest on the bonds represent cash to be received by the buyer in the future. The buyer determines how much to pay for the bonds by computing the present value of these future cash receipts, using the market rate of interest. The concept of present value is based on the time value of money.

The time value of money concept recognizes that an amount of cash to be received today is worth more than the same amount of cash to be received in the future. For example, what would you rather have: $100 today or $100 one year from now? You would rather have the $100 today because it could be invested to earn income. For example, if the $100 could be invested to earn 10% per year, the $100 will accumulate to $110 ($100 plus $10 earnings) in one year. In this sense, you can think of the $100 in hand today as the **present value** of $110 to be received a year from today. This present value is illustrated in the following time line:



If IBM 7¼% bonds maturing in 2005 are listed as selling for 104⅜, is the market rate of interest higher or lower than that for similar bonds?

Lower

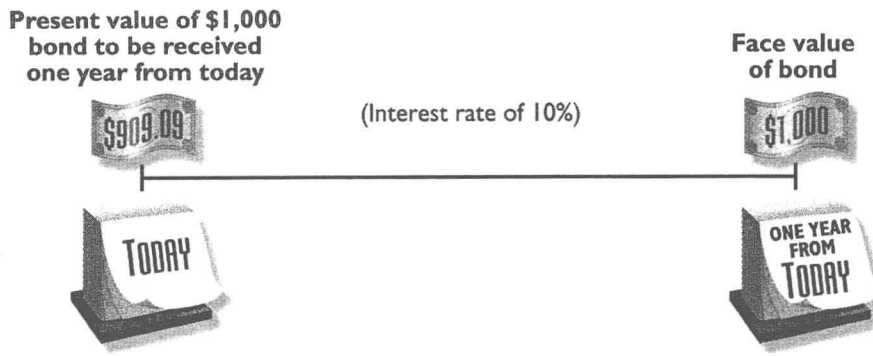
A related concept to present value is **future value**. In the preceding illustration, the $110 to be received a year from today is the future value of $100 today, assuming an interest rate of 10%.

What is the future value of $100 to be received in two years, assuming an interest rate of 10%?

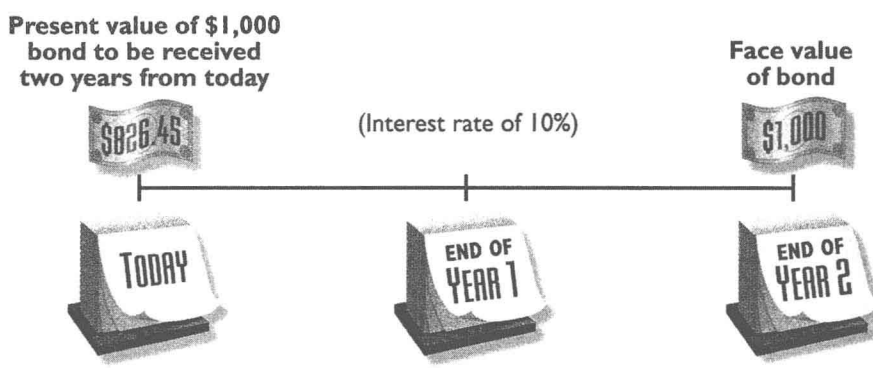
$121 ($100 × 1.10 × 1.10)

Present Value of the Face Amount of Bonds

The present value of the face amount of bonds is the value today of the amount to be received at a future maturity date. For example, assume that you are to receive the face value of a $1,000 bond in one year. If the market rate of interest is 10%, the present value of the face value of the $1,000 bond is $909.09 ($1,000/1.10). This present value is illustrated in the following time line:



If you are to receive the face value of a $1,000 bond in two years, with interest of 10% compounded at the end of the first year, the present value is $826.45 ($909.09/1.10).[2] We illustrate this present value in the following time line:



What is the present value of $1,000 to be received in three years, assuming an interest rate of 10%?

$751.32 ($826.45/1.10)

Point of Interest Spreadsheet software with built-in present value functions can be used to calculate present values.

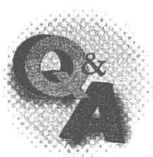
You can determine the present value of the face amount of bonds to be received in the future by a time line and a series of divisions. In practice, however, it is easier to use a table of present values. The *present value of $1 table* can be used to find the present-value factor for $1 to be received after a number of periods in the future. The face amount of the bonds is then multiplied by this factor to determine its present value. Exhibit 3 is a partial table of the present value of $1.[3]

[2] Note that the future value of $826.45 in two years, at an interest rate of 10% compounded annually, is $1,000.

[3] To simplify the illustrations and homework assignments, the tables presented in this chapter are limited to 10 periods for a small number of interest rates, and the amounts are carried to only five decimal places. Computer programs are available for determining present value factors for any number of interest rates, decimal places, or periods. More complete interest tables, including future value tables, are presented in Appendix A.

Exhibit 3 Present Value of $1 at Compound Interest

Periods	5%	5½%	6%	6½%	7%	10%	11%	12%	13%	14%
1	0.95238	0.94787	0.94340	0.93897	0.93458	0.90909	0.90090	0.89286	0.88496	0.87719
2	0.90703	0.89845	0.89000	0.88166	0.87344	0.82645	0.81162	0.79719	0.78315	0.76947
3	0.86384	0.85161	0.83962	0.82785	0.81630	0.75132	0.73119	0.71178	0.69305	0.67497
4	0.82270	0.80722	0.79209	0.77732	0.76290	0.68301	0.65873	0.63552	0.61332	0.59208
5	0.78353	0.76513	0.74726	0.72988	0.71299	0.62092	0.59345	0.56743	0.54276	0.51937
6	0.74622	0.72525	0.70496	0.68533	0.66634	0.56447	0.53464	0.50663	0.48032	0.45559
7	0.71068	0.68744	0.66506	0.64351	0.62275	0.51316	0.48166	0.45235	0.42506	0.39964
8	0.67684	0.65160	0.62741	0.60423	0.58201	0.46651	0.43393	0.40388	0.37616	0.35056
9	0.64461	0.61763	0.59190	0.56735	0.54393	0.42410	0.39092	0.36061	0.33288	0.30751
10	0.61391	0.58543	0.55840	0.53273	0.50835	0.38554	0.35218	0.32197	0.29459	0.26974



What is the present value of $3,000 to be received in 5 years at a market rate of interest of 14% compounded annually?

$1,558.11 ($3,000 × 0.51937)

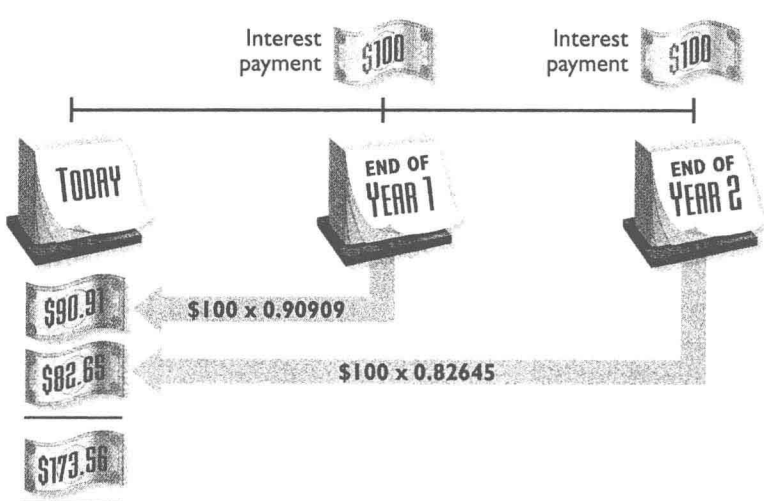
Exhibit 3 indicates that the present value of $1 to be received in two years with a market rate of interest of 10% a year is 0.82645. Multiplying the $1,000 face amount of the bond in the preceding example by 0.82645 yields $826.45.

In Exhibit 3, the Periods column represents the number of compounding periods, and the percentage columns represent the compound interest rate per period. For example, 10% for two years compounded *annually*, as in the preceding example, is 10% for two periods. Likewise, 10% for two years compounded *semiannually* would be 5% (10% per year/2 semiannual periods) for four periods (2 years × 2 semiannual periods). Similarly, 10% for three years compounded semiannually would be 5% (10%/2) for six periods (3 years × 2 semiannual periods).

Present Value of the Periodic Bond Interest Payments

The present value of the periodic bond interest payments is the value today of the amount of interest to be received at the end of each interest period. Such a series of equal cash payments at fixed intervals is called an **annuity**.

The **present value of an annuity** is the sum of the present values of each cash flow. To illustrate, assume that the $1,000 bond in the preceding example pays interest of 10% annually and that the market rate of interest is also 10%. In addition, assume that the bond matures at the end of two years. The present value of the two interest payments of $100 ($1,000 × 10%) is $173.56, as shown in the time line at the left. It can be determined by using the present value table shown in Exhibit 3.



Present value of $100 interest payments to be received each year for 2 years (rounded to the nearest cent)

Instead of using present value of amount tables, such as Exhibit 3, separate present value tables are normally used for annuities. Exhibit 4 is a partial table of the *present value of an annuity of $1* at compound interest. It shows the present value of $1 to be received at the end of each period for various compound rates of interest. For example, the present

value of $100 to be received at the end of each of the next two years at 10% compound interest per period is $173.55 ($100 × 1.73554). This amount is the same amount that we computed previously, except for rounding.

Exhibit 4 Present Value of Annuity of $1 at Compound Interest

Periods	5%	5½%	6%	6½%	7%	10%	11%	12%	13%	14%
1	0.95238	0.94787	0.94340	0.93897	0.93458	0.90909	0.90090	0.89286	0.88496	0.87719
2	1.85941	1.84632	1.83339	1.82063	1.80802	1.73554	1.71252	1.69005	1.66810	1.64666
3	2.72325	2.69793	2.67301	2.64848	2.62432	2.48685	2.44371	2.40183	2.36115	2.32163
4	3.54595	3.50515	3.46511	3.42580	3.38721	3.16987	3.10245	3.03735	2.97447	2.91371
5	4.32948	4.27028	4.21236	4.15568	4.10020	3.79079	3.69590	3.60478	3.51723	3.43308
6	5.07569	4.99553	4.91732	4.84101	4.76654	4.35526	4.23054	4.11141	3.99755	3.88867
7	5.78637	5.68297	5.58238	5.48452	5.38929	4.86842	4.71220	4.56376	4.42261	4.28830
8	6.46321	6.33457	6.20979	6.08875	5.97130	5.33493	5.14612	4.96764	4.79677	4.63886
9	7.10782	6.95220	6.80169	6.65610	6.51523	5.75902	5.53705	5.32825	5.13166	4.94637
10	7.72174	7.53763	7.36009	7.18883	7.02358	6.14457	5.88923	5.65022	5.42624	5.21612

What is the present sent value of a $10,000, 7%, 5-year bond that pays interest annually, assuming a market rate of interest of 7%?

$10,000 [($10,000 × 0.71299) + ($700 × 4.10020)]

As we stated earlier, the amount buyers are willing to pay for a bond is the sum of the present value of the face value and the periodic interest payments, calculated by using the market rate of interest. In our example, this calculation is as follows:

Present value of face value of $1,000 due in 2 years at 10% compounded annually: $1,000 × 0.82645 (present value factor of $1 for 2 periods at 10%)	$ 826.45
Present value of 2 annual interest payments of $100 at 10% compounded annually: $100 × 1.73554 (present value of annuity of $1 for 2 periods at 10%)	173.55
Total present value of bonds	$1,000.00

In this example, the market rate and the contract rate of interest are the same. Thus, the present value is the same as the face value.

Accounting for Bonds Payable

objective 4

Journalize entries for bonds payable.

In the preceding section, we described and illustrated how present value concepts are used in determining how much buyers are willing to pay for bonds. In this section, we describe and illustrate how corporations record the issuance of bonds and the payment of bond interest.

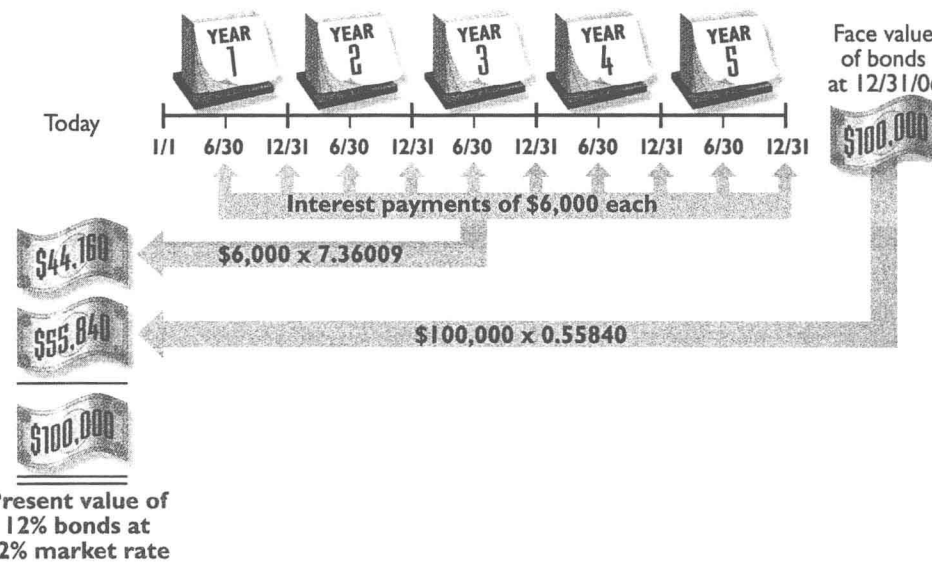
Bonds Issued at Face Amount

To illustrate the journal entries for issuing bonds, assume that on January 1, 2002, a corporation issues for cash $100,000 of 12%, five-year bonds, with interest of $6,000 payable *semiannually*. The market rate of interest at the time the bonds are issued is 12%. Since the contract rate and the market rate of interest are the same, the bonds will sell at their face amount. This amount is the sum of (1) the present value

of the face amount of $100,000 to be repaid in five years and (2) the present value of ten *semiannual* interest payments of $6,000 each. This computation and a time line are shown below.

Present value of face amount of $100,000 due in 5 years, at 12% compounded semiannually: $100,000 × 0.55840 (present value of $1 for 10 periods at 6%)	$ 55,840
Present value of 10 semiannual interest payments of $6,000, at 12% compounded semiannually: $6,000 × 7.36009 (present value of annuity of $1 for 10 periods at 6%)	44,160*
Total present value of bonds	$100,000

*Because the present-value tables are rounded to five decimal places, minor rounding differences may appear in the illustrations.



The following entry records the issuing of the $100,000 bonds at their face amount:

2002 Jan.	1	Cash		100 0 0 0 0 00	
		Bonds Payable			100 0 0 0 0 00
		Issued $100,000 bonds payable at face amount.			

Every six months after the bonds have been issued, interest payments of $6,000 are made. The first interest payment is recorded as shown below.

June	30	Interest Expense		6 0 0 0 0 00	
		Cash			6 0 0 0 0 00
		Paid six months' interest on bonds.			

At the maturity date, the payment of the principal of $100,000 is recorded as follows:

2006 Dec.	31	Bonds Payable	100,000 00	
		Cash		100,000 00
		Paid bond principal at maturity date.		

Bonds Issued at a Discount

What if the market rate of interest is higher than the contract rate of interest? If the market rate of interest is 13% and the contract rate is 12% on the five-year, $100,000 bonds, the bonds will sell at a discount. The present value of these bonds is calculated as follows:

Bonds will sell at a discount when the market rate of interest is higher than the contract rate.

Present value of face amount of $100,000 due in 5 years, at 13% compounded semiannually: $100,000 × 0.53273 (present value of $1 for 10 periods at 6½%)	$53,273
Present value of 10 semiannual interest payments of $6,000, at 13% compounded semiannually: $6,000 × 7.18883 (present value of an annuity of $1 for 10 periods at 6½%)	43,133
Total present value of bonds	$96,406

Q&A: What is the present value of a $100,000, 6%, 5-year bond paying semiannual interest if the market rate of interest is 10%?

$84,556 [($100,000 × 0.61391) + ($3,000 × 7.72174)]

The two present values that make up the total are both less than the related amounts in the preceding example. This is because the market rate of interest was 12% in the first example, while the market rate of interest is 13% in this example. The present value of a future amount becomes less and less as the interest rate used to compute the present value increases.

The entry to record the issuing of the $100,000 bonds at a discount is shown below.

2002 Jan.	1	Cash	96,406 00	
		Discount on Bonds Payable	3,594 00	
		Bonds Payable		100,000 00
		Issued $100,000 bonds at discount.		

The $3,594 discount may be viewed as the amount that is needed to entice investors to accept a contract rate of interest that is below the market rate. You may think of the discount as the market's way of adjusting a bond's contract rate of interest to the higher market rate of interest. Using this logic, generally accepted accounting principles require that bond discounts be amortized as interest expense over the life of the bond.

Amortizing a Bond Discount

There are two methods of amortizing a bond discount: (1) the **straight-line method** and (2) the **effective interest rate method**, often called the **interest method**. Both methods amortize the same total amount of discount over the life of the bonds. The interest method is required by generally accepted accounting principles. However, the straight-line method is acceptable if the results obtained do not materially differ from the results that would be obtained by using the interest method. Because the straight-line method illustrates the basic concept of amortizing discounts and is simpler, we will use it in this chapter. We illustrate the interest method in an appendix to this chapter.

If the amount of a bond discount on a newly issued 6%, 5-year, $100,000 bond is $28,092, what are (a) the semiannual straight-line amortization of the discount and (b) the annual interest expense?

(a) $2,809.20, (b) $11,618.40 ($2,809.20 + $2,809.20 + $6,000)

The straight-line method of amortizing a bond discount provides for amortization in equal periodic amounts. Applying this method to the preceding example yields amortization of 1/10 of $3,594, or $359.40, each half year. The amount of the interest expense on the bonds is the same, $6,359.40 ($6,000 + $359.40) for each half year. The entry to record the first interest payment and the amortization of the related discount is shown below.

2002 June	30	Interest Expense		6,359.40	
		Discount on Bonds Payable			359.40
		Cash			6,000.00
		Paid semiannual interest and amortized 1/10 of bond discount.			

Bonds Issued at a Premium

If the market rate of interest is 11% and the contract rate is 12% on the five-year, $100,000 bonds, the bonds will sell at a premium. The present value of these bonds is computed as follows:

Bonds will sell at a premium when the market rate of interest is less than the contract rate.

Present value of face amount of $100,000 due in 5 years, at 11% compounded semiannually: $100,000 × 0.58543 (present value of $1 for 10 periods at 5½%)	$ 58,543
Present value of 10 semiannual interest payments of $6,000, at 11% compounded semiannually: $6,000 × 7.53763 (present value of an annuity of $1 for 10 periods at 5½%)	45,226
Total present value of bonds	$103,769

The entry to record the issuing of the bonds is as follows:

2002 Jan.	1	Cash		103,769.00	
		Bonds Payable			100,000.00
		Premium on Bonds Payable			3,769.00
		Issued $100,000 bonds at a premium.			

If the amount of a bond premium on a newly issued 13%, 5-year, $100,000 bond is $11,581, what are (a) the semiannual straight-line amortization of the premium and (b) the annual interest expense?

(a) $1,158.10, (b) $10,683.80 ($13,000 − $1,158.10 − $1,158.10)

Amortizing a Bond Premium

The amortization of bond premiums is basically the same as that for bond discounts, except that interest expense is decreased. In the above example, the straight-line method yields amortization of 1/10 of $3,769, or $376.90, each half year. The entry to record the first interest payment and the amortization of the related premium is as follows:

2002 June	30	Interest Expense		5,623.10	
		Premium on Bonds Payable		376.90	
		Cash			6,000.00
		Paid semiannual interest and amortized 1/10 of bond premium.			

Zero-Coupon Bonds

Some corporations issue bonds that provide for only the payment of the face amount at the maturity date. Such bonds are called **zero-coupon bonds**. Because they do not provide for interest payments, these bonds sell at a large discount. For example, **Hewlett-Packard's** zero-coupon bonds maturing in 2017 were selling for 55 on November 16, 2000.

The issuing price of zero-coupon bonds is the present value of their face amount. To illustrate, if the market rate of interest is 13%, the present value of $100,000 zero-coupon, five-year bonds is calculated as follows:

Some bonds with high contract rates, as well as some zero-coupon bonds, are issued by weak companies. Because such bonds are high-risk bonds, they are called **junk bonds**.

Present value of $100,000 due in 5 years, at 13% compounded semiannually: $100,000 × 0.53273 (present value of $1 for 10 periods at 6½%) $53,273

The accounting for zero-coupon bonds is similar to that for interest-bearing bonds that have been sold at a discount. The discount is amortized as interest expense over the life of the bonds. The entry to record the issuing of the bonds is as follows:

	2002 Jan.	1	Cash				53	2	7	3	00						
			Discount on Bonds Payable				46	7	2	7	00						
			Bonds Payable									100	0	0	0	0	00
			Issued $100,000 zero-coupon bonds.														

Bond Sinking Funds

objective 5

Describe bond sinking funds.

A bond indenture may restrict dividend payments to stockholders as a means of increasing the likelihood that the bonds will be paid at maturity. In addition to or instead of this restriction, the bond indenture may require that funds for the payment of the face value of the bonds at maturity be set aside over the life of the bond issue. The amounts set aside are kept separate from other assets in a special fund called a **sinking fund**.

When cash is transferred to the sinking fund, it is recorded in an account called *Sinking Fund Cash*. When investments are purchased with the sinking fund cash, they are recorded in an account called *Sinking Fund Investments*. As income (interest or dividends) is received, it is recorded in an account called *Sinking Fund Revenue*.

Sinking fund revenue represents earnings of the corporation and is reported in the income statement as Other Income. The cash and the securities making up the sinking fund are reported in the balance sheet as Investments, immediately below the Current Assets section.

Bond Redemption

objective 6

Journalize entries for bond redemptions.

A corporation may call or redeem bonds before they mature. This is often done if the market rate of interest declines significantly after the bonds have been issued. In this situation, the corporation may sell new bonds at a lower interest rate and use the funds to redeem the original bond issue. The corporation can thus save on future interest expenses.

A corporation often issues callable bonds to protect itself against significant declines in future interest rates. However, callable bonds are more risky for investors, who may not be able to replace the called bonds with investments paying an equal amount of interest.

Indo Rayon issued 5-year, 10% bonds, callable after 3 years.

Callable bonds can be redeemed by the issuing corporation within the period of time and at the price stated in the bond indenture. Normally, the call price is above the face value. A corporation may also redeem its bonds by purchasing them on the open market.

A corporation usually redeems its bonds at a price different from that of the carrying amount (or book value) of the bonds. The carrying amount of bonds payable is the balance of the bonds payable account (face amount of the bonds) less any unamortized discount or plus any unamortized premium. If the price paid for redemption is below the bond carrying amount, the difference in these two amounts is recorded as a gain. If the price paid for the redemption is above the carrying amount, a loss is recorded. Gains and losses on the redemption of bonds are reported as an extraordinary item on the income statement.

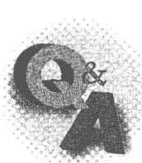
To illustrate, assume that on June 30 a corporation has a bond issue of $100,000 outstanding, on which there is an unamortized premium of $4,000. Assuming that the corporation purchases one-fourth ($25,000) of the bonds for $24,000 on June 30, the entry to record the redemption is as follows:

2002 June	30	Bonds Payable	25 0 0 0 00		
		Premium on Bonds Payable	1 0 0 0 00		
		Cash		24 0 0 0 00	
		Gain on Redemption of Bonds		2 0 0 0 00	
		Redeemed $25,000 bonds for $24,000.			

In the preceding entry, only a portion of the premium relating to the redeemed bonds is written off. The difference between the carrying amount of the bonds purchased, $26,000 ($25,000 + $1,000), and the price paid for the redemption, $24,000, is recorded as a gain.

If the corporation calls the entire bond issue for $105,000 on June 30, the entry to record the redemption is as follows:

2002 June	30	Bonds Payable	100 0 0 0 00		
		Premium on Bonds Payable	4 0 0 0 00		
		Loss on Redemption of Bonds	1 0 0 0 00		
		Cash		105 0 0 0 00	
		Redeemed $100,000 bonds for $105,000.			



A $250,000 bond issue on which there is an unamortized discount of $20,000 is redeemed for $235,000. What is the gain or loss on the redemption of the bonds?

$5,000 loss ($250,000 − $20,000 − $235,000)

Investments in Bonds

objective 7

Journalize entries for the purchase, interest, discount and premium amortization, and sale of bond investments.

Throughout this chapter, we have discussed bonds and the related transactions of the issuing corporation (the debtor). However, these transactions also affect investors. In this section, we discuss the accounting for bonds from the point of view of investors.

Accounting for Bond Investments—Purchase, Interest, and Amortization

Bonds may be purchased either directly from the issuing corporation or through an organized bond exchange. Bond exchanges publish daily bond quotations. These quotations normally include the bond interest rate, maturity date, volume of sales, and the high, low, and closing prices for each corporation's bonds traded during the day. Prices for bonds are quoted as a percentage of the face amount. Thus, the price of a $1,000 bond quoted at 99½ would be $995, while the price of a bond quoted at 104¼ would be $1,042.50.

As with other assets, the cost of a bond investment includes all costs related to the purchase. For example, for bonds purchased through an exchange, the amount paid as a broker's commission should be included as part of the cost of the investment.

When bonds are purchased between interest dates, the buyer normally pays the seller the interest accrued from the last interest payment date to the date of purchase. The amount of the interest paid is normally debited to *Interest Revenue*, since it is an offset against the amount that will be received at the next interest date.

To illustrate, assume that an investor purchases a $1,000 bond at 102 plus a brokerage fee of $5.30 and accrued interest of $10.20. The investor records the transaction as follows:

2002 Apr.	2	Investment in Lewis Co. Bonds		1025 30	
		Interest Revenue		10 20	
		Cash			1035 50

Loews' 3⅛% bonds maturing in 2007 were listed as selling for 92¾ on September 7, 2000.

A premium or discount on a bond investment is recorded in the investment account and is amortized over the remaining life of the bonds.

The cost of the bond is recorded in a single investment account. The face amount of the bond and the premium (or discount) are normally not recorded in separate accounts. This is different from the accounting for bonds payable. Separate premium and discount accounts are usually not used by investors, because they usually do not hold bond investments until the bonds mature.

When bonds held as long-term investments are purchased at a price other than the face amount, the premium or discount should be amortized over the remaining life of the bonds. The amortization of premiums and discounts affects the investment and interest accounts as shown below.

Premium Amortization:			*Discount Amortization:*		
Interest Revenue	XXX		Investment in Bonds	XXX	
Investment in Bonds		XXX	Interest Revenue		XXX

The amount of the amortization can be determined by using either the straight-line or interest methods. Unlike bonds payable, the amortization of premiums and discounts on bond investments is usually recorded at the end of the period, rather than when interest is received.