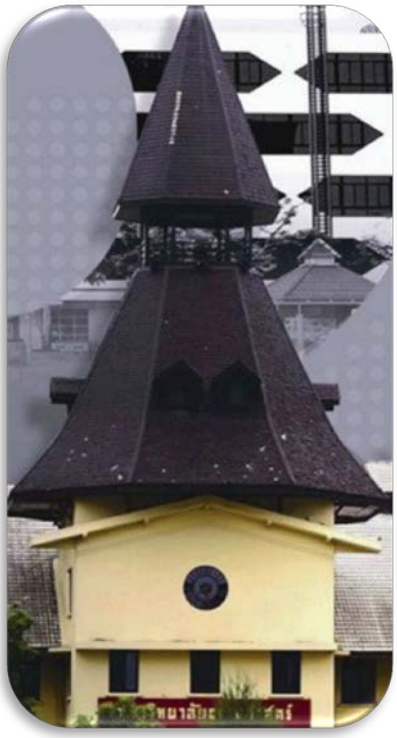
Thammasat University
Faculty of Economics
Bachelor of Economics (International Program)

AC201
Fundamental Accounting

Semester 2/2012



Course Materials

Topic:

Chapter 10 Reporting and Interpreting Bonds

Session:

Session #10

Instructor:

Assistant Professor Dr. Orapan Yolrabil

CHAPTER 10: REPORTING AND INTERPRETING BONDS

CHAPTER SUMMARY

This chapter discusses bonds payable, which represent a primary way for corporations to obtain funds to acquire long-term assets and to expand a business. An important advantage of bonds payable is that the cost of borrowing the funds – interest expense – is deductible on the income statement (and for income tax purposes), which reduces the interest cost to the business.

Bonds may be sold at par amount, a premium, or a discount, depending on the difference between the stated interest rate and the market interest rate. In each case, bonds are recorded at the present value of their future cash flows. The issue price of a bond varies based on the relationship between the market rate and stated rate of interest. If the stated rate is higher than the market rate, the bonds will sell at a premium. Conversely, if the stated rate is lower than the market rate, the bonds will sell at a discount. If the stated rate and the market rate are the same, the bonds will sell at par. Discounts and premiums on bonds payable are adjustments to interest expense for the issuing company during the term of the bonds. Therefore, the discount or premium on bonds payable is amortized over the period outstanding from issue date to maturity date.

CHAPTER OBJECTIVES

LO1 Describe the characteristics of bonds.
LO2 Report bonds payable and interest expense for bonds sold at par and analyze the times interest earned ratio.
LO3 Report bonds payable and interest expense for bonds sold at a discount.
LO4 Report bonds payable and interest expense for bonds sold at a premium.
LO5 Analyze the debt-to-equity ratio.
LO6 Report the early retirement of bonds.
LO7 Explain how financing activities are reported on the statement of cash flows.

CHAPTER OUTLINE

I. UNDERSTANDING BUSINESS

1. The capital structure of a company is a mixture of debt and equity.
2. Corporations frequently raise debt capital by borrowing money through the issuance of bonds.
   a. Bonds are securities issued by corporations as well as government entities.
   b. Because of established markets, a bondholder may sell the bond before its maturity date to another investor via the bond exchange. This provides the bondholder with liquidity since the investment can be sold for cash at any time.

II. LO1 DESCRIBE THE CHARACTERISTICS OF BONDS.

A. Advantages of debt financing

1. Issuing bonds does not dilute ownership and control. Dilution would take place if additional stock were issued instead. Bondholders are not owners in the company and, thus, cannot vote.
2. Interest is tax deductible whereas dividends are not. Net interest cost is interest cost less any income tax savings associated with interest expense.
3. The liquidity of bond investments typically permits corporations to reduce the cost of long-term borrowing. This can give rise to positive financial leverage (borrowing at low rate and investing at a higher rate).

B. Disadvantages of debt financing

1. Required interest payments must be made each interest period. If payments are not made, there is a risk of bankruptcy.
2. The principal (par) of the bond must be paid at the maturity date. This is so even if the corporation has no earnings. On the other hand, dividends to stockholders usually materialize only if the company has earnings (or retained earnings).

C. Characteristics of Bonds Payable

1. There are many different characteristics for various bond issues. Different types of creditors have different risk and return preferences. Companies try to design features of bond issues that are attractive to different groups of investors to make the bonds more marketable.
2. Some key types of bonds are shown below:

Bond Classification		Bond Characteristics	
On the basis of collateral (assets):			
a.	Unsecured bonds (called debentures).	a.	Bonds that do not include a mortgage or pledge of specific assets as a guarantee of repayment at maturity.
b.	Secured bonds (often designated on the basis of the type of asset pledged, such as a real estate mortgage).	b.	Bonds that include the pledge of specific assets as a guarantee of repayment at maturity.
On the basis of early retirement:			
a.	Callable bonds.	a.	Bonds that may be called for early retirement at the option of the issuer.
b.	Convertible bonds.	b.	Bonds that may be converted to other securities of the issuer (usually common stock) at the option of the bondholder.

3. The bond contract is called a bond indenture.
   a. This specifies the legal provisions of the bonds.
   b. May also contain covenants, which place restrictions on the issuing company. Covenants provide reduced risk for the creditors.
4. The investor in a bond receives a bond certificate, which specifies the maturity date, interest rate, interest dates, and other provisions.
5. Other terminology associated with bond issues:
   a. Bond principal (par value, face amount, maturity value) is the amount payable at the maturity date. This amount is used to compute periodic interest payments.
   b. Stated rate is the rate of interest that will be paid on the bond principal. This interest rate is "stated" in the bond. The interest periods are usually annual or semiannual.
   c. A prospectus is a legal document given to potential (prospective) bond investors. It describes the issuing company, the bonds, and how the proceeds of the bonds will be used.
   d. A trustee (an independent party) is often appointed to represent the bondholders. A trustee's duties include ascertaining whether the issuing company fulfills all of the provisions of the bond indenture.

D. Reporting Bond Transactions
1. Corporate bond issues typically provide for two types of cash payments.
   a. The payment (many times a single payment) required when the bond matures is the principal.
   b. Interest payments are usually required over the life of the bond issue annually or semiannually. These payments represent an annuity and are computed by applying the stated interest rate (contract rate or coupon rate) to the principal of the bond.

$$\text{Interest} = \text{Principal} \times \text{Rate} \times \text{Time}$$

2. Bonds may be sold at face value (par value) or at some amount above or below face value.
   a. When a bond's stated interest rate is less than the investors required rate of return (the market interest rate) they will be sold at a discount, an amount that is less than their face value.
   b. When a bond's stated interest rate is more than the investors required rate of return (the market interest rate), they will be sold at a premium, an amount that is more than their face value.
3. The market interest rate ("yield" interest rate or "effective" rate) is the rate creditors demand to compensate them for the risks related to the bond investment.
4. The market determines the price at which bonds will sell for. Using present value (PV) applications, two computations are required to determine the selling price of the bonds since two separate types of cash flows are usually associated with eventual bond payments.
   a. Each interest payment (an annuity) to be made in the future is multiplied by the appropriate PV factor (based on the market rate of interest) to determine the PV of future interest payments.
   b. The principal of the bond (often a single payment) will be paid at the maturity date. This amount is multiplied by the appropriate PV factor (based on the market rate of interest) to determine the PV of the future principal payment.
   c. The PV of future interest payments plus the PV of the principal payment equals the selling price of the bonds.
5. Bonds sell at par if the stated rate equals the market rate of interest. If they do not sell at par, one of two possibilities exist:
   a. Bonds will sell at a discount if the PV of the bonds is below par (that is, if the market rate exceeds the stated rate of interest).
   b. Bonds will sell at a premium if the PV of the bonds is above par (that is, if the stated rate exceeds the market rate of interest).
6. Corporations do not care if bonds sell at par, a discount, or a premium. That is, bonds are "worth" their future cash flows based on the market rate of interest when they are sold. Discounts are not "bad" and premiums are not "good". They are simply realities of basic economic events.

LO2 REPORT BONDS PAYABLE AND INTEREST EXPENSE FOR BONDS SOLD AT PAR AND ANALYZE THE TIMES INTEREST EARNED RATIO.

A. Bonds Issued at Par
  1. Bonds sell at their par value when the stated interest rate on the bonds is the same as the market rate required by investors.
    a. The reason is that the PV of the future cash flows associated with the bond is equal to the bond's par amount.
    b. The bonds are sold "at 100". This is 100% of the par value.
  2. To record bonds issued at par, cash is debited and bonds payable is credited for the principal amount.

Cash	xxx	
Bonds Payable		xxx

B. Reporting interest
  1. Interest Expense is reported on the Income Statement.
    a. Since interest relates to financing, the interest related to the bond is not normally included in Operating Expenses.
    b. Usually a deduction from "Income from Operations" – in the "Other Gains and Losses" section.
  2. Interest payments require a debit to bond interest expense and a credit to cash in the same amount. Under the matching principle, bond interest expense must be recorded when incurred. Therefore, if a company's year-end differs from the end of an interest period, an adjusting entry is required.
  3. When bonds are issued at par, the bond interest expense is the same amount as cash payments for interest since the effective (market) interest rate and the stated rate are the same.

C. Times interest earned ratio
  1. A measure of solvency.
  2. Helps to answer the question: Is the company generating sufficient resources from its profit-making activities to meet its current interest obligations?
  3. Generally, a high times interest earned ratio is viewed more favorably than a low one.

$$\text{Times Interest Earned} = \frac{\text{Net Income} + \text{Interest Expense} + \text{Income Tax Expense}}{\text{Interest Expense}}$$

III. LO3 REPORT BONDS PAYABLE AND INTEREST EXPENSE FOR BONDS SOLD AT A DISCOUNT.

A. Bonds sell at a discount (below par) when the stated interest rate on the bonds is less than the market rate required by investors.
  1. The reason is that the PV (based on the market rate) of the future cash flows associated with the bonds is less than the par amount.
  2. The bonds are sold at *less than* 100. That is, they are sold at *less than* 100% of par value. (For example, their price may be stated as 99 or 98.5, which is less than 100.)

B. Recording bonds issued at a discount:
  1. Cash is debited for the selling price (PV of future cash flows associated with the bond for principal and interest).
  2. Bonds payable is credited for the par value of the bonds (the amount to be paid at the maturity date).
  3. The discount is the difference of the debit to cash and the credit to bond payable. This difference is debited to the Discount on Bonds Payable account (a contra liability account).

Cash	xxx	
Discount on Bonds Payable	xxx	
Bonds Payable		xxx

  4. The balance sheet reports the bonds payable at the book value or carrying value (par value minus unamortized discount). At the maturity date, the carrying value will equal par (the payoff).
  5. The bond discount will be amortized over the life of the bond using one of two methods: straight-line or effective interest rate method of amortization.

C. Reporting Interest Expense on Bonds Issued at a Discount Using Straight-Line Amortization
  1. Interest payments require a debit to bond interest expense, which is *greater* than the cash payment for interest.

a. Using the straight-line amortization method, an equal amount (initial discount divided by the number of interest periods) of discount is credited to the Discount on Bonds Payable account.

Bond Interest Expense	xxx	
Discount on Bonds Payable		xxx
Cash		xxx

b. When the bonds mature, the Discount will be fully amortized.

c. The matching principle requires that interest expense be reported as incurred. Discount amortization is required to reflect the interest expense incurred.

2. Since bonds are recorded at their PV when issued, the accounting for the bond issue is unaffected by subsequent changes in the market rate of interest.

3. Although the straight-line method of amortizing is not accepted by GAAP, many companies use this method since the difference between the straight-line method and the effective interest rate method is frequently not material.

D. Reporting Interest Expense on Bonds Issued at a Discount Using Effective-Interest Amortization

1. The effective-interest method for amortizing bond discounts and premiums derives the "true" interest expense for each interest period.

a. This method is conceptually superior to the simpler straight-line method.

b. In fact, GAAP states that straight-line amortization may only be used if the results are not materially different from the effective-interest method.

2. The computation of interest expense under the effective-interest method considers the actual amount borrowed instead of the maturity value of the bond. It is computed as follows:

$$\text{Bond Interest Expense} = \text{Bond Carrying Value} \times \text{Market Interest Rate at Issue}$$

The amortization of the discount is the difference between the calculated bond interest expense and the cash interest payment (or accrual).

4. The journal entries for interest follow the same format as discussed for straight-line amortization.
5. For a bond discount, the amount of interest expense increases over the life of the bond issue. The carrying value increases to the par value by maturity.

E. Zero Coupon Bonds

1. Zero coupon bonds do not pay periodic interest to investors. The coupon rate is zero. Therefore, these bonds are issued substantially below their maturity value.

2. An example of these "deep" discount bonds is U.S. Savings Bonds.

3. The accounting for a zero coupon bond is no different than any bond sold at a discount. However, the discount is much larger than other bond issues.

IV. LO4 REPORT BONDS PAYABLE AND INTEREST EXPENSE FOR BONDS SOLD AT A PREMIUM.

A. Bonds sell at a premium (above par) when the stated interest rate on the bonds is more than the market rate required by investors.

1. The reason is that the PV (based on the market rate) of the future cash flows associated with the bond is greater than the bond par value.

2. The bonds are sold at *more than* 100. That is, they are sold at *more than* 100% of par value. (For example, their price may be stated as 102 or 102.5, which is more than 100.)

B. Recording bonds issued at a premium:

1. Cash is debited for the selling price (PV of future cash flows associated with the bond for principal and interest).

2. Bonds payable is credited for the par value (the maturity amount).

3. The premium is the difference of the debit to cash and the credit to bonds payable. This difference is credited to the Premium on Bonds Payable account.

Cash		xxx	
	Premium on Bonds Payable		xxx
	Bonds Payable		xxx

4. The balance sheet reports the bonds payable at the book value or carrying value (par value plus unamortized premium). At the maturity date, the carrying value will equal par (the payoff).

C. Reporting Interest Expense on Bonds Issued at a Premium Using Straight-Line Amortization

1. Interest payments require a debit to bond interest expense, which is less than the cash payment for interest.

a. Using straight-line amortization, an equal amount (initial premium divided by the number of interest periods) of premium is debited to the Premium on Bonds Payable account.

Bond Interest Expense		xxx	
Premium on Bonds Payable		xxx	
	Cash		xxx

b. When the bonds mature, the Premium will be fully amortized.

c. The matching principle requires that interest be reported as incurred. Premium amortization is required to reflect the true interest expense incurred.

2. Since bonds are recorded at their PV when issued, the accounting for the bond issue is unaffected by subsequent changes in the market rate of interest.

D. Reporting Interest Expense on Bonds Issued at a Premium Using Effective-Interest Amortization

1. The amortization of the premium is the difference between the cash interest payment and the calculated bond interest expense (i.e. the accrual).

2. The journal entries for interest follow the same format as discussed for straight-line amortization except that the amounts have changed due to using the effective interest rate method.

3. For a bond premium, the amount of interest expense decreases over the life of the bond issue. The carrying value decreases to the par value by maturity.

V. LO5 ANALYZE THE DEBT-TO-EQUITY RATIO.

1. The debt-to-equity ratio is another measure of solvency.

2. It shows the relationship between the proportions of capital provided by creditors versus the amount provided by owners.

$$\text{Debt - to - Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Owners Equity}}$$

3. A high ratio suggests that a company relies heavily on funds provided by creditors. This increases the risk that a company may not be able to meet its contractual financial obligations during a business downturn.

VI. LO6 REPORT THE EARLY RETIREMENT OF BONDS.

1. A company may decide to buy back its own bonds prior to the maturity date. A company's decision to buy back its bonds may be based on rising interest rates in the market price. Bond prices move in the opposite direction of interest rates.
2. There are two ways for a company to buy its bonds.
   a. If the bonds have a call feature, the issuer has the option to buy them back before they mature. Typically, a call premium is paid to the creditors upon early retirement (if it is specified in the bond indenture).
   b. The issuer might buy back the bonds on the open market to avoid paying a call premium.
3. After considering any accrued interest at the date of purchase, the price paid for the bonds is compared to the carrying value of the bonds on the issuing company's books.
   a. If the price paid exceeds the carrying value, a loss on early retirement results. If the price paid is less than the carrying value, the company will record a gain on early retirement.
   b. A loss or a gain on early retirement of debt is included in the income statement as an extraordinary item.
4. The loss or gain on early retirement of debt is also a taxable event in that year.

VII. LO7 EXPLAIN HOW FINANCING ACTIVITIES ARE REPORTED ON THE STATEMENT OF CASH FLOWS.

1. Cash receipts from the issuance of bonds are shown as an inflow of cash in the financing section of the Statement of Cash Flows.
2. Repayments of bonds are shown as an outflow of cash in the financing section of the Statement of Cash Flows.
3. Interest payments are included in the operating section.

CHAPTER 10: REPORTING AND INTERPRETING BONDS

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Capital Structure

Capital Structure -- The acquisition of assets is financed from two sources: ***Debt & Equity***. The mix of debt and equity for a company is called the ***capital structure***.

Debt

Equity

Debt Financing -- Sources of Financing Provided by ***Creditors***

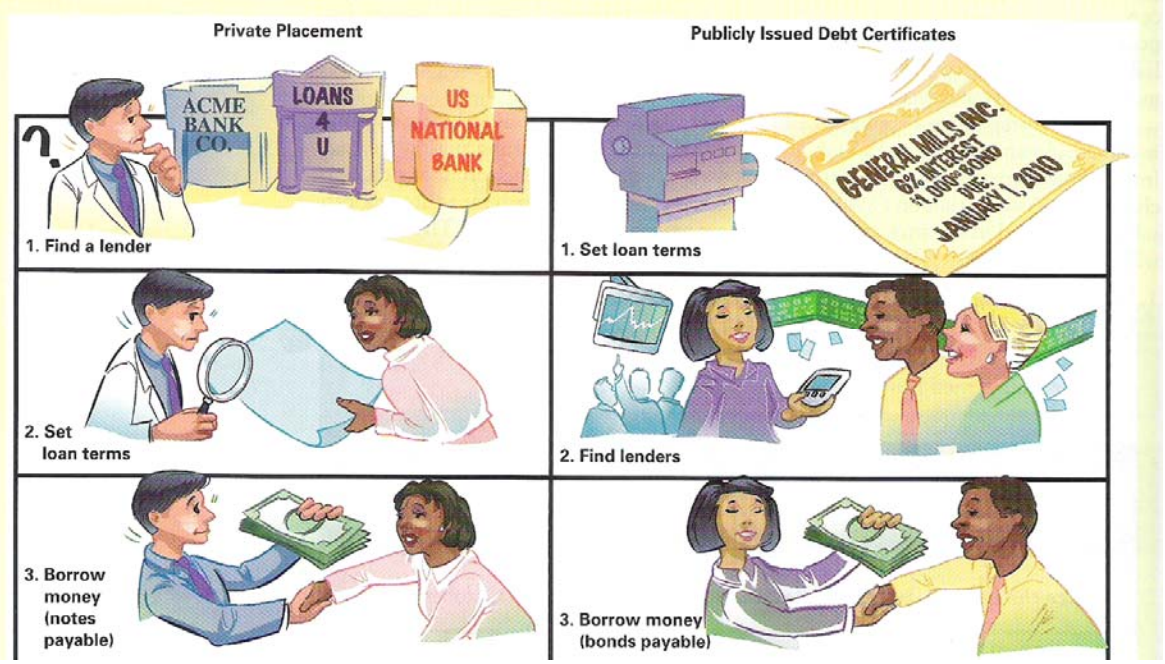
Interest is a legal obligations

Creditors can force bankruptcy

Equity Financing – Sources of Financing Provided by ***Owners***

Dividend is a board of directors' discretion

Sources of Debt Financing



Liabilities - Defined

Liabilities:

Probable debts or obligations of the entity that result from past transactions, which will be paid with assets or services.

Maturity = 1 year or less

Maturity > 1 year

Current liabilities:

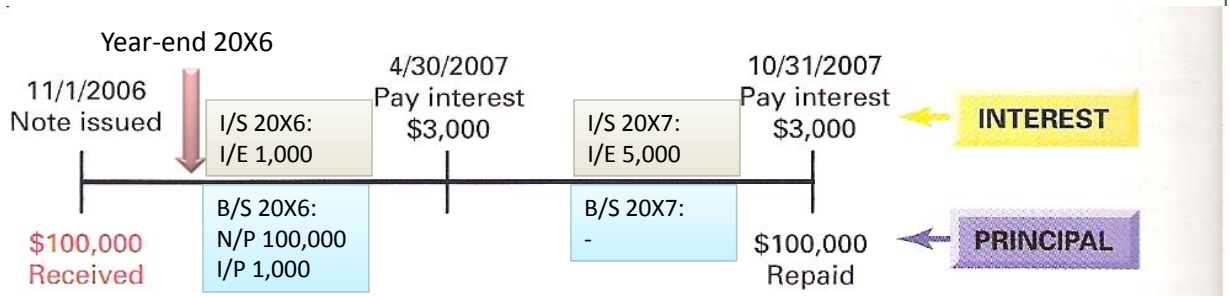
Short-term obligations that will be paid in cash (or other current assets) within the current operating cycle or one year, whichever is longer.

Noncurrent (long-term) liabilities:

All of the entity's obligations that are not classified as current liabilities.

Example: Notes Payable

Assume that on November 1, 20X6, Company A negotiates with Bank B to borrow ฿ 100,000 cash on a one-year note. Bank B charges 6% interest per year. Interest payments are to be made in two cash installments, on April 30 and October 31. The principal is to be repaid on the notes' October 31, 20X7, maturity date.



A		=	L		+	E	
Cash [A+]	+100,000		Notes payable [L+]	+100,000			
			Interest payable [L+]	+1,000		Interest expense [EXP+, E-]	-1,000
Cash [A-]	-3,000		Interest payable [L-]	-1,000		Interest expense [EXP+, E-]	-2,000
Cash [A-]	-103,000		Notes payable [L-]	-100,000		Interest expense [EXP+, E-]	-3,000

AC201 Fundamental Accounting

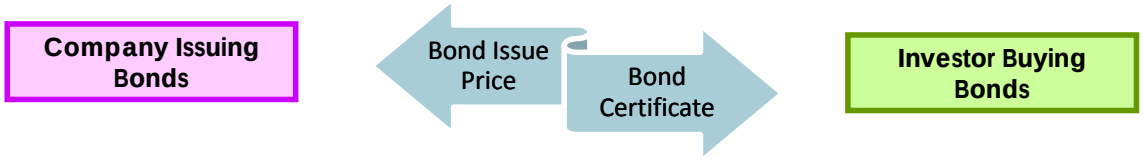
Bonds Payable

- **A bond is a security, usually long term, representing money that a corporation borrows from the investing public.**
  - A bond entails a promise to repay the amount borrowed, called the par value or principal, on a specified date and to pay interest at a specified rate at specified times – usually semiannually.
  - In contrast to shareholders, who are the owners of a corporation, bondholders are a corporation's creditors.

Bonds Payable (Cont.)

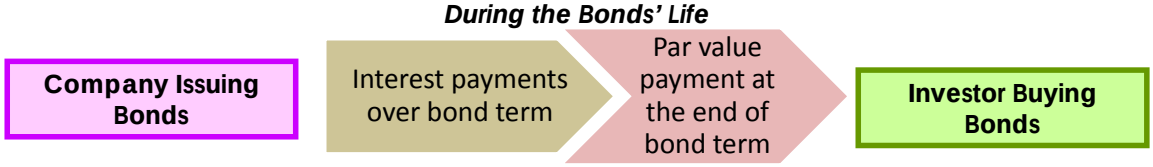
- **Bonds payable:**
  - A bond is simply a form of an interest-bearing note. A bond requires periodic interest payments , and the par value must be repaid at the maturity date. The bondholders are creditors of the issuing corporation and their claims on the assets of the corporation rank ahead of shareholders.

At Bond Issuance Date



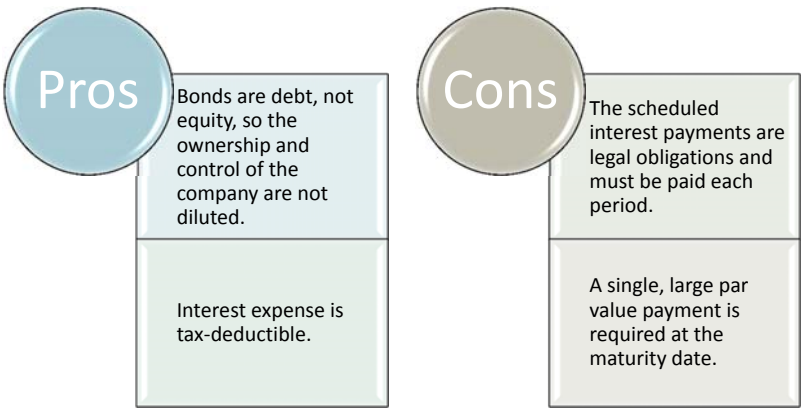
Bonds payable are long-term debt for the issuing company.

During the Bonds' Life



Pros and Cons

- **Bond: A contract between a borrower promises to pay a specified rate of interest for each period the bond is outstanding and repay the principal at the maturity date.**



Good to know…

Bond was first introduced in Thailand during the reign of King Rama the 5th in 1905. The bearer bond represented a loan of one million pounds in London and Paris. The proceeds were used for the railroad development project, and as a reserve for economic expansion. A bearer bond is an unregistered bond on which the interest and principal are payable to the current holder of the bond regardless of whom it was originally issued to. The issued bonds were to mature in 40 years, accompanied by an annual interest rate of 4.5 percent. The interest payments were paid on a semi-annual basis, September 1st and March 1st.

The Nature of Bonds (Cont.)

- **Bond Issue: Prices and Interest Rates**
  - A bond issue is the total value of bonds issued at one time.
  - Stated interest rate and market interest rate:
    - The stated interest rate is the fixed rate of interest paid to bondholders based on the par value of the bonds. The rate and amount are fixed over the life of the bond.
    - The market interest rate is the rate of interest paid in the market on bonds of similar risk. It is also called the effective interest rate.
- **Discount and Premiums**
  - The fluctuation in market interest rate causes the bonds to sell at either a discount or a premium.
    - A discount equals the exceeds of the par value over the issue price.
      - The issue price will be less than the par value when the market interest rate is higher than the stated interest rate.
    - A premium equals the excess of the issue price over the par value.
      - The issue price will be more than the par value when the market interest rate is lower than the stated interest rate.

Characteristics of Bonds

- **Unsecured and secured bonds**
  - Unsecured bonds (also called debenture bonds) are issued on the basis of a corporation's general credit.
  - Secured bonds carry a pledge of certain corporate assets as a guarantee for repayment.
- **Term and serial bonds**
  - When all the bonds of an issue mature at the same time. They are called term bonds.
  - When the bonds of an issue mature on different dates, they are called serial bonds.
- **Callable and convertible bonds**
  - Callable bonds give the issuer the right to buy back and retire the bonds before maturity at a specified call price, which is usually above par value.
  - Convertible bonds allow the bondholder to exchange a bond for a specified number of shares of ordinary share.
- **Registered and coupon bonds**
  - Registered bonds are issued in the names of the bondholders.
  - Coupon bonds are not registered with the organization. Instead, they bear coupons stating the amount of interest due and the payment date.

Example

- **Par Value = Principal = Face value: ฿1,000,000**
- **Stated interest rate = Coupon rate = Contract rate: 10% (an annual rate)**
- **Interest payment schedule: Annually, Semi-annually, Quarterly, Monthly**
  - Interest payment dates: Jun. 30 and Dec. 31
- **Date of issuance: Jan. 1, 20X1**
- **Bond life: 10 years**
- **Maturity date: Dec. 31, 20X10**

Market interest rate = Yield = Effective interest rate:
???

Future Cash Flows on the Bonds

Cash interest payment
= Par value x Stated rate x Time
= 1,000,000 x 10% x 6/12
= 50,000

Statement of Financial Position
Noncurrent liabilities:
Bonds @ par
Less: Bond discount
Add: Bond premium
= Bonds, net

Jan. 1, X1

Price ???

50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K
50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K

Interest

Dec. 31, X10

Case #1: Market interest rate = 10%	Future cash flows	PV factor (n=20, i=5%)	Amount
Present value of the principal	1,000,000	0.37689	376,890
+ Present value of the interest	50,000	12.46221	623,111
= Bond price			1,000,001

Date	General Journal	Debit	Credit
1/1/X1	Dr. Cash (@price)	1,000,000	
	Cr. Bonds payable (@par)		1,000,000

1,000,000 — Par value

Future Cash Flows on the Bonds

Cash interest payment
= Par value x Stated rate x Time
= 1,000,000 x 10% x 6/12
= 50,000

Jan. 1, X1

Price ???

50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K
50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K

Interest

Dec. 31, X10

Case #2: Market interest rate = 8%	Future cash flows	PV factor (n=20, i=4%)	Amount
Present value of the principal	1,000,000	0.45639	456,390
+ Present value of the interest	50,000	13.59033	679,517
= Bond price			1,135,907

Date	General Journal	Debit	Credit
1/1/X1	Dr. Cash (@price)	1,135,907	
	Cr. Bonds payable (@par)		1,000,000
	Bond premium		135,907

1,000,000 — Par value

Future Cash Flows on the Bonds

Cash interest payment
= Par value x Stated rate x Time
= 1,000,000 x 10% x 6/12
= 50,000

Jan. 1, X1

Price ???

50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K
50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K | 50 K

Interest

Dec. 31, X10

Case #3: Market interest rate = 12%	Future cash flows	PV factor (n=20, i=6%)	Amount
Present value of the principal	1,000,000	0.3118	311,800
+ Present value of the interest	50,000	11.46992	573,496
= Bond price			885,296

Date	General Journal	Debit	Credit
1/1/X1	Dr. Cash (@price)	885,296	
	Bond discount	114,704	
	Cr. Bonds payable (@par)		1,000,000

1,000,000 — Par value

Company A issued the following bonds:
Par value: ฿1,000,000
Stated interest rate: 10%
Interest payment dates: Semiannual interest payments on Jun. 30 and Dec. 31.
Issuance date: January 1, 20X1
Maturity date: December 31, 20X10
Bond life: 10 years

Bonds issued at premium:

Market interest rate 8%

- PV of par value ฿1,000,000 x PVF (n=20, i=4%) 0.45639 = ฿456,390
- PV of interest ฿50,000 x PVAF (n=20, i=4%) 13.59033 = ฿679,516
- Bonds issue price ฿ 456,390 + ฿679,516 = ฿1,135,906
- Bonds premium = ฿1,135,906 – ฿1,000,000 = ฿135,906

Bonds issued at par:

Market interest rate 10%

- PV of par value ฿1,000,000 x PVF (n=20, i=5%) 0.37689 = ฿376,890
- PV of interest ฿50,000 x PVAF (n=20, i=5%) 12.46221 = ฿623,110
- Bonds issue price ฿376,890 + ฿623,110 = ฿1,000,000
- No bonds premium or discount

Bonds issued at discount:

Market interest rate 12%

- PV of par value ฿1,000,000 x PVF (n=20, i=6%) 0.31180 = ฿311,800
- PV of interest ฿50,000 x PVAF (n=20, i=6%) 11.46992 = ฿573,496
- Bonds issue price ฿ 311,800 + ฿573,496 = ฿885,296
- Bonds discount = ฿1,000,000 - ฿885,296 = ฿114,704

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Bond par

Bond discount: The difference between selling price and par value when a bond is sold for less than par value.

Bond premium: The difference between selling price and par value when a bond is sold for more than par value.

Bonds	Principal	Stated interest rate	Interest payment periods	Market interest rate	Bond Life	Bond price
Bond #1	1,000,000	10%	Semiannually	6%	4 years	Premium
Bond #2	1,000,000	12%	Quarterly	10%	2 years	Premium
Bond #3	1,000,000	8%	Annually	10%	10 years	Discount

Bond #1	Future cash flows	PV factor (n=8, i=3%)	Amount
Present value of the principal	1,000,000	0.78941	789,410
+ Present value of the interest (1,000,000 x 10% x 6/12)	50,000	7.01969	350,985
= Bond price			1,140,395

Bond #2	Future cash flows	PV factor (n=8, i=2.5%)	Amount
Present value of the principal	1,000,000	0.82075	820,750
+ Present value of the interest (1,000,000 x 12% x 3/12)	30,000	7.17014	215,104
= Bond price			1,035,854

Bond #3	Future cash flows	PV factor (n=10, i=10%)	Amount
Present value of the principal	1,000,000	0.38554	385,540
+ Present value of the interest (1,000,000 x 8% x 12/12)	80,000	6.14457	491,566
= Bond price			877,106

AC201 Fundamental Accounting

Entry at issuance

Date	General Journal	Debit	Credit
1/1/X1	Dr. Cash (@price)	1,140,395	
	Cr. Bonds payable (@par)		1,000,000
	Bond premium		140,395

Date	General Journal	Debit	Credit
1/1/X1	Dr. Cash (@price)	1,035,854	
	Cr. Bonds payable (@par)		1,000,000
	Bond premium		35,854

Date	General Journal	Debit	Credit
1/1/X1	Dr. Cash (@price)	877,106	
	Bond discount	122,894	
	Cr. Bonds payable (@par)		1,000,000

Accounting for the Issuance of Bonds -- @ Par

- **Bonds issued at par value:**
  - The Company issues 100,000 Baht of 9 percent, five-year bonds on January 1, 20X6, and sells them on the same date for their par value. The bond indenture states that interest to be paid on January 1 and July 1 of each year. The entry to record the bond issue is as follows:

Date	General Journal	Debit	Credit
Jan. 1, 20X6	Dr. Cash [A+]	100,000	
	Cr. Bonds payable [L+]		100,000
	Sold 100,000 Baht of 9%, 5-year bonds at face value		

Accounting for the Issuance of Bonds -- @ Par (Cont.)

- Once a Company issues bonds, it must pay interest to the bondholders over the life of the bonds, usually semiannually, and the par value of the bonds at maturity. The interest paid on January 1 and July 1 of each year. Thus, the Company would owe the bondholders 4,500 Baht interest on July 1, 20X6:
  - Interest = Principal x Stated interest rate x Time
    = 100,000 x 9% x 6/12
    = 4,500 Baht
- The Company would record the interest paid to the bondholders on each semiannual interest payment date (January 1 and July 1) as follows:

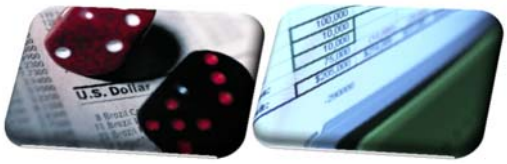
Date	General Journal	Debit	Credit
July 1, 20X6	Dr. Interest expense [Exp+, E-]	4,500	
	Cr. Cash [A-]		4,500
	Paid semiannual interest to bondholders of 9%, 5-year bonds		

Note that, on December 31, the Company must record the accrued interest to interest payable .

Accounting for the Issuance of Bonds -- @ Par (Cont.)

- Upon maturity, the par value must be paid back to the bondholders. The entry to record the par value paid is as follows:

Date	General Journal	Debit	Credit
Jan. 1, 20X11	Dr. Bonds payable [L-]	100,000	
	Cr. Cash [A-]		100,000
	Paid 100,000 Baht par value to bondholders at maturity		



Accounting for the Issuance of Bonds -- @ Discount

- **Bonds issued at a discount:**
  - The Company issues 100,000 Baht of 9 percent, five-year bonds at 96.149 on January 1, 20X6, when the market interest rate is 10 percent. In this case, the bonds are being issued at a discount because the market interest rate exceeds the stated interest rate. The following entry records the issuance of the bonds at a discount:

Date	General Journal	Debit	Credit
Jan. 1, 20X6	Dr. Cash [A+]	96,149	
	Bonds discount [Contra L+, L-]	3,851	
	Cr. Bonds payable [L+]		100,000
	Sold 100,000 Baht of 9%, 5-year bonds at 96.149		
	Par value of the bonds	*100,000*	
	Less: Issue price of bonds (100,000 x 96.149)	*96,149*	
	Discount on bonds payable	***3,851***	

Accounting for the Issuance of Bonds -- @ Discount (Cont.)

- In this entry, cash is debited for the amount received (96,149 Baht), bonds payable is credited for the face amount (100,000 Baht) of the bond liability, and the difference (3,851 Baht) is debited to bonds discount.
- If the statement of financial position is prepared right after the bonds are issued at a discount, the liability for bonds payable is reported as follows:

Long-term liabilities		
9% bonds payable, due 1/1/2011	100,000	
Less: Bonds discount	3,851	96,149

  - bonds discount is a ***contra-liability account***. Its balance is deducted from the face amount of the bonds to arrive at the carrying amount, or present value, of the bonds. The bond discount balance at a given point in time is unamortized balance and it will be amortized (written off) over the life of the bonds.

Accounting for the Issuance of Bonds -- @ Premium

- **Bonds issued at a premium:**
  - When bonds have a stated interest rate above the market rate for similar investments, they are issued at a price above the par value, or at a premium.
    - The Company issues 100,000 Baht of 9 percent, five-year bonds for 104,100 Baht on January 1, 20X6, when the market interest rate is 8 percent. This means that investors will purchase the bonds at 104.10 percent of their par value. The issuance would be recorded as follows:

Date	General Journal	Debit	Credit
Jan. 1, 20X6	Dr. Cash [A+]	104,100	
	Cr. Bonds payable [L+]		100,000
	Bonds premium [Adjunct L+, L+]		4,100
	Sold 100,000 Baht of 9%, 5-year bonds at 104.10		
	Issue price of bonds (100,000 x 104.10)	*104,100*	
	Less: Par value of the bonds	*100,000*	
	Premium on bonds payable	***4,100***	

Accounting for the Issuance of Bonds -- @ Premium (Cont.)

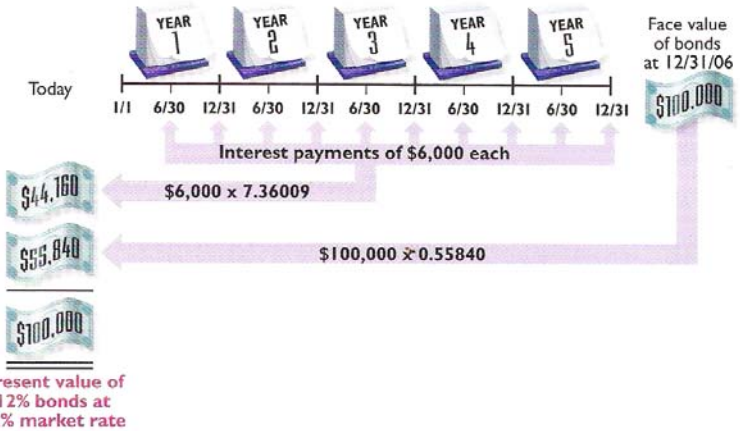
- Right after this entry is made, bonds payable would be presented on the statement of financial position as follows:

Long-term liabilities		
9% bonds payable, due 1/1/2011	100,000	
Add: Bonds premium	4,100	104,100

  - The carrying amount of the bonds payable is 104,100 Baht, which equals the par value of the bonds plus the bonds premium. The cash received from the bond issue is also 104,100 Baht. This means that the purchasers were willing to pay a premium of 4,100 Baht to buy these bonds because their stated interest rate was higher than the market interest rate.

Using Present Value to Value a Bond

- **A bond's value is based on the present value of two components of cash flows:**
  - (1) a series of fixed interest payments, and
  - (2) a single payment at maturity.
    - The amount of interest a bond pays is fixed over its life. However, the market interest rate varies from day to day. Thus, the amount investors are willing to pay for a bond varies as well.



Bonds Issue Price

The issue price of the bond is determined by the market, based on the time value of money.

Present Value of the Principal (a single payment)
+ Present Value of the Interest Payments (an annuity)
= Issue Price of the Bond

The interest rate used to compute the present value is the *market interest rate*. The *stated rate*, or *coupon rate*, is only used to compute the periodic interest payments.

Interest = Principal × Stated Rate × Time

Face value Stated interest rate	Issue price Market interest rate
↓	↓
Used only to determine cash payments	Used only to determine the bond liabilities and interest expense

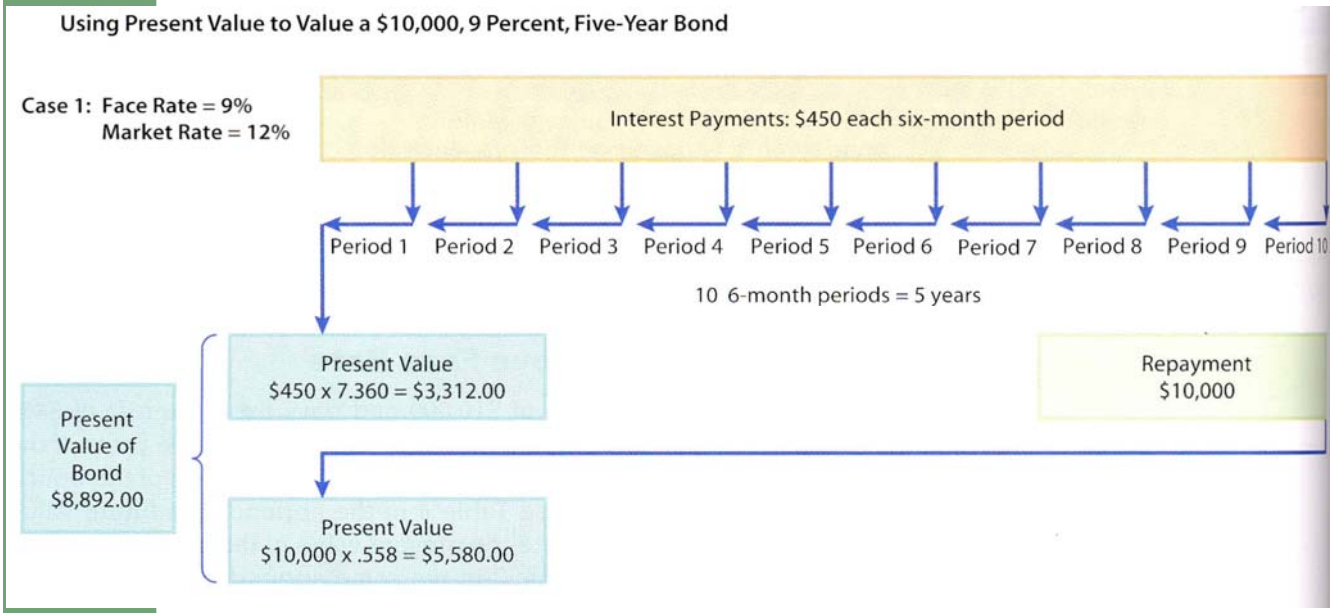
Case 1: Market Rate Above Stated Rate

- **Example:**
  - Suppose a bond has a par value of 10,000 Baht and pays fixed interest of 450 Baht every six months (a 9 percent annual rate). The bonds is due in five years. If the market interest rate today is 12 percent, what is the present value of the bond?
    - Financial calculator:
      - FV = 10,000, I = 6%, n = 10 → PV = 5,580 Baht
      - PMT = 450, I = 6%, n = 10 → PVA = 3,312 Baht
      - Bonds issue price = 5,580 + 3,312 = 8,892 Baht
    - PV Table:

Present value of a single payment at the end of 10 periods at 6%: (10,000 x 0.558)	5,580.00
Present value of 10 periodic payments at 6%: (450 x 7.360)	3,312.00
Present value of 10,000 Baht bond	**8,892.00**

  - The market rate has increased so much since the bond was issued – from 9 percent to 12 percent – that the value of the bond today is only 8,892 Baht. That amount is all investors would be willing to pay at this time for a bond that provides income of 450 Baht every six months and a return of the 10,000 Baht par value in five years.

Using Present Value to Value a Bond -- Illustration

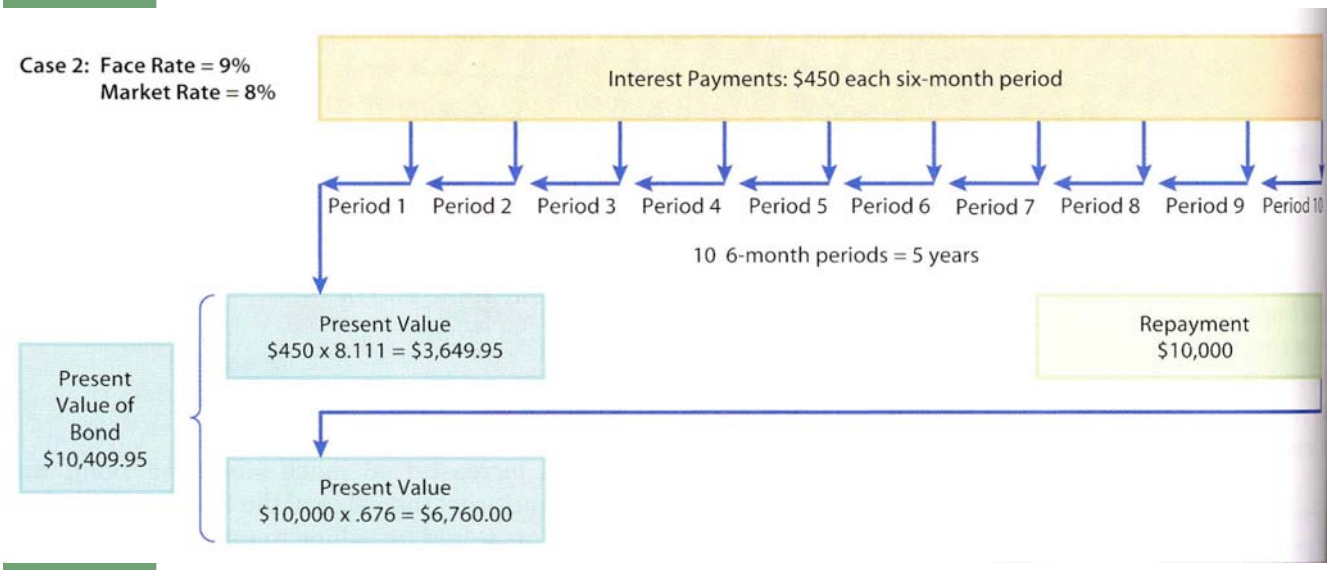


Case 2: Market Rate Below Stated Rate

- **Example:**
  - Suppose a bond has a par value of 10,000 Baht and pays fixed interest of 450 Baht every six months (a 9 percent annual rate). The bonds is due in five years. If the market interest rate today is 8 percent, what is the present value of the bond?
    - Financial calculator:
      - FV = 10,000, I = 4%, n = 10 → PV = 6,760.00 Baht
      - PMT = 450, I = 4%, n = 10 → PVA = 3,649.95 Baht
      - Bonds issue price = 6,760.00 + 3,649.95 = 10,409.95 Baht
    - PV Table:

Present value of a single payment at the end of 10 periods at 4%: (10,000 x 0.676)	6,760.00
Present value of 10 periodic payments at 4%: (450 x 8.111)	3,649.95
Present value of 10,000 Baht bond	**10,409.95**

Using Present Value to Value a Bond -- Illustration



Amortization of Bond Discounts and Premiums

- **A bond discount or premium represents the amount by which the total interest cost is higher or lower than the total interest payments.**
  - To record interest expense properly and ensure that the carrying amount of the bonds payable a maturity equals par value, it is necessary to systematically reduce the bond discount or premium – that is, to amortize them – over the life of the bonds. This is accomplished by using either the straight-line method or the effective interest method.

Amortizing a Bond Discount

- **Example:**

Par

  - Recall that the Company issued 100,000 Baht of five-year bonds at a time when the market interest rate of 10 percent exceeded the stated interest rate f 9 percent. The bonds sold for 96,149 Baht, resulting in an unamortized bond discount of 3,851 Baht.
  - Because a bond discount affects interest expense in each year of a bond issue, the bond discount should be amortized over the life of the bond issue.
    - In this way, the unamortized bond discount will decrease gradually over time, and the carrying amount of the bond issue (par value less unamortized discount) will gradually increase. By the maturity date, the carrying amount of the bond issue will equal its par value, and the unamortized bond discount will be zero.

Amortizing a Bond Discount – Straight-line Method

- **Straight-line method:**
  - The ***straight-line method*** equalizes amortization of bond discount for each interest period.
    - The interest payment dates of the bond issue are January 1 and July 1 of each year, and the bonds mature in five years.
    - With the straight-line method, the amount of the bond discount amortized and the interest expense for each semiannual period are calculated in four steps:
      - 1. Total interest payment periods
        = Interest payments per year x Life of bonds
        = 2 x 5 = 10 periods
      - 2. Amortization of bond discount per interest period
        = Bond discount ÷ Total interest payments
        = 3,851 / 10 = 385.10 Baht
      - 3. Cash interest payment
        = Par value x Stated interest rate x Time
        = 100,000 x 9% x 6/12 = 4,500.00 Baht
      - 4. Interest expense per interest period
        = Interest payment + Amortization of bond discount
        = 4,500.00 + 385.10 = 4,885.10 Baht

Amortizing a Bond Discount – Straight-line Method (Cont.)

- On July 1, 20X6, the first semiannual interest date, the entry would be as follows:

Date	General Journal	Debit	Credit
July 1, 20X6	Dr. Interest expense [Exp+, E-]	4,885	
	Cr. Cash [A-]		4,500
	Bonds discount [Contra L-, L+]		385
	Paid semiannual interest to bondholders of 9%, 5-year bonds		
	and amortized the bond discount		

Amortizing a Bond Discount – Effective Interest Method

- **Effective interest method:**
  - When the ***effective interest method*** is used to compute the interest and amortization of a bond discount, a constant interest rate is applied to the carrying amount of the bonds at the beginning of each interest period. This constant rate is the market rate (i.e., the effective rate) at the time the bonds were issued. The amount amortized each period is the difference between the interest computed by using the market rate and the actual interest paid to bondholders.
    - Using the same set of facts stated earlier, the amortization table is presented below.

Amortizing a Bond Discount – Effective Interest Method (Cont.)

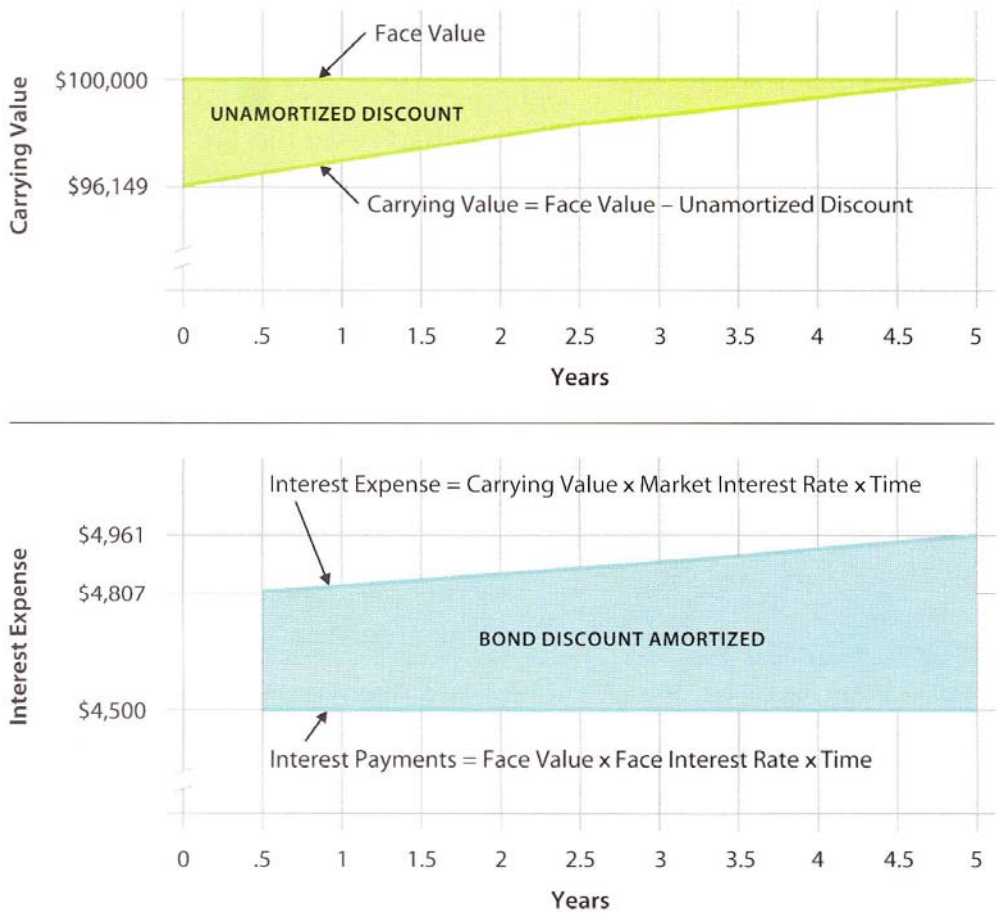
	A	B	C	D	E	F
Semiannual Interest Period	Carrying Amount at Beginning of Period	Semiannual Interest Expense at 10% to Be Recorded (5% x A)	Semiannual Cash Interest Payment to Bondholders (4.5% x 100,000)	Amortization of Bond Discount (B-C)	Unamortized Bond Discount at End of Period (E-D)	Carrying Amount at End of Period (A+D)
0					3,851.00	96,149.00
1	96,149.00	4,807.45	4,500.00	307.45	3,543.55	96,456.45
2	96,456.45	4,822.82	4,500.00	322.82	3,220.73	96,779.27
3	96,779.27	4,838.96	4,500.00	338.96	2,881.76	97,118.24
4	97,118.24	4,855.91	4,500.00	355.91	2,525.85	97,474.15
5	97,474.15	4,873.71	4,500.00	373.71	2,152.14	97,847.86
6	97,847.86	4,892.39	4,500.00	392.39	1,759.75	98,240.25
7	98,240.25	4,912.01	4,500.00	412.01	1,347.74	98,652.26
8	98,652.26	4,932.61	4,500.00	432.61	915.13	99,084.87
9	99,084.87	4,954.24	4,500.00	454.24	460.88	99,539.12
10	99,539.12	4,960.88	4,500.00	460.88	- 0.00	100,000.00

Amortizing a Bond Discount – Effective Interest Method (Cont.)

- The entry to record the interest expense is exactly like the one when the straight-line method is used. However, the amounts debited and credited to the various accounts are different. Using the effective interest method, the entry for July 1, 20X6, would be as follows:

Date	General Journal	Debit	Credit
July 1, 20X6	Dr. Interest expense [Exp+, E-]	4,807	
	Cr. Cash [A-]		4,500
	Bonds discount [Contra L-, L+]		307
	Paid semiannual interest to bondholders of 9%, 5-year bonds		
	and amortized the bond discount		

Carrying Value and Interest Expense—Bonds Issued at a Discount



Amortizing a Bond Premium

- **Example:**
  - The company issued 100,000 Baht of five-year bonds at a time when the market interest rate was 8 percent and the stated interest rate is 9 percent. The bonds sold for 104,100 Baht, which resulted in an unamortized bond premium of 4,100 Baht. Like a discount, a premium must be amortized over the life of the bonds so that it can be matched to its effects on interest expense during that period.

Amortizing a Bond Premium – Straight-line method (Cont.)

- **Straight-line method:**
  - Under the ***straight-line method***, the bond premium is spread evenly over the life of the bond issue.
    - As with bond discounts, the amount of bond premium amortized and interest expense for each semiannual period are computed in four steps:
      - 1. Total interest payment periods
        = Interest payment per year x Life of bonds
        = 2 x 5 = 10 periods
      - 2. Amortization of bond premium per interest payment period
        = Bond premium ÷ Total interest payment periods
        = 4,100 / 10 = 410 Baht
      - 3. Cash interest payment
        = Principal x Stated interest rate x Time
        = 100,000 x 9% x 6/12 = 4,500 Baht
      - 4. Interest expense per interest payment period
        = Interest expense – Amortization of bond premium
        = 4,500 – 410 = 4,090 Baht

Amortizing a Bond Premium – Straight-line method (Cont.)

- On July 1, 20X6, the first semiannual interest date, the entry would be like this:

Date	General Journal	Debit	Credit
July 1, 20X6	Dr. Interest expense [Exp+, E-]	4,090	
	Bonds premium [Adjunct L-, L-]	410	
	Cr. Cash [A-]		4,500
	Paid semiannual interest to bondholders of 9%, 5-year bonds		
	and amortized the bond premium		

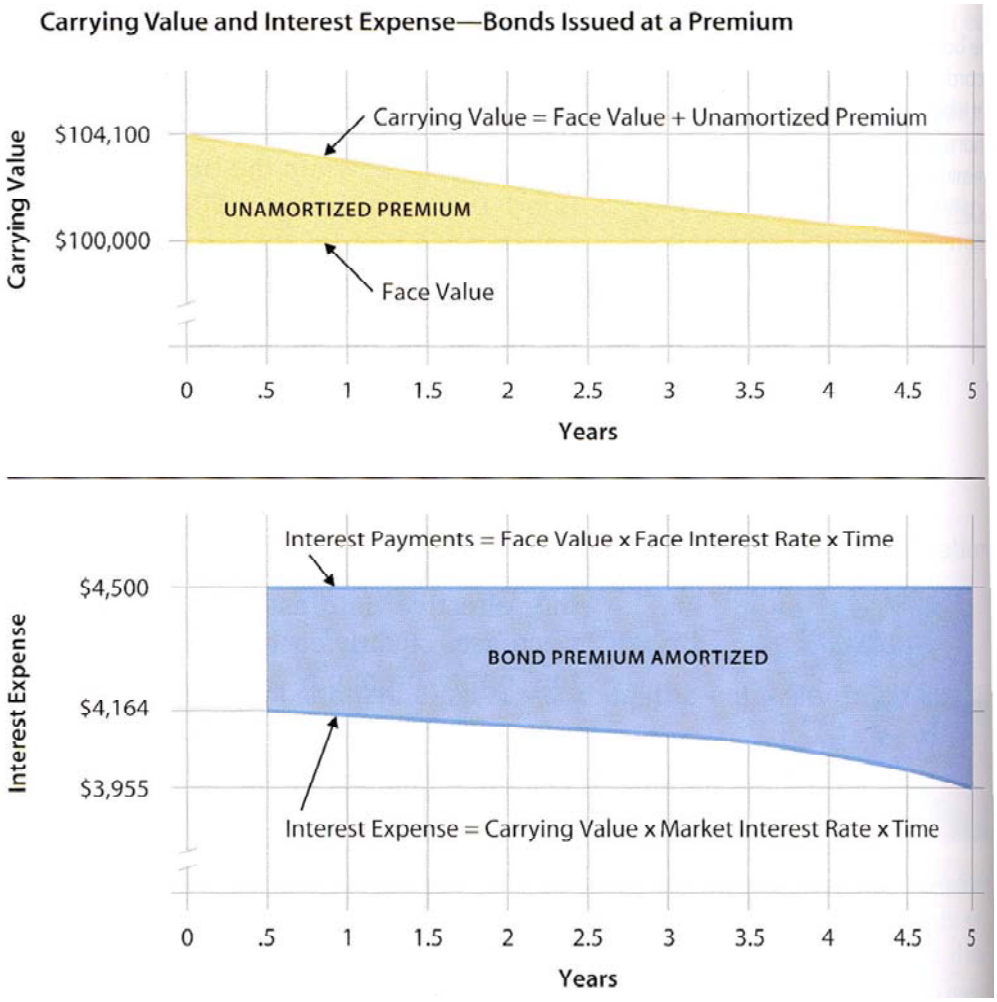
Amortizing a Bond Premium – Effective Interest Method (Cont.)

	A	B	C	D	E	F
Semiannual Interest Period	Carrying Amount at Beginning of Period	Semiannual Interest Expense at 8% to Be Recorded (4% x A)	Semiannual Cash Interest Payment to Bondholders (4.5% x 100,000)	Amortization of Bond Premium (C-B)	Unamortized Bond Premium at End of Period (E-D)	Carrying Amount at End of Period (A-D)
0					4,100.00	104,100.00
1	104,100.00	4,164.00	4,500.00	336.00	3,764.00	103,764.00
2	103,764.00	4,150.56	4,500.00	349.44	3,414.56	103,414.56
3	103,414.56	4,136.58	4,500.00	363.42	3,051.14	103,051.14
4	103,051.14	4,122.05	4,500.00	377.95	2,673.19	102,673.19
5	102,673.19	4,106.93	4,500.00	393.07	2,280.12	102,280.12
6	102,280.12	4,091.20	4,500.00	408.80	1,871.32	101,871.32
7	101,871.32	4,074.85	4,500.00	425.15	1,446.17	101,446.17
8	101,446.17	4,057.85	4,500.00	442.15	1,004.02	101,004.02
9	101,004.02	4,040.16	4,500.00	459.84	544.18	100,544.18
10	100,544.18	3,955.82	4,500.00	544.18	0.00	100,000.00

Amortizing a Bond Premium – Effective Interest Method

- **Effective interest method:**
  - With this method, the interest expense decreases slightly each period because the amount of the bond premium amortized increases slightly. This occurs because a fixed rate is applied each period to the gradually decreasing carrying amount. The first interest payment is recorded as follows:

Date	General Journal	Debit	Credit
July 1, 20X6	Dr. Interest expense [Exp+, E-]	4,164	
	Bonds premium [Adjunct L-, L-]	336	
	Cr. Cash [A-]		4,500
	Paid semiannual interest to bondholders of 9%, 5-year bonds		
	and amortized the bond premium		



Financial Ratios Related to Debt Financing

- **Debt ratio:**
  - A measure of leverage, computed by dividing total liabilities by total assets.
    - Debt ratio = Total liabilities ÷ Total assets
- **Debt-to-equity ratio:**
  - The ratio that measures the balance between debt and equity. Debt funds are viewed as being riskier than equity funds. The ratio is computed as total liabilities divided by total equity.
    - Debt-to-equity ratio = Total liabilities ÷ Total shareholders' equity
- **Times interest earned ratio:**
  - The ratio that measure a company's ability to generate resources from current operations to meet its interest obligations. The ratio is computed as follows:
    - Times interest earned ratio = Earnings before interest and taxes ÷ Interest expense

STATEMENTS OF FINANCIAL POSITION (CONTINUED)

PRESIDENT BAKERY PUBLIC COMPANY LIMITED
As at 31 December 2011 and 2010

Example of Financial Statement Presentation & Disclosure: Liabilities
[Source: www.farmhouse.co.th]

(Unit: Baht)

	NOTE	SEPARATE FINANCIAL STATEMENTS 2011	2010
Liabilities and shareholders' equity			
Current liabilities			
Bank overdrafts	17	78	-
Trade and other payables	11, 18	608,881,454	591,665,451
Current portion of liabilities under finance lease agreements	11, 19	68,260,107	52,180,486
Corporate income tax payable		67,060,015	68,351,203
Accrued expenses		152,668,527	125,345,711
Other current liabilities		20,386,721	16,828,265
Total current liabilities		917,256,902	854,371,116

STATEMENTS OF FINANCIAL POSITION (CONTINUED)

PRESIDENT BAKERY PUBLIC COMPANY LIMITED
As at 31 December 2011 and 2010

(Unit: Baht)

	NOTE	SEPARATE FINANCIAL STATEMENTS 2011	2010
Non-current liabilities			
Liabilities under finance lease agreements - net of current portion	11, 19	83,586,175	77,410,516
Long-term loans from directors	11, 20	79,646,619	72,795,970
Long-term loans from employees	20	43,583,378	47,836,707
Provision for long-term employee benefits	21	33,976,079	-
Other non-current liabilities		876,201	535,907
Total non-current liabilities		241,668,452	198,579,100
Total liabilities		1,158,925,354	1,052,950,216

17. BANK OVERDRAFTS

The Company has overdraft facilities of Baht 44 million, which bear interest at a rate of MOR percent per annum.

18. TRADE AND OTHER PAYABLES

(Unit: Thousand Baht)

	2011	2010
Trade payables - related parties	220,319	159,114
Trade payables - unrelated parties	297,896	257,281
Other payables - related party	700	66
Other payables for purchase of machineries	10,331	82,265
Other payables for miscellaneous expenses	79,635	92,939
Total trade and other payables	608,881	591,665

The Siam Cement Public Company Limited and its Subsidiaries

Consolidated balance sheets

As at 31 December 2010 and 2009

in thousand Baht

Liabilities and shareholders' equity	Note	2010	2009
Non-current liabilities			
Provident funds	25	421,162	415,503
Long-term debts	16	27,643,146	35,695,519
Debentures	17	84,853,756	94,749,874
Deferred tax liabilities	13	2,623,343	387,726
Other non-current liabilities	18	1,024,712	1,079,180
Total non-current liabilities		**116,566,119**	**132,327,802**
Total liabilities		**199,648,611**	**184,570,416**

Example of Financial Statement Presentation & Disclosure: Bonds (Debentures)

[Source: www.scg.co.th]

16 Long-term debts

	in million Baht	
	2010	2009
Current		
- Secured		
Current portion of long-term debts from financial institutions	-	162
- Unsecured		
Current portion of long-term debts	7,013	2,330
Current portion of finance lease liabilities	198	119
	7,211	**2,611**
Non-current		
- Unsecured		
Long-term debts	26,829	35,390
Finance lease liabilities	814	306
	27,643	**35,696**
Total	**34,854**	**38,307**

17 Debentures

As at 31 December 2010, the Company had issued unsubordinated and unsecured debentures and the subsidiary had issued subordinated and unsecured convertible debentures totalling Baht 110,944 million *(2009: Baht 110,929 million)* as follows:

	in million Baht		Interest Rate			Fair Value *	
Debentures No.	2010	2009	(% p.a.)	Term	Maturity Date	2010	2009
Debentures - The Siam Cement Public Company Limited							
3/2006	-	10,000	6.00	4 years	1 April 2010	-	1,009
4/2006	-	5,000	6.25	4 years	1 October 2010	-	1,038
1/2007	15,000	15,000	5.75	4 years	1 April 2011	1,020	1,049
2/2007	10,000	10,000	4.50	4 years	1 November 2011	1,024	1,041
1/2008	20,000	20,000	4.25	4 years	1 April 2012	1,031	1,044
2/2008	20,000	20,000	5.35	4 years	1 November 2012	1,046	1,059
1/2009	20,000	20,000	5.15	4 years	1 April 2013	1,044	1,059
2/2009	10,000	10,000	4.15	4 years	1 October 2013	1,031	1,025
1/2010	10,000	-	3.85	4 years	1 April 2014	1,032	-
2/2010	5,000	-	3.85	4 years	1 October 2014	1,037	-
Total	110,000	110,000					

Convertible Debentures - Thai-German Ceramic Industry Public Company Limited **							
1/2008	944	929	1st - 2nd year MLR minus 3.50 3rd - 5th year MLR minus 3.00	5 years	1 August 2013	911	922
Total	110,944	110,929					
Less: Debentures held by subsidiaries	1,212	1,219					
Net	**109,732**	**109,710**					
Less: Current portion	24,878	14,960					
Net	**84,854**	**94,750**					

* Latest price (Baht per unit: 1 unit = Baht 1,000) as at 31 December 2010 and 2009.

** Debenture holders have the option to convert the debentures into TGCI shares at the rate of Baht 1.45 per 1 share of TGCI, subject to the adjustment of which is specified in the agreement. The holders can exercise the option after 2 years from the issuance date of the debentures.

EXERCISES

Available with McGraw-Hill's Homework Manager

E10-1 Bond Terminology: Fill in the Missing Blanks
LO1

1. The _____ is the amount (a) payable at the maturity of the bond and (b) on which the periodic cash interest payments are computed.
2. _____ is another name for bond principal, or the maturity amount of a bond.
3. _____ is another name for principal, or the principal amount of the bond.
4. The _____ is the rate of cash interest per period stated in the bond contract.
5. A _____ is an unsecured bond; no assets are specifically pledged to guarantee repayment.
6. _____ bonds may be called for early retirement at the option of the issuer.
7. _____ bonds may be converted to other securities of the issuer (usually common stock).

Interpreting Information Reported in the Business Press

E10-2
LO1
AT&T

As this book was being written, the business press reported the following information concerning bonds issued by AT&T:

Bonds	Yield	Close
AT&T 6.5	7.3	89.5

Explain the meaning of the reported information. If you bought AT&T bonds with $10,000 face value, how much would you pay (based on the preceding information reported)? Assume that the bonds were originally sold at par. What impact would the decline in value have on the financial statements for AT&T?

Analyzing a Conversion Feature

E10-3
LO2

Wynn Resorts

Wynn Resorts owns a variety of popular gaming resorts. Their annual report contained the following information:

Debenture Conversions

Our convertible debentures are currently convertible at each holder's option into shares of the Company's common stock at a conversion price of $23.00 per share (equivalent to 43.4782 shares per $1,000 principal amount). During the fourth quarter of 2006, we issued 1,434 shares of common stock upon the conversion of $33,000 of convertible debentures.

The current selling price for Wynn stock is $90. Explain why some bondholders have not converted the bonds to common stock, given that they can do so at $23 per share.

Computing Issue Prices of Bonds for Three Cases

E10-4
LO2,3,4

Thompson Corporation is planning to issue $100,000, seven-year, 8 percent bonds. Interest is payable each December 31. All of the bonds will be sold on January 1, 2009.

Required:
Compute the issue (sale) price on January 1, 2009, for each of the following independent cases (show computations):

a. **Case A:** Market (yield) rate, 8 percent.
b. **Case B:** Market (yield) rate, 6 percent.
c. **Case C:** Market (yield) rate, 10 percent.

Computing Issue Prices of Bonds for Three Cases

E10-5
LO2,3,4

Oxxford Corporation is planning to issue $500,000 worth of bonds that mature in 10 years and pay 6 percent interest each June 30 and December 31. All of the bonds will be sold on January 1, 2009.

Required:
Compute the issue (sale) price on January 1, 2009, for each of the following independent cases (show computations):

a. **Case A:** Market (yield) rate, 4 percent.
b. **Case B:** Market (yield) rate, 6 percent.
c. **Case C:** Market (yield) rate, 8 percent.

Analyzing Financial Ratios

E10-6
LO2,5

You have just started your first job as a financial analyst for a large stock brokerage company. Your boss, a senior analyst, has finished a detailed report evaluating bonds issued by two different companies. She stopped by your desk and asked for help: "I have compared two ratios for the companies and found something interesting." She went on to explain that the debt-to-equity ratio for Applied Technologies, Inc., is much lower than the industry average and that the one for Innovative Solutions, Inc., is much higher. On the other hand, the times interest earned ratio for Applied Technologies is much higher than the industry average, and the ratio for Innovative Solutions is much lower. Your boss then asked you to think about what the ratios indicate about the two companies so that she could include the explanation in her report. How would you respond to your boss?

E10-7 **Computing the Issue Price of a Bond**
LO3

Wilson Corporation issued a $100,000 bond that matures in five years. The bond has a stated interest rate of 6 percent. On January 1, 2009, when the bond was issued, the market rate was 8 percent. The bond pays interest twice per year, on June 30 and December 31. At what price was the bond issued?

E10-8 **Recording Bond Issue and First Interest Payment with Discount (Straight-Line Amortization)**

On January 1, 2009, Seton Corporation sold a $750,000, 8 percent bond issue (9 percent market rate). The bonds were dated January 1, 2009, pay interest each December 31, and mature in 10 years.

Required:

1. Give the journal entry to record the issuance of the bonds.
2. Give the journal entry to record the interest payment on December 31, 2009. Use straight-line amortization.
3. Show how the interest expense and the bonds payable should be reported on the December 31, 2009, annual financial statements.

E10-9 **Recording Bond Issue and First Interest Payment with Discount (Effective-Interest Amortization)**
LO3

On January 1, 2009, Hyde Corporation sold a $600,000, 7.5 percent bond issue (8.5 percent market rate). The bonds were dated January 1, 2009, pay interest each June 30 and December 31, and mature in four years.

Required:

1. Give the journal entry to record the issuance of the bonds.
2. Give the journal entry to record the interest payment on December 31, 2009. Use effective-interest amortization.
3. Show how the bond interest expense and the bonds payable should be reported on the June 30, 2009, income statement and balance sheet.

E10-10 **Recording Bond Issue: Entries for Issuance and Interest (Straight-Line Amortization)**
LO3

Northland Corporation had $300,000, 10-year bonds outstanding on December 31, 2009 (end of the accounting period). Interest is payable each December 31. The bonds were issued on January 1, 2009. The company uses the straight-line method to amortize any premium or discount. The December 31, 2009 annual financial statements showed the following:

Income statement	
Bond interest expense	$ 23,100
Balance sheet	
Bonds payable (net liability)	281,100

Required (show computations):

1. What was the issue price of the bonds? Give the journal entry to record the issuance of the bonds.
2. Give the entry to record 2009 interest.

E10-11 **Analyzing a Bond Amortization Schedule: Reporting Bonds Payable**
LO3

Stein Corporation sold a $1,000 bond on January 1, 2009. The bond specified an interest rate of 6 percent payable at the end of each year. The bond matures at the end of 2011. It was sold at a market rate of 8 percent per year. The following spreadsheet was completed:

	Cash Paid	Interest Expense	Amortization	Balance
January 1, 2009				$ 948
End of year 2009	$60	$76	$16	964
End of year 2010	60	77	17	981
End of year 2011	60	79	19	1,000

Required:

1. What was the bond's issue price?
2. Did the bond sell at a discount or a premium? How much was the premium or discount?
3. What amount of cash was paid each year for bond interest?
4. What amount of interest expense should be shown each year on the income statement?
5. What amount(s) should be shown on the balance sheet for bonds payable at each year-end? (For year 2011, show the balance just before retirement of the bond.)
6. What method of amortization was used?
7. Show how the following amounts were computed for year 2010: (a) $60, (b) $77, (c) $17, and (d) $981.
8. Is the method of amortization that was used preferable? Explain why.

Explaining Why Debt Is Sold at a Discount

E10-12
LO3
American Airlines

The annual report of American Airlines contained the following note:

The Company recorded the issuance of $775 million in bonds (net of $25 million discount) as long-term debt on the consolidated balance sheet. The bonds bear interest at fixed rates, with an average effective rate of 8.06 percent, and mature over various periods of time, with a final maturity in 2031.

After reading this note, an investor asked her financial advisor why the company didn't simply sell the notes for an effective yield of more than 8.06 percent and avoid having to account for a small discount over the next 20 years. Prepare a written response to this question.

Explaining Bond Features

E10-13
LO3
Disney

The annual report for Disney Company contained the following note:

The Company has outstanding $1.3 billion of convertible senior notes due on April 15, 2023. The notes bear interest at a fixed annual rate of 2.13 percent. The notes are convertible into common stock, under certain circumstances, at a conversion rate of 33.9443 shares of common stock per $1,000 principal amount of notes. This is equivalent to a conversion price of $29.46.

When the notes were issued, interest rates were much higher than the 2.13 percent offered by Disney. Why would an investor accept such a low interest rate?

Evaluating Bond Features

E10-14
LO3

You are a personal financial planner working with a married couple in their early 40s who have decided to invest $100,000 in corporate bonds. You have found two bonds that you think will interest your clients. One is a zero coupon bond issued by PepsiCo with an effective interest rate of 9 percent and a maturity date of 2018. It is callable at par. The other is a Walt Disney bond that matures in 2093. It has an effective interest rate of 9.5 percent and is callable at 105 percent of par. Which bond would you recommend and why? Would your answer be different if you expected interest rates to fall significantly over the next few years? Would you prefer a different bond if the couple were in their late 60s and retired?

Recording Bond Issue and First Interest Payment with Premium (Straight-Line Amortization)

E10-15
LO4

On January 1, 2009, Bochini Corporation sold a $1,400,000, 8 percent bond issue (6 percent market rate). The bonds were dated January 1, 2009, pay interest each June 30 and December 31, and mature in four years.

Required:

1. Give the journal entry to record the issuance of the bonds.
2. Give the journal entry to record the interest payment on June 30, 2009. Use straight-line amortization.
3. Show how the bond interest expense and the bonds payable should be reported on the June 30, 2009 balance sheet and income statement.

E10-16 LO4 Recording Bond Issue and First Interest Payment with Premium (Effective-Interest Amortization)

On January 1, 2009, Frog Corporation sold a $2,000,000, 10 percent bond issue (8.5 percent market rate). The bonds were dated January 1, 2009, pay interest each June 30 and December 31, and mature in 10 years.

Required:

1. Give the journal entry to record the issuance of the bonds.
2. Give the journal entry to record the interest payment on June 30, 2009. Use effective-interest amortization.
3. Show how the bond interest expense and the bonds payable should be reported on the June 30, 2009, financial statements.

E10-17 LO4 Preparing a Debt Payment Schedule with Effective-Interest Method of Amortization and Determining Reported Amounts

Shuttle Company issued a $10,000, three-year, 5 percent bond on January 1, 2009. The bond interest is paid each December 31. The bond was sold to yield 4 percent.

Required:

1. Complete a bond payment schedule. Use the effective-interest method.
2. What amounts will be reported on the income statement and balance sheet at the end of 2009, 2010, and 2011?

E10-18 LO4 Determining Financial Statement Effects for Bond Issue and First Interest Payment with Premium (Straight-Line Amortization)

Grocery Corporation sold a $300,000, 6 percent bond issue on January 1, 2009, at a market rate of 3 percent. The bonds were dated January 1, 2009, with interest to be paid each December 31; they mature in 10 years. The company uses the straight-line method to amortize any discount or premium).

Required:

1. How are the financial statements affected by the issuance of the bonds? Describe the impact on the debt-to-equity and times interest earned ratios, if any.
2. How are the financial statements affected by the payment of interest on December 31? Describe the impact on the debt-to-equity and times interest earned ratios, if any.
3. Show how the bond interest expense and the bonds payable should be reported on the December 31, 2009, annual financial statements.

E10-19 LO4,7 Computing the Issue Price of a Bond with Analysis of Income and Cash Flow Effects

Imai Company issued a $1 million bond that matures in 10 years. The bond has a 10 percent stated rate of interest. When the bond was issued, the market rate was 8 percent. The bond pays interest each six months. Record the issuance of the bond on June 30. Notice that the company received more than $1 million when it issued the bond. How will this premium affect future income and future cash flows?

E10-20 LO6 Reporting the Early Retirement of a Bond

Several years ago, Walters Company issued a $600,000 bond at par value. As a result of declining interest rates, the company has decided to call the bond at a call premium of 8 percent. Record the retirement of the bonds.

E10-21 LO6 Reporting the Early Retirement of a Bond with a Discount

The Nair Company issued $500,000 in bonds at a discount five years ago. The current book value of the bonds is $475,000. The company now has excess cash on hand and plans to retire the bonds. The company must pay a 7 percent (of par) call premium to retire the bonds. Record the retirement of the bonds.

Determining Effects on the Statement of Cash Flows

E10-22
LO7

A number of events over the life of a bond have effects that are reported on the statement of cash flows. For each of the following events, determine whether the event affects the statement of cash flows. If so, describe the impact and specify where on the statement the effect is reported.

Required:

1. A $1,000,000 bond is issued at a discount. The reported amount of the bond on the balance sheet is $960,000.
2. At year-end, $45,000 accrued interest is reported and $1,000 of the bond discount is amortized using the straight-line method.
3. Early in the second year, accrued interest is paid. At the same time, $9,000 interest that accrued in the second year is paid.
4. The company elects to retire the debt in the fifth year. At that time, the reported carrying value of the bonds is $960,000 and the company reports a $20,000 gain on the early retirement of debt.

EXERCISES
E10–1.

1. Bond principal, par value, or face value
2. Par value or face value
3. Face value or par value
4. Stated rate, coupon rate, or contract rate
5. Debenture
6. Callable bonds
7. Convertible bonds

E10–2.
The AT&T bonds have a coupon interest rate of 6.5%. If bonds with a $10,000 face value were purchased, the issue price would be $8,950 and they would provide a cash yield of 7.3%. A decline in value after issuance would have no impact on AT&T's financial statements.

E10–3.

When a bond offers a conversion feature, its value will be affected by the value of the common stock. As the price of the stock goes up, the bond becomes more valuable. In the case of the Wynn bond, each $1,000 face value bond can be converted into 43.4782 shares of stock. Given that the stock now sells for $90 per share, each bond is worth at least $3,913 based on this conversion feature. A bondholder who needs cash can simply sell the bond rather than converting it to stock and then selling the stock. In many cases, it is better to hold a company's bond than its stock. Such is the case with Wynn. The company's stock does not pay dividends but the bonds do pay periodic interest. Therefore, holders of bonds can participate in the appreciation of the stock while earning interest on their investment.

E10–4.

CASE A:		
$100,000 x 0.5835	$ 58,350	
$8,000 x 5.2064	41,651	
Issue price (market and stated rate same)	$100,001	(at par; $1 rounding error)
CASE B:		
$100,000 x 0.6651	$ 66,510	
$8,000 x 5.5824	44,659	
Issue price (market rate less than stated rate)	$111,169	(at a premium)
CASE C:		
$100,000 x 0.5132	$ 51,320	
$8,000 x 4.8684	38,947	
Issue price (market rate more than stated rate)	$ 90,267	(at a discount)

E10–5.

CASE A:		
$500,000 x 0.6730	$ 336,500	
$15,000 x 16.3514	245,271	
Issue price (market rate less than stated rate)	$581,771	(at a premium)
CASE B:		
$500,000 x 0.5537	$ 276,850	
$15,000 x 14.8775	223,163	
Issue price (market rate and stated rate same)	$500,013	(at par, $13 rounding error)
CASE C:		
$500,000 x 0.4564	$ 228,200	
$15,000 x 13.5903	203,855	
Issue price (market rate more than stated rate)	$ 432,055	(at a discount)

E10–6.

Applied Technologies' ratios look better than Innovative Solutions' ratios. Applied Technologies has a lower debt-to-equity ratio than Innovative Solutions. This means that they have less debt in their capital structure, and therefore, are a less leveraged company and have less risk than Innovative Solutions. Applied Technologies' times-interest-earned ratio is higher than the ratio for Innovative Solutions. This also makes Applied Technologies a less risky company than Innovative Solutions because Applied Technologies generates a larger amount of income compared to its obligatory payments to creditors than Innovative Solutions.

E10–7.

Computations:

Interest:		
$100,000 x 6% x 1/2	=	$3,000
Present value:		
$100,000 x 0.6756	=	67,560
$ 3,000 x 8.1109	=	24,333
Issue price	=	$91,893

E10–8.

Computations:

Interest:		
$750,000 x 8%	=	$ 60,000
Present value:		
$750,000 x 0.4224	=	316,800
$ 60,000 x 6.4177	=	385,062
Issue price	=	$701,862

Req. 1

January 1:

Cash (+A)	701,862	
Discount on Bonds Payable (+XL, -L)	48,138	
Bonds Payable (+L)		750,000

Req. 2

December 31:

Bond Interest Expense (+E, -SE)	64,814	
Discount on Bonds Payable (-XL, +L)		4,814
Cash (-A)		60,000

Req. 3

December 31, 2009:

Income statement:

Bond interest expense	$ 64,814	

Balance sheet:

Long-term Liabilities		
Bonds payable	$750,000	
Less: Unamortized discount ($48,138 - $4,814)	43,324	$706,676

E10–9.

Computations:

Interest:		
$600,000 x 7.5% x 1/2	=	$ 22,500
Present value:		
$600,000 x 0.7168	=	430,080
$ 22,500 x 6.6638	=	149,936
Issue price	=	$580,016

Req. 1

January 1:

Cash (+A)	580,016	
Discount on Bonds Payable (+XL, -L)	19,984	
Bonds Payable (+L)		600,000

Req. 2

June 30:

Bond Interest Expense (+E, -SE) ($580,016 x 8.5% x 1/2)	24,651	
Discount on Bonds Payable (-XL, +L)		2,151
Cash (-A)		22,500

Req. 3

June 30, 2009:

Income statement:

Bond interest expense	$ 24,651	

Balance sheet:

Long-term Liabilities		
Bonds payable	$600,000	
Less: Unamortized discount ($19,984 – $2,151)	17,833	$582,167

E10–10.

Req. 1

Issue price:

1. Par, $300,000 – Carrying value at end of 1 year, $281,100 = $18,900 (unamortized discount for 9 remaining years).
2. $18,900 ÷ 9 years = $2,100 discount amortization per year (straight line).
3. $281,100 – $2,100 = $279,000 issue price (discount $21,000).

Issuance entry:

Cash (+A)	279,000	
Discount on bonds payable (+XL, -L)	21,000	
Bonds payable (+L)		300,000

Req. 2

Coupon (stated interest) rate:

1. Reported interest expense, $23,100 – Discount amortized, $2,100 = $21,000 (cash interest).
2. $21,000 ÷ $300,000 = 7% coupon (stated interest) rate.

Interest expense:

Interest expense (+E, -SE)	23,100	
Discount on bonds payable ($21,000 ÷ 10 years) (-XL, +L)		2,100
Cash ($300,000 x 7%) (-A)		21,000

E10–11.

1. Issue price: $948. Stated rate, 6%; effective or yield rate, 8% (both were given).
2. Discount: $1,000 – $948 = $52.
3. $1,000 x 6% = $60.
4. 2009, $76; 2010, $77; 2011, $79.
5. Balance sheet:

2009	$ 964	
2010	$ 981	
2011	$1,000	(immediately before retirement)

6. Effective-interest amortization was used.

E10–11. (continued)

7. (a) $1,000 x 6% = $60.
   (b) $964 x 8% = $77 (rounded).
   (c) $77 – $60 = $17.
   (d) $964 + $17 = $981.
8. Effective-interest amortization measures the amount of interest expense and net liability for each period on a present value basis. The interest expense and related amortization are based on the actual unpaid balance of the debt and the effective interest rate. Straight-line amortization is an approximation that does not take these factors into consideration. The effective-interest method is conceptually preferable but the straight-line method is used widely in practice because of computational simplicity and the materiality concept.

E10–12.

The effective interest rate for a bond is determined by market forces and not the company. American was able to specify the coupon rate for the bonds which determines the periodic interest payments. It appears that American intended to sell the bonds close to par value which would be achieved by having a coupon rate that was the same as the market rate. The market rate of interest continually changes as the result of such factors as inflation expectations and the level of business activity. It is virtually impossible to issue a bond at a point when the coupon rate and the market rate are exactly the same.

E10–13.

Students will typically offer one of two explanations:

- Normally, bonds that offer less than the market rate sell at a discount that results in a bond yield equal to the market rate of interest. While this is generally true, we do not think it explains the low interest rate for the Disney bond.
- The Disney bond includes a feature not seen in most bonds. It provides investors with the opportunity to participate in stock price appreciation while holding a more conservative investment. The conversion feature permits bond holders to convert their bonds into stock at a price of $29.46 per share. When this problem was written, Disney stock was selling for $33 per share. This conversion feature enhances the potential return for investors and permits the issuer to pay a lower rate of interest.

E10–14.

Assuming that both companies offer the same business risk, many people might prefer the bond that had the slightly higher yield which is Walt Disney at 9.5%. If interest rates were to fall significantly, companies might decide to call their bonds and issue new ones at a lower interest rate. In this case, a zero coupon bond offers an extra margin of protection. A zero is sold at a deep discount (say 60% of par). It would be very unusual to see a company call such a bond if it were callable at par. In this case, the PepsiCo bond would be preferred.

Many people who are retired desire to have a steady income without engaging in time-consuming transactions. These people would probably not want to buy a zero coupon bond which paid interest only at maturity.

E10–15.

Computations:

Interest:		
$1,400,000 x 8% x 1/2	=	$ 56,000
Present value:		
$1,400,000 x 0.7894	=	1,105,160
$ 56,000 x 7.0197	=	393,103
Issue price	=	$1,498,263

Req. 1

January 1:		
Cash (+A)	1,498,263	
Premium on Bonds Payable (+L)		98,263
Bonds Payable (+L)		1,400,000

Req. 2

June 30:		
Bond Interest Expense (+E, -SE)	43,717	
Premium on Bonds Payable (-L)	12,283	
Cash (-A)		56,000

Req. 3

June 30, 2009:

Income statement:

Bond interest expense	$ 43,717	

Balance sheet:

Long-term Liabilities		
Bonds payable	$1,400,000	
Plus: Unamortized premium ($98,263 – $12,283)...	85,980	$1,485,980

E10–16.

Computations:

Interest:		
$2,000,000 x 5%	=	$ 100,000
Present value:		
$2,000,000 x 0.4350	=	870,000
$ 100,000 x 13.2944	=	1,329,440
Issue price	=	$2,199,440

Req. 1

January 1:		
Cash (+A)	2,199,440	
Premium on Bonds Payable (+L)		199,440
Bonds Payable (+L)		2,000,000

Req. 2

June 30:		
Bond Interest Expense (+E, -SE) ($2,199,440 x 4.25%)	93,476	
Premium on Bonds Payable (-L)	6,524	
Cash (-A)		100,000

Req. 3

June 30, 2009:

Income statement:

Bond interest expense	$ 93,476	

Balance sheet:

Long-term Liabilities		
Bonds payable	$2,000,000	
Plus: Unamortized premium ($199,440 – $6,524)...	192,916	$2,192,916

E10–17.

Req. 1

Date	Cash Interest	Interest Expense	Premium Amortization	Net Liability Balance
1/1/2009				$10,278
12/31/2009	$500	$10,278 x 4% = $411	$89	10,189
12/31/2010	500	$10,189 x 4% = $408	92	10,097
12/31/2011	500	$10,097 x 4% = $404	96	10,001*

* $1 rounding error

Present value computation:

Principal:	$10,000 x .8890	$ 8,890
Interest:	500 x 2.7751	1,388
	Issue price	$10,278

Req. 2

	2009	2010	2011
December 31:			
Interest expense.....	$411	$408	$404
Bond liability……	$10,189	$10,097	$10,000*

***Immediately before repayment of principal

E10–18.

Req. 1

Cash is increased on the balance sheet. The statement of cash flows shows an inflow from financing activities. Bonds payable and premium on bonds payable are increased on the balance sheet. The debt-to-equity ratio will be increased.

January 1:		
Cash (+A).....	376,774	
Premium on bonds payable (+L).....		76,774
Bonds payable (+L).....		300,000
Principal: $300,000 x .7441.....		$223,230
Interest: $18,000 x 8.5302.....		153,544
Issue (sale) price.....		$376,774

Req. 2

The interest expense will be increased on the income statement and the cash will be decreased on the balance sheet. The premium on bonds payable will be decreased on the balance sheet. The debt-to-equity ratio will be decreased and the times-interest-earned ratio will be decreased.

December 31:		
Interest expense (+E, -SE).....	10,323	
Premium on bonds payable ($76,774 ÷10 periods) (-L).....	7,677	
Cash ($300,000 x 6%) (-A).....		18,000

Req. 3

December 31, 2009:

Income Statement:

Bond Interest Expense	$10,323	

Balance Sheet:

Long-term Liabilities			
Bonds Payable		$300,000	
Add: Unamortized premium	($76,774 - $7,677)	69,097	$369,097

E10–19.

Req. 1

Computations:

Interest:

$1,000,000 x 10% = $100,000 ÷ 2 = $50,000

Present value

$ 1,000,000 x .4564	=	456,400
$ 50,000 x 13.5903	=	679,515
		$ 1,135,915

June 30:

Cash (+A)	1,135,915	
Bond payable (+L)		1,000,000
Bond premium (+L)		135,915

Req. 2

The amortization of bond premium results in cash payments for interest that are higher than reported interest expense for the period.

E10–20.

Bond payable (-L)	600,000	
Loss on bond call (+E, -SE)	48,000	
Cash (-A)		648,000

E10–21.

Bond payable (-L)	500,000	
Loss on bond call (+E, -SE)	35,000	
Bond discount (-XL,+ L)		25,000
Cash (-A)		510,000

E10–22.

1. Impacts Statement of Cash Flows (SCF) : report $960,000 inflow in financing section
2. Does not impact SCF
3. Impacts SCF : report $54,000 payment in operating activities section
4. Impacts SCF : report $940,000 payment in financing section