

BACHELOR of ECONOMICS



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

AC201 Fundamental Accounting

Semester 1/2012

Course Materials

Topic:

Chapters 9 & 10 Reporting and
Interpreting Liabilities and Bonds

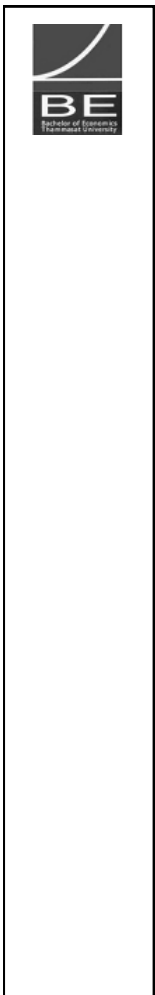
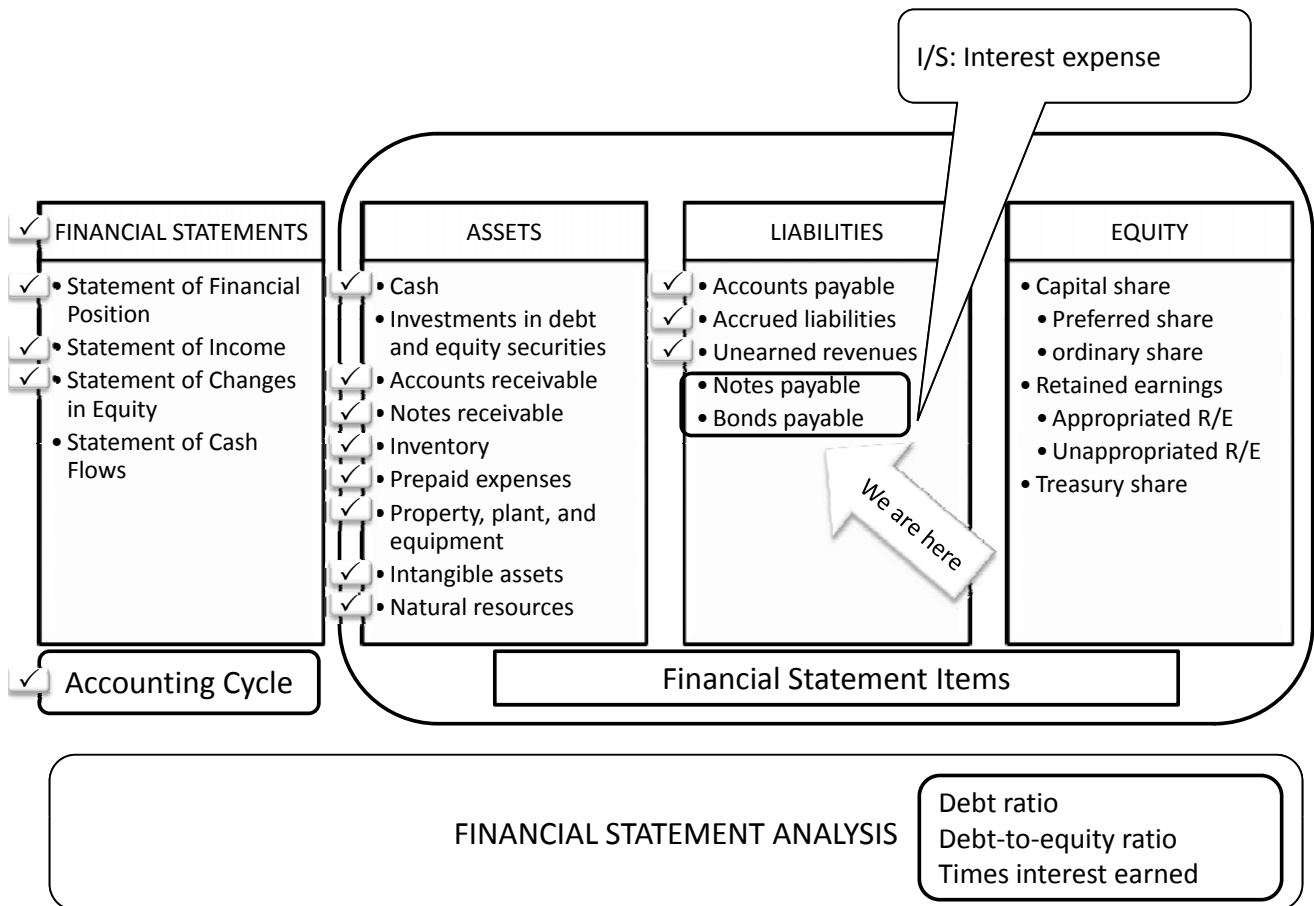
Session:

Sessions #10

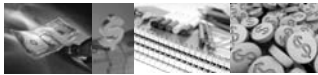
Instructor:

Assistant Professor Dr. Orapan Yolrabil





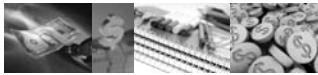
AC201 Fundamental Accounting



BACHELOR
of ECONOMICS

**CHAPTER 9 & 10:
REPORTING AND INTERPRETING
LIABILITIES AND BONDS**

**Assistant Professor Dr. Orapan Yolrabil
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Thammasat University**



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

Debt Financing -- Sources of financing provided by **Creditors**

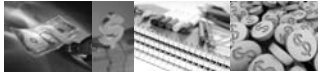
Interest is a legal obligations

Creditors can force bankruptcy

Equity

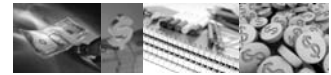
Equity Financing -- Sources of financing provided by **Owners**

Dividend is a board of directors' discretion



Sources of Debt Financing

Private Placement	Publicly Issued Debt Certificates
<p>1. Find a lender</p>	<p>1. Set loan terms</p>
<p>2. Set loan terms</p>	<p>2. Find lenders</p>
<p>3. Borrow money (notes payable)</p>	<p>3. Borrow money (bonds payable)</p>



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

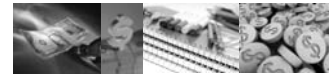
Maturity > 1 year

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.

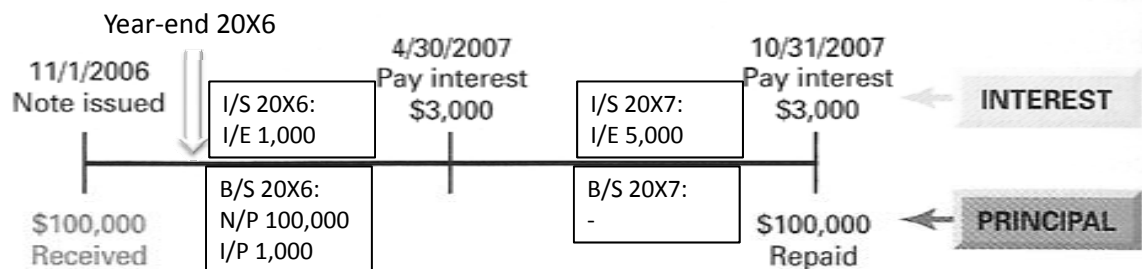
Noncurrent (long-term) liabilities:

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

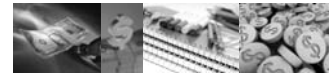


Example: Notes Payable

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.



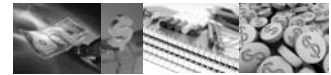
A	=	L	+	E	
Cash [A+]	+100,000	Notes payable [L+]	+100,000		
		Interest payable [L+]	+1,000	Interest expense [EXP+, E-]	-1,000
Cash [A-]	-3,000	Interest payable [L-]	-1,000	Interest expense [EXP+, E-]	-2,000
Cash [A-]	-103,000	Notes payable [L-]	-100,000	Interest expense [EXP+, E-]	-3,000



GENERAL JOURNAL				
Date		Accounts Titles and Explanation	Debit	Credit
20X6				
Nov	1	Cash (+A)	100,000	
		Notes payable (+L)		100,000
		To record the proceed from the 1-year note.		
Dec	31	Interest expense (+EXP, -E)	1,000	
		Interest payable (+L)		1,000
		To record interest on note for 20X6.		

GENERAL JOURNAL				
Date		Accounts Titles and Explanation	Debit	Credit
20X7				
Apr	30	Interest payable (-L)	1,000	
		Interest expense (+EXP, -E)	2,000	
		Cash (-A)		3,000
		To record the interest payment.		
Oct	31	Notes payable (-L)	100,000	
		Interest expense (+EXP, -E)	3,000	
		Cash (-A)		103,000
		To record interest on note for 20X6.		

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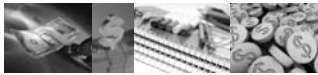


Bonds Payable

- **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**.

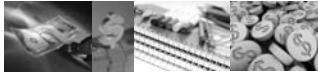
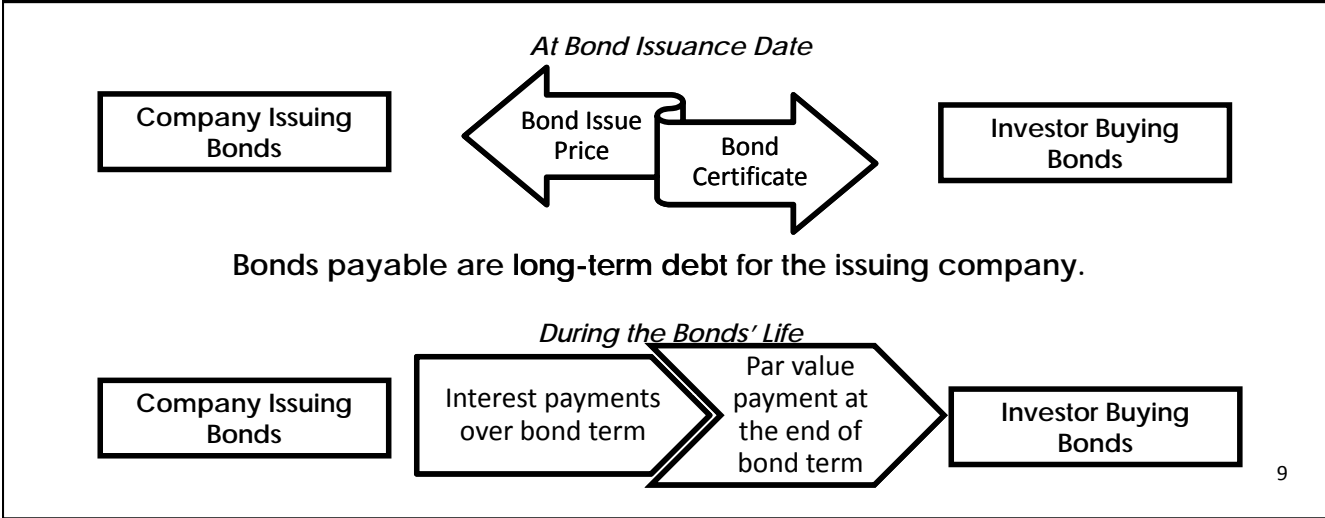


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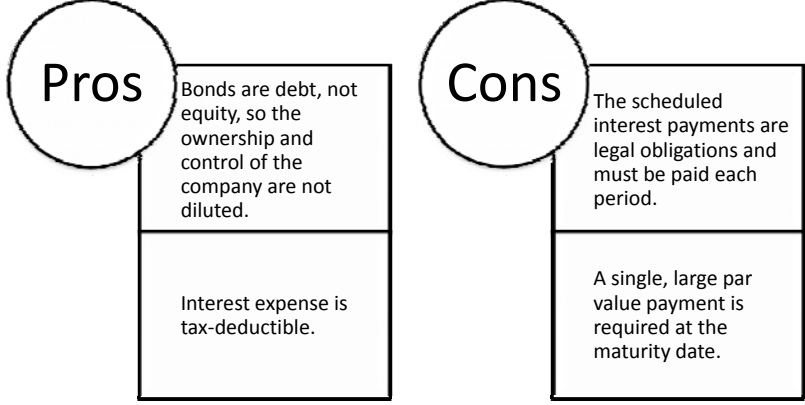
Bonds Payable (Cont.)

- **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.



Pros and Cons

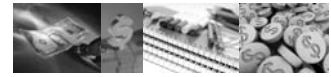
- **Bond: A contract in which a borrower promises to pay a specified rate of interest for each period the bond is outstanding and repay the principal at the maturity date to the lender.**



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.)

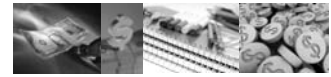
• **Bond Issue: Prices and Interest Rates**

- 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 excess 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.

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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.

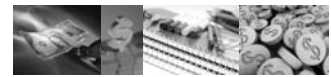
• **Callable and convertible bonds**

- 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.

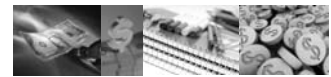
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Example 1 – Issue Price of Bonds

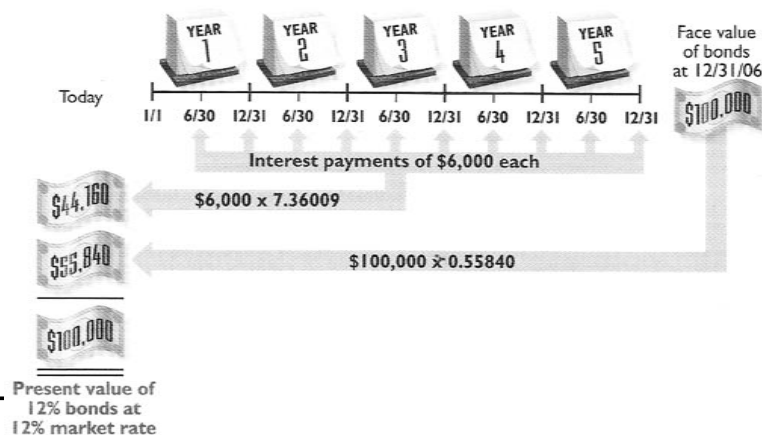
- **Par Value = Principal = Face value: \$1,000,000**
- **Stated interest rate = Coupon rate = Contract rate: 10% (an annual rate)**
- **Interest payment schedule: Annually, Semi-annually, Quarterly, Monthly**
 - Interest payment dates: **Jun. 30** and **Dec. 31**
- **Date of issuance: Jan. 1, 20X1**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

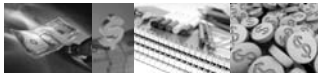
Market interest rate = Yield = Effective interest rate:
???



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.





Issue Price of Bonds

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

$$\begin{aligned} & \text{Present Value of the Principal (a single payment)} \\ & + \text{Present Value of the Interest Payments (an annuity)} \\ & = \underline{\underline{\text{Issue Price of the Bond}}} \end{aligned}$$

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.

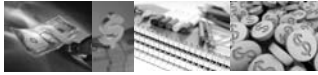
$$\text{Interest} = \text{Principal} \times \text{Stated Rate} \times \text{Time}$$

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



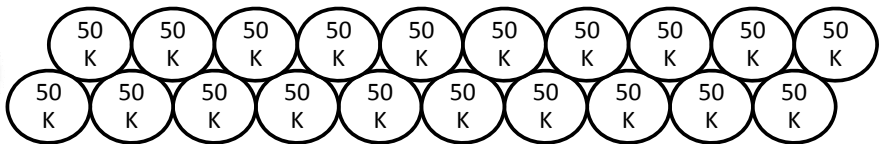
Future Cash Flows on the Bonds

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 ???



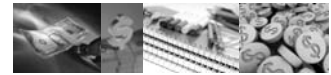
Dec. 31, X10

	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

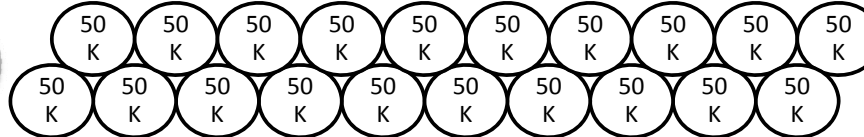


Future Cash Flows on the Bonds

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

Jan. 1, X1

Price
 ???



Interest

Dec. 31, X10

Case #2: Market interest rate = 8%

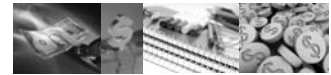
Future cash flows	PV factor (n=20, i=4%)	Amount
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Present value of the principal	1,000,000	0.45639	456,390
+ Present value of the interest	50,000	13.59033	679,517
= Bond price			1,135,907

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

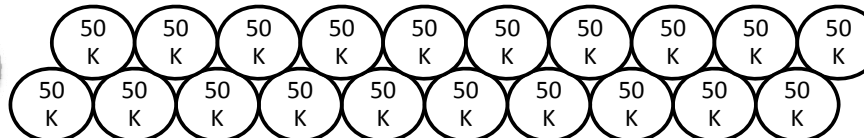


Future Cash Flows on the Bonds

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

Jan. 1, X1

Price
 ???



Interest

Dec. 31, X10

Case #3: Market interest rate = 12%

Future cash flows	PV factor (n=20, i=6%)	Amount
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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, 2011

Maturity date: December 31, 2020

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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MARKET RATE = CONTRACT RATE

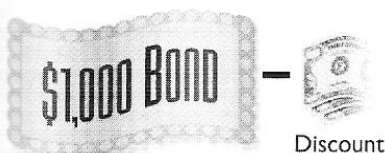
Selling price of bond = \$1,000



Bond par

MARKET RATE > CONTRACT RATE

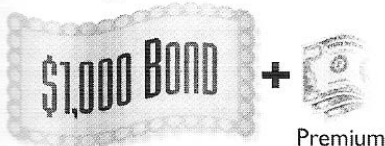
Selling price of bond < \$1,000



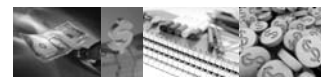
Bond discount: The difference between selling price and par value when a bond is sold for less than par value.

MARKET RATE < CONTRACT RATE

Selling price of bond > \$1,000



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



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 bond is due in five years. If the market interest rate today is 12 percent, what is the present value of the bond?

- Financial calculator:

- $FV = 10,000, I = 6\%, n = 10 \rightarrow PV = 5,580 \text{ Baht}$

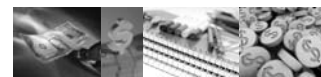
- $PMT = 450, I = 6\%, n = 10 \rightarrow PVA = 3,312 \text{ Baht}$

- Bonds issue price = $5,580 + 3,312 = 8,892 \text{ Baht}$

- PV Table:

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

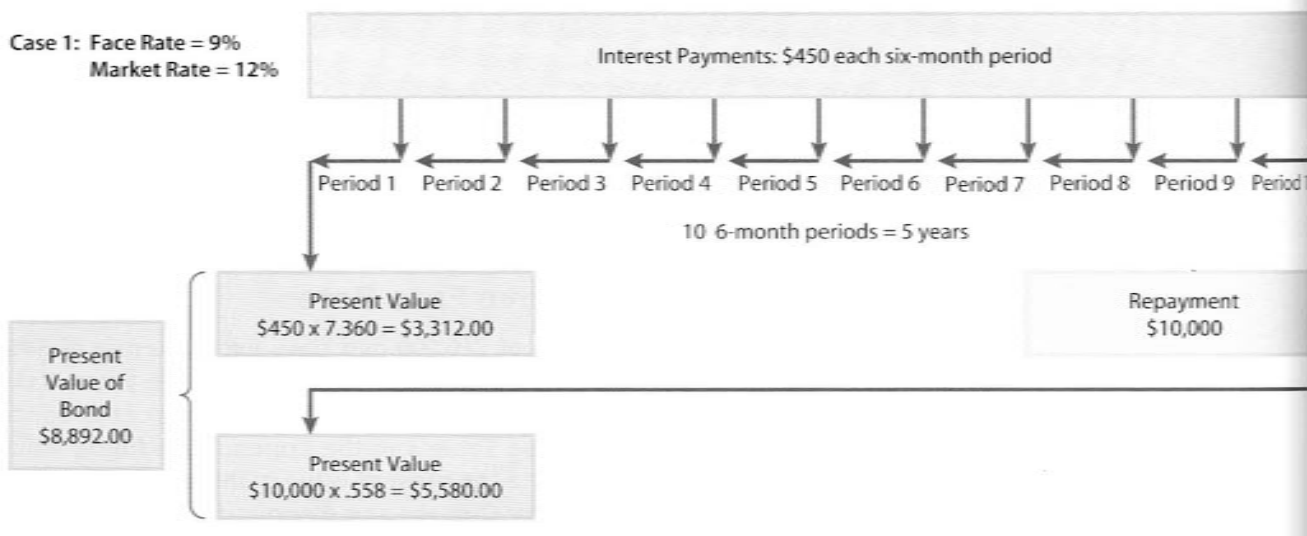
- The market rate has increased so much since the bond was issued – from 9 percent to 12 percent – that the value of the bond today is only 8,892 Baht. That amount is all investors would be willing to pay at this time for a bond that provides income of 450 Baht every six months and a return of the 10,000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

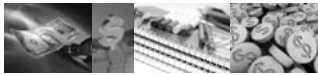


Using Present Value to Value a Bond -- Illustration

Using Present Value to Value a \$10,000, 9 Percent, Five-Year Bond

Case 1: Face Rate = 9%
Market Rate = 12%



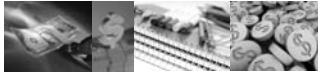


Case 2: Market Rate Below Stated Rate

• **Example:**

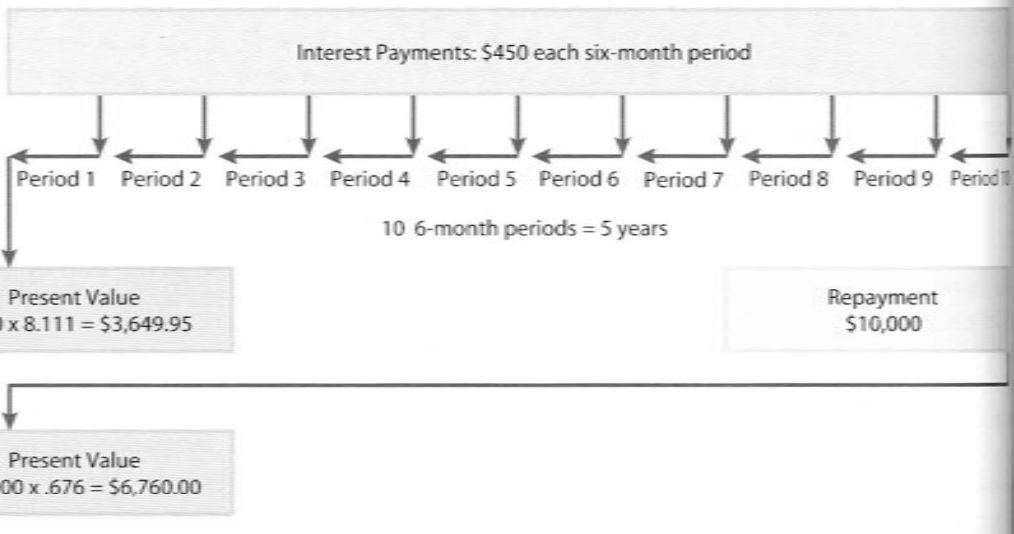
- Suppose a bond has a par value of 10,000 Baht and pays fixed interest of 450 Baht every six months (a 9 percent annual rate). The bonds is due in five years. If the market interest rate today is 8 percent, what is the present value of the bond?
 - Financial calculator:
 - $FV = 10,000, I = 4\%, n =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

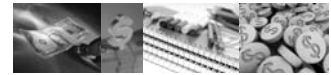
Present value of a single payment at the end of 10 periods at 4%: $(10,000 \times 0.676)$	6,760.00
Present value of 10 periodic payments at 4%: (450×8.111)	3,649.95
Present value of 10,000 Baht bond	<u>10,409.95</u>



Using Present Value to Value a Bond -- Illustration

Case 2: Face Rate = 9%
Market Rate = 8%



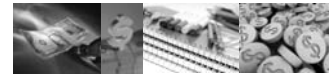


Bonds	Principal	Stated interest rate	Interest payment periods	Market interest rate	Bond Life	Bond price
Bond #1	1,000,000	10%	Semiannually	6%	4 years	Premium
Bond #2	1,000,000	12%	Quarterly	10%	2 years	Premium
Bond #3	1,000,000	8%	Annually	10%	10 years	Discount

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

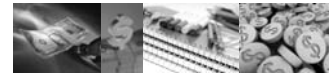


Entry at issuance

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

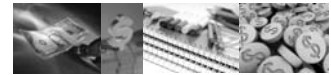


Accounting for the Issuance of Bonds -- @ Par

• 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		

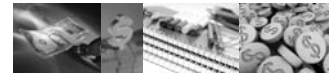


Accounting for the Issuance of Bonds -- @ Par (Cont.)

- 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		

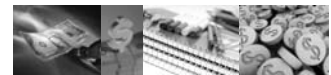
Note that, on December 31, the Company must record the accrued interest to interest payable .



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:

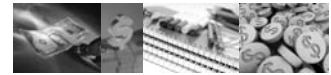
Date	General Journal	Debit	Credit
Jan. 1, 20X11	Dr. Bonds payable [L-]	100,000	
	Cr. Cash [A-]		100,000
	Paid 100,000 Baht par value to bondholders at maturity		



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		
	<i>Par value of the bonds</i>	<i>100,000</i>	
	<i>Less: Issue price of bonds (100,000 x 96.149)</i>	<i>96,149</i>	
	<i>Discount on bonds payable</i>	<i>3,851</i>	

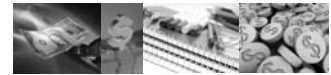


Accounting for the Issuance of Bonds -- @ Discount (Cont.)

- 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	
<u>Less: Bonds discount</u>	<u>3,851</u>	96,149

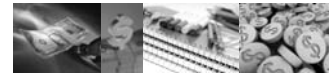
- bonds discount is a **contra-liability account**. Its balance is deducted from the face amount of the bonds to arrive at the **carrying amount**, or **present value**, of the bonds. The bond discount balance at a given point in time is unamortized balance and it will be amortized (written off) over 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		
	<i>Issue price of bonds (100,000 x 104.10)</i>	<i>104,100</i>	
	<i>Less: Par value of the bonds</i>	<i>100,000</i>	
	Premium on bonds payable	4,100	

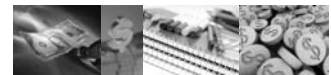


Accounting for the Issuance of Bonds -- @ Premium (Cont.)

- 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

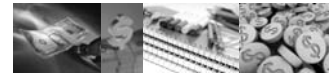
- The carrying amount of the bonds payable is 104,100 Baht, which equals the par value of the bonds plus the bonds premium. The cash received from the bond issue is also 104,100 Baht. This means that the purchasers were willing to pay a premium of 4,100 Baht to buy these bonds because their stated interest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



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.





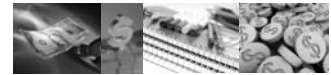
Amortizing a Bond Discount

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 of 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.

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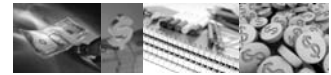


Amortizing a Bond Discount - Straight-line Method

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

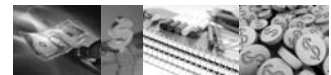
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Amortizing a Bond Discount - Straight-line Method (Cont.)

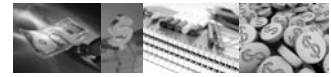
- On July 1, 20X6, the first semiannual interest date, the entry would be as follows:

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

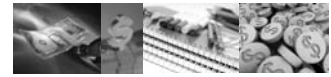
- Effective interest method:**
 - When the ***effective interest method*** is used to compute the interest and amortization of a bond discount, a constant interest rate is applied to the carrying amount of the bonds at the beginning of each interest period. This constant rate is the market rate (i.e., 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

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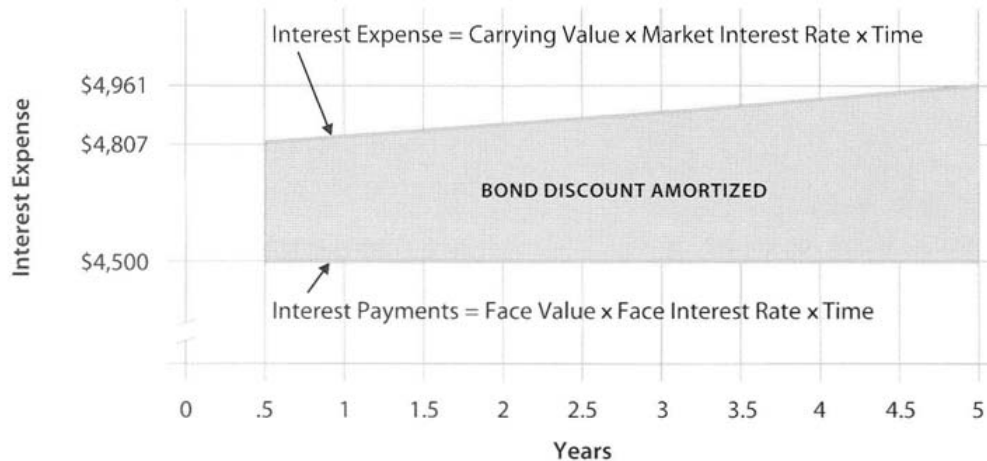
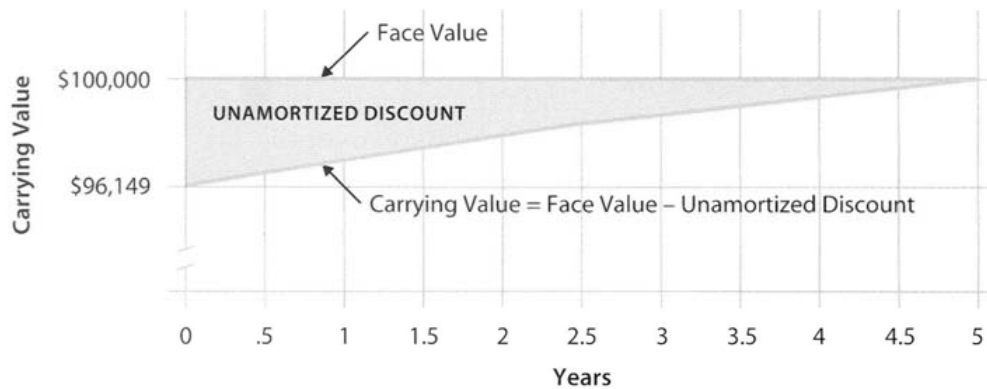
Amortizing a Bond Discount - Effective Interest Method (Cont.)

- 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		

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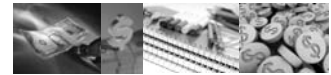
Carrying Value and Interest Expense—Bonds Issued at a Discount



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AC201 Fundamental Accounting

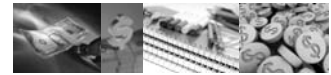


Amortizing a Bond Premium

• 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.

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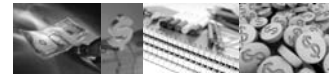


Amortizing a Bond Premium – Straight-line method

• 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

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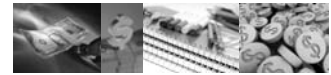


Amortizing a Bond Premium – Straight-line method (Cont.)

- 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		

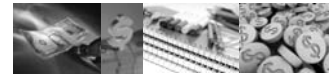
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Amortizing a Bond Premium - Effective Interest Method (Cont.)

	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

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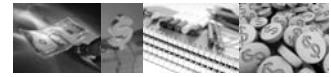
Amortizing a Bond Premium - Effective Interest Method (Cont.)

• **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		

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Financial Ratios Related to Debt Financing

- **Debt ratio:**

- A measure of leverage, computed by dividing total liabilities by total assets.

- $\text{Debt ratio} = \text{Total liabilities} \div \text{Total assets}$

- **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.

- $\text{Debt-to-equity ratio} = \text{Total liabilities} \div \text{Total shareholders' equity}$

- **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:

- $\text{Times interest earned ratio} = \text{Earnings before interest and taxes} \div \text{Interest expense}$