

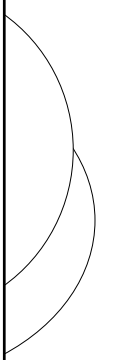


# Chapter 10 Reporting and Interpreting Bonds

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Zining Li  
Acct 2301 Fall08

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## Topics on Bonds

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- Terminology of bonds
  - coupon rate vs. market rate
  - face value vs. carrying amount
- Proceeds from bonds (or selling/issuing price of bonds)
- Bonds issued at par, premium, and discount
- Amortization of bond premium (discount)

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## Bonds

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- Debt instruments sold to the public
- An alternative to raise capital
- Corporate bonds are publicly traded at *bond market*

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## Stated on a share of Bond

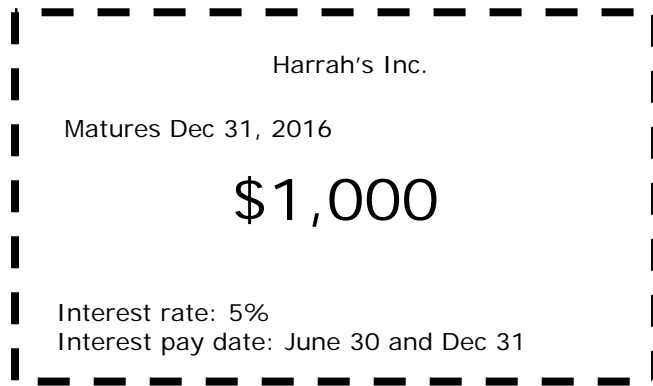
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- Maturity date
- Face value
  - Amount of cash that bondholders will receive at maturity date
  - Also called bond principal, par value, face amount
- Interest rate
  - Is the stated interest rate or coupon rate
  - NOT the market rate
- Interest pay date: annually or semi-annually, or monthly

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## A share of bonds

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## Bond holders are entitled to

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- Principal
  - A lump sum payment at maturity date
  - Face value of the bond
- Interest payment
  - A series of periodic cash payment
  - = face value x stated interest rate

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## Proceeds of Bond

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- Amount of cash that issuing company receives from the sale of bonds
- Also called the selling price of bonds or the issuing price
- Not always equal the face value of bonds

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## How is the selling price of bonds determined

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- Not determined by the issuing company, but the market (Why?)
- Demand = Supply
- = Present Value of all the future cash flows the bonds render
- = PV (face value) + PV (periodic interest payments) = Issuing price of bonds

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Example: Issued \$1,000, 5-year bonds, dated and sold 01/01/1997, paying 10% annual interest every Dec 31<sup>st</sup> .

Market Interest Rate <i>r</i>	Principle payment	PV Factor \$1 <i>n=5</i>	Interest payment	PV Factor Annuity <i>n=5</i>	Selling price of bonds
10%	<b>\$1,000</b>	<b>0.6209</b>	<b>\$100</b>	<b>3.7908</b>	\$1,000
12%	<b>\$1,000</b>	<b>0.5674</b>	<b>\$100</b>	<b>3.6048</b>	\$928
9%	<b>\$1,000</b>	<b>0.6499</b>	<b>\$100</b>	<b>3.8897</b>	\$1,039

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## Recording Sale of Bonds

	Accounts	Debits	Credits
<b>Issue at Par</b>	<b>Dr. Cash</b>	<b>\$1,000</b>	
	<b>Cr. Bonds payable</b>		<b>\$1,000</b>
<b>Issue at Discount</b>	<b>Dr. Cash</b>	<b>\$928</b>	
	<b>Dr. Discount on bonds payable</b>	<b>\$72</b>	
	<b>Cr. Bonds payable</b>		<b>\$1,000</b>
<b>Issue at Premium</b>	<b>Dr. Cash</b>	<b>\$1,039</b>	
	<b>Cr. Bonds payable</b>		<b>\$1,000</b>
	<b>Cr. Premium on bonds payable</b>		<b>\$39</b>

Both discount and premium are liability accounts

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## Carrying Amount of Bonds

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- Also called Book Value of bonds payable
- Its amount equal to
  - Bonds Payable + Premium on Bonds Payable
- Or
- Bonds Payable - Discount on Bonds Payable

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## Recording Interest Expense 1

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### Interest Expense VS Interest Payment

- Different concepts
- Different calculation
- Often different amounts
  - They equal each other *only* when bonds are issued at par

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## Recording Interest Expense 2

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Also a process of amortizing the discount or premium

- Total amount of discount or premium is allocated over the life of bonds
- With each interest payment, the balance of discount or premium will be reduced by a portion
- The balance of discount or premium will be reduced to zero at maturity

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## Recording Interest Expense 3

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Methods of amortizing discount or premium

- Straight-line (NOT GAAP)
- Effective-interest (GAAP)

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## Straight-line method

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- Allocates the discount or premium evenly over the life of bonds
- Interest expense is a derived (plug-in) number to balance the journal entry
- Interest expense does not reflect the true economic cost of borrowing money
- Allowed only when it yields similar amounts as effective-interest method

***Not for test***

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## Effective-interest method

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- Interest Expense  
= carrying amount X market interest rate
- Interest expense reflects the true cost of using borrowed funds
- Amortization amount= the difference between interest payment and interest expense

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## Recording Interest Expense Issued at discount

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On the date of interest payment

\$y = cash paid to bondholders

\$y = **face value** X stated interest rate

\$x = interest expense the company incur

\$x = **carrying amount** X market rate

Amortization of discount:

Dr. Interest Expense	\$x	
Cr. Cash		\$y
Cr. Discount on Bonds payable		\$z

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## Recording Interest Expense Issued at premium

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On the date of interest payment

\$yy = cash paid to bondholders

\$yy = **face value** X stated interest rate

\$xx = interest expense the company incur

\$xx = **carrying amount** X market rate

Amortization of premium:

Dr. Interest Expense	\$xx	
Dr. Premium on Bonds payable	\$zz	
Cr. Cash		\$yy

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## Example: Amortization of Discount on Bonds Payable

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- \$100,000, 5- year, 12% bonds were issued at January 1, 1998; paying interest semiannually starting June 30, 1998.
- market interest rate was 14%
- the bonds were sold for \$92, 976.
- Assume the company prepares financial statements semi-annually.

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## Effective-interest method

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- Interest payment =?
- Interest expense =?
- Amortization of discount or premiums =?
- Carrying amount (book value) of bonds=?

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Payment Period	Carrying amount of Bonds at beginning of period	Interest expense	Interest to be paid	Amortization	Carrying amount of Bonds at end of Period
(1)	(2)	(3)	(4)	(5) = (3) - (4)	(6) = (2) + (5)
1/1/1998					92,976
6/30/1998	92,976	6,508	6,000	508	93,484
12/31/1998	93,484	6,544	6,000	544	94,028
6/30/1999	94,028	6,582	6,000	582	94,610
12/31/1999	94,610	6,623	6,000	623	95,233
6/30/2000	95,233	6,666	6,000	666	95,899
12/31/2000	95,899	6,713	6,000	713	96,612
6/30/2001	96,612	6,763	6,000	763	97,375
12/31/2001	97,375	6,816	6,000	816	98,191
6/30/2002	98,191	6,873	6,000	873	99,064
12/31/2002	99,064	6,936	6,000	936	100,000

## Journal Entries

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Date	Accounts	Debits	Credits
June 31, 1998	Dr. Interest Expense	\$6,508	
	Cr. Discount on bonds payable		\$508
	Cr. Cash		\$6,000
Dec 31, 1998	Dr. Interest Expense	\$6,544	
	Cr. Discount on bonds payable		\$544
	Cr. Cash		\$6,000

## Classification of Bonds

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- *Unsecured (debenture) bonds*
  - Do not have pledged assets as a guarantee of repayment at maturity
- *Secured bonds*
  - Include a pledge of specific assets as a guarantee of repayment
- *Callable bonds*
  - May be retired and repaid (called) at any time at the option of the issuer
- *Redeemable bonds*
  - May be turned in at any time for repayment at the option of the bondholder
- *Convertible bonds*
  - May be exchanged for securities of the issuer
- *Zero-coupon bonds*
  - Bonds that do not pay cash interest but the single lump sum payment at maturity

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## Ratios on Solvency

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

$$\text{Debt-to-Equity ratio} = \frac{\text{Total Liabilities}}{\text{Total Shareholders' Equity}}$$

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