Chapter 10

Reporting and Interpreting Bond Securities债券的报告和解释

Learning Objectives

After studying this chapter, you should be able to:

10-1 Describe the characteristics of bond securities.

10-2 Report bonds payable and interest expense for bond securities issued at par.

10-3 Compute and analyze the times interest earned ratio.

10-4 Report bonds payable and interest expense for bond securities issued at a discount.

10-5 Report bonds payable and interest expense for bond securities issued at a premium.

10-6 Compute and analyze the debt-to-equity ratio.

10-7 Report the early retirement of bond securities.

10-8 Explain how bond securities are reported on the statement of cash flows.

10-2

Understanding the Business

A company's capital structure is the mixture of **debt** and **equity** it uses to finance its operations.

Borrowing a large amount from an individual bank is often impractical, so companies and governments issue bond securities (**bonds债券**) to the investing public instead.

After bonds are issued they are traded on exchanges such as the New York Bond Exchange.

- The ability to sell a bond is an advantage to investors because it provides them with liquidity.投资人流动性好
- By issuing more liquid debt that investors can easily buy and sell in the bond markets, companies are able to reduce the cost of long-term borrowing.公司融资成本低

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Exhibit 10.1 Excerpts from Amazon's Long-Term Debt Footnote

NOTE 5-Long-Term Debt (in millions)	December 31, 2017	December 31, 2016
1.200% Notes due on November 29, 2017	$ —	$ 1,000
2.600% Notes due on December 5, 2019	1,000	1,000
1.900% Notes due on August 21, 2020	1,000	—
3.300% Notes due on December 5, 2021	1,000	1,000
2.500% Notes due on November 29, 2022	1,250	1,250
2.400% Notes due on February 22, 2023	1,000	—
2.800% Notes due on August 22, 2024	2,000	—
3.800% Notes due on December 5, 2024	1,250	1,250
5.200% Notes due on December 3, 2025	1,000	—
3.150% Notes due on August 22, 2027	3,500	—
4.800% Notes due on December 5, 2034	1,250	1,250
3.875% Notes due on August 22, 2037	2,750	—
4.950% Notes due on December 5, 2044	1,500	1,500
4.050% Notes due on August 22, 2047	3,500	—
4.250% Notes due on August 22, 2057	2,250	—
Credit Facility	592	495
Other long-term debt	100	93
Total debt	24,942	8,838
Less current portion of long-term debt	(100)	(1,056)
Long-term debt reported on the balance sheet	$24,842	$ 7,782

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Characteristics of Bonds Payable
Reasons Why Companies Issue Bonds

Advantages of bonds	Disadvantages of bonds
• Stockholders maintain control • A portion of interest expense is tax deductible • The return to shareholders can be positive if money is borrowed at a low interest rate and invested in projects that earn a higher rate.	• Risk of bankruptcy exists • Negative impact on cash flows because bonds must be repaid at a specific time in the future

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Bond Terminology[1]

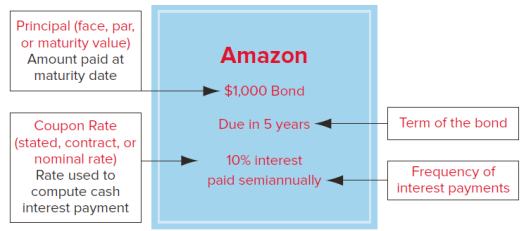
A bond usually requires the payment of interest over its life with repayment of principal on the maturity date.

The bond principal本金 is:

(1) the amount a company must pay to bondholders at the maturity date

(2) the amount used to compute the bond's periodic cash interest payments.

- Bond principal is also called face value面值, par value, or maturity value.
- All bonds have a face value. The face value is usually $1,000, but it can be any amount.



10-6

Bond Terminology 2

The coupon rate is the interest rate specified on a bond, and the rate used to compute the bond's periodic cash interest payment.

A bond always specifies the coupon rate and the frequency of periodic cash interest payments.

- The **coupon rate** 票面利率is also called the **stated rate, contract rate,** or **nominal rate**.
- The interest payments: coupon payments.
- Coupon rate is always stated in annual terms.
  - If interest is paid annually, the periodic cash interest payment is computed as the bond's face value times its coupon rate.
  - If the interest payment is made more frequently, the coupon rate should be converted to a rate per interest.

Frequency of Interest Payment	Interest Rate per Interest Period	Case Payment per Interest Period
Annual (once per year)	8% × 1 = 8%	$1,000 × 8% = $80
Semiannual (twice per year)	8% × 1/2 = 4%	$1,000 × 4% = $40
Quarterly (four times per year)	8% × 1/4 = 2%	$1,000 × 2% = $20

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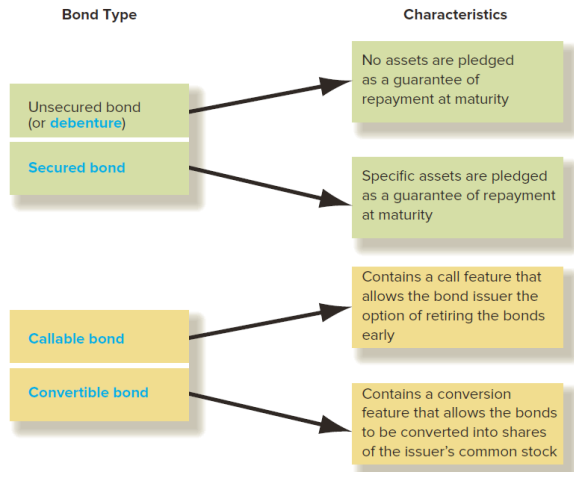
Characteristics of different types of bonds

Different types of bonds have different characteristics because individual investors have different risk and return preferences.



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Bond Issuance Process

When a company decides to issue securities in the bond markets, it prepares:

- The **indenture**债券契约is a legal document that specifies all the details of the bond offering.
- The **prospectus**债券募集说明书is a regulatory document that is filed with the Securities and Exchange Commission.

The prospectus also contains **covenants** 债券合约 designed to protect the bondholders

An independent party, called the **trustee**受托机构, is usually appointed to represent the bondholders.

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Bond Rating Agencies评级机构 and Assessments of Default Risk

FINANCIAL ANALYSIS

Agencies evaluate the risk that a bond issuer will not be able to meet the requirements specified in the prospectus.

This risk is called **default risk违约风险**. Higher-quality bonds have a lower default risk, while lower-quality bonds have a higher default risk.

Standard & Poor's	Moody's	Fitch	Description	Risk
AAA	Aaa	AAA	Highest investment grade	Low risk
AA	Aa	AA		
A	A	A		
BBB	Baa	BBB	Lowest investment grade	
BB	Ba	BB	Highest junk bond grade	
B	B	B		
CCC	Caa	CCC		
CC	Ca	CC		
C	C	C		
D	C	DDD	In default or unrated	High risk

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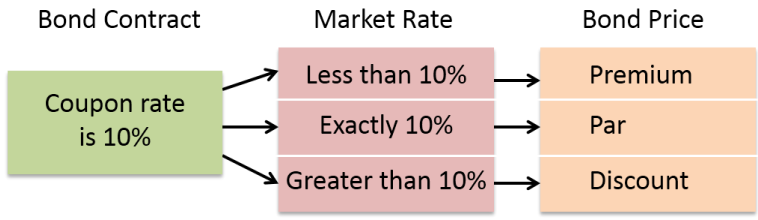
Relationship between Coupon Rate and Market Rate

Price of the bonds：present value of the bonds using the market rate(yield rate) of interest on the day the company issues the bonds.

The relationship between the market interest rate and the bond's coupon rate determines whether the bond is issued at **par**, at a **premium**, or at a **discount**.

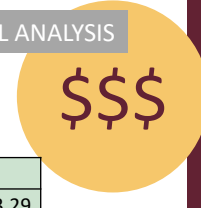


Important: Regardless of whether a bond is issued at par, at a discount, or at a premium, investors always will earn the market rate of return.

10-11

Bond Information from the Business Press

FINANCIAL ANALYSIS



Bond prices are reported each day in the business press based on transactions that have occurred on the bond exchange.

Issuer	Coupon (%)	Maturity	Current ($)	Yield (%)
Apple	3.45	2024	101.29	3.29
Amazon	2.50	2022	94.92	3.20
Walmart	3.30	2024	101.36	3.13

Amazon bond pays a coupon rate of 2.5%, will mature in the year 2022, and is currently selling for $94.92. The bond's "yield" reflects a return on investment of 3.2% for those investors who purchased the bond at its current price and hold it to maturity.

The current price listed above does not affect the bond issuer's financial statements—the issuer is not a part of the transaction when one investor decides to sell his or her bond to another investor.

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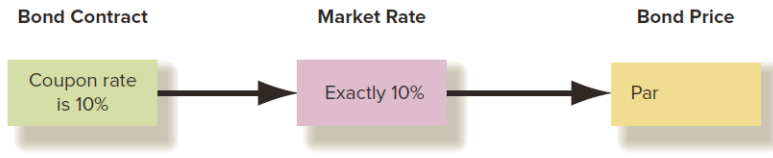
Bonds Issued at Par 1



10-13

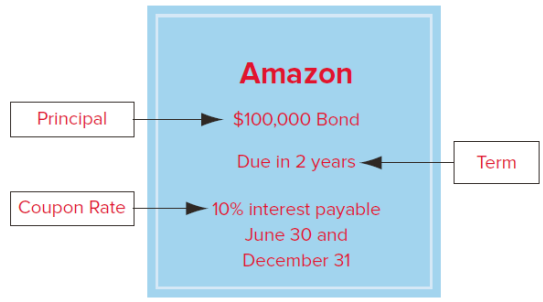
Bonds Issued at Par 2

On January 1, 2019, Amazon issues bonds with a coupon rate of 10% and a face value of $100,000.

The bonds start accruing interest on January 1, 2019, and will pay interest each June 30 and December 31.

The bonds mature in two years on December 31, 2020.

Investors are willing to pay $100,000 in cash for the bonds meaning the bonds are sold at **Par**.



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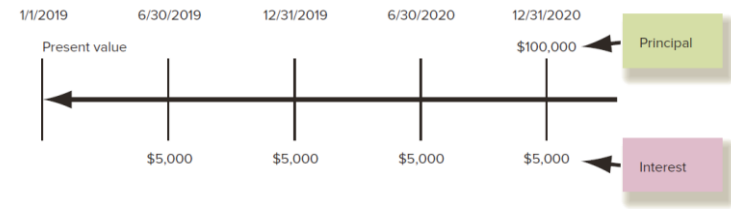
Bonds Issued at Par 3

The amount of money a company receives when it sells bonds is the present value of the future cash flows associated with the bonds.



a single payment of $100,000 when the bond matures in 2 years

an annuity of $5,000 [$100,000 × (10% × ½ year)] payable twice a year for two years. The 10% in the equation is the **bond's coupon rate**.

10-15

Bonds Issued at Par 4

We use the bond's **market interest rate** per period (in this case 10% ÷ 2 = 5%) to compute the bond's present value as follows:

	Present Value
Single principal payment at maturity: $100,000 × 0.82270	$82,270
+ Annuity cash interest payment: $5,000 × 3.54595	17,730
Issue (sale) price of bonds	$100,000

10-16

Bonds Issued at Par 平价发行

When the market rate of interest equals the coupon rate, the present value of the future cash flows associated with a bond always equals the bond's face value amount.

On the date Amazon issues the bonds, it records a bond liability equal to the amount investors are willing to pay for the bonds:

	Debit	Credit
Cash (+A)	100,000	
Bonds payable (+L)		100,000

The amount of interest each period will be $5,000 ($100,000 × 0.10 × ½ year). The entry to record each interest payment is as follows:

	Debit	Credit
Interest expense (+E, −SE)	5,000	
Cash (−A)		5,000

10-17

Reporting Interest Expense

Interest expense is reported on the income statement. Because interest is related to financing activities rather than operating activities, it is normally not included in operating expenses on the income statement.

Interest expense is typically reported just below "income from operations" on the income statement.

AMAZON.COM, INC.
CONSOLIDATED STATEMENTS OF INCOME
(in millions, except per share data)

	Year Ended December 31		
	2017	2016	2015
. . .			
Operating income	4,106	4,186	2,233
Interest income	202	100	50
Interest expense	(848)	(484)	(459)
Other income (expense), net	346	90	(256)
Total non-operating income (expense)	(300)	(294)	(665)
Income before income taxes	3,806	3,892	1,568
. . .			

10-18

Exercise 10-1

Berkline Corporation is planning to issue bonds with a face value of $77,500 and a coupon rate of 8 percent. The bonds mature in seven years. Interest is paid annually on December 31. All of the bonds will be sold on January 1 of this year.

Required:

Compute the issue (sale) price on January 1 of this year for each of the following independent cases (show computations):

a. **Case A:** Market interest rate (annual) 8 percent.
b. **Cash B:** Market interest rate (annual) 6 percent.
c. **Case C:** Market interest rate (annual) 10 percent.

Cash interest payment = Face value × Coupon rate (annual) × Time period
Cash interest payment = $77,500 × 0.08 × 1 year = $6,200

CASE A:

$77,500× 0.58349.....	$ 45,220
$6,200× 5.20637.....	32,279
Issue price (market and stated rate same).....	$ 77,499

Periods	8.0%	9.0%	10.0%	11.0%	12.0%
6	0.63017	0.59627	0.56447	0.53464	0.50663
7	0.58349	0.54703	0.51316	0.48166	0.45235
8	0.54027	0.50187	0.46651	0.43393	0.40388
9	0.50025	0.46043	0.42410	0.39092	0.36061
10	0.46319	0.42241	0.38554	0.35218	0.32197

CASE C:

$77,500× 0.51316.....	$ 39,770
$6,200× 4.86842.....	30,184
Issue price (market rate more than stated rate).....	$ 69,954 (at a discount)

8	0.71679	0.67684	0.62741	0.58201
9	0.68757	0.64461	0.59190	0.54393
10	0.65954	0.61391	0.55839	0.50835

Cash interest payment = Face value × Coupon rate (annual) × Time period
Cash interest payment = $77,500 × 0.08 × 1 year = $6,200

CASE A:

$77,500× 0.58349	$ 45,220
$6,200× 5.20637	32,279
Issue price (market and stated rate same)	$ 77,499

CASE B:

$77,500× 0.66506	$ 51,542	
$6,200× 5.58238	34,611	
Issue price (market rate less than stated rate)	$ 86,153	(at a premium)

CASE C:

$77,500× 0.51316	$ 39,770	
$6,200× 4.86842	30,184	
Issue price (market rate more than stated rate)	$ 69,954	(at a discount)

10-21

Times Interest Earned利息保障倍数

KEY RATIO ANALYSIS

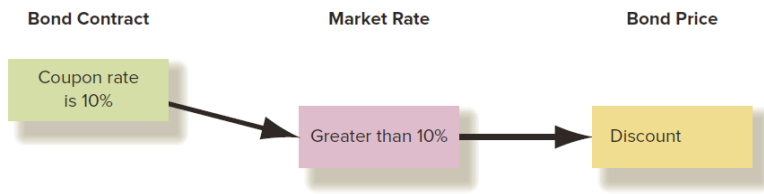
This ratio shows whether a company is generating sufficient resources from its profit-making operations to meet its current interest obligations.

A high ratio indicates an extra margin of protection in case profitability deteriorates.

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

10-22

折价发行Bonds Issued at a Discount 1



10-23

Bonds Issued at a Discount 2

On January 1, 2019, Amazon issues bonds with a coupon rate of 10% and a face value of $100,000.

The bonds start accruing interest on January 1, 2019, and will pay interest each June 30 and December 31.

The bonds mature in two years on December 31, 2020.

The coupon rate (10%) is less than the market interest rate (12%) on the date of issuance so the bonds sell at a **discount**.

	Present Value
Single principal payment at maturity: $100,000 × 0.79209	$79,209
+ Annuity cash interest payment: $5,000 × 3.46511	17,326
Issue (sale) price of bonds	$96,535

10-24

Bonds Issued at a Discount 3

There are two acceptable recording methods:

- **Explicitly** keep track of the bond discount by incorporating it into the journal entries日记账记录债券折价账户
- **Implicitly** keep track of the bond discount but do not incorporate it into the journal entries. 日记账不记录债券折价账户

Regardless of the method used, the dollar value reported on the balance sheet (the bond payable book value) is identical.

The journal entries to record:

WITH DISCOUNT ACCOUNT			WITHOUT DISCOUNT ACCOUNT		
	Debit	Credit		Debit	Credit
Cash (+A)	96,535		Cash (+A)	96,535	
Bond discount (−L)	3,465		Bonds payable (+L)		96,535
Bonds payable (+L)		100,000			

Bond discount is a contra-liability account

10-25

Bonds Issued at a Discount Using Effective-Interest Amortization

折价发行债券_实际利率法 1

interest expense: **multiplying the bonds payable book value times the market rate of interest** on the date of issuance.

Step 1: Compute interest expense
Bonds Payable Book Value × Market Interest Rate per Period

Step 2: Compute cash owed for interest
Bond Face Value × Coupon Rate per Period

Step 3: Compute amortization amount
Interest Expense − Cash Owed for Interest

10-26

Bonds Issued at a Discount Using Effective-Interest Amortization 2

The cash owed for interest is computed by multiplying the bond's face value ($100,000) by the coupon rate per period (10% × ½ year).

Thus, Amazon owes bondholders cash of $5,000 each June 30 and again on December 31. The first interest payment on the bonds is made on June 30, 2019.

$$\text{Step 1: Interest expense: } \$96,535 \times (0.12 \times \tfrac{1}{2} \text{ year}) = \$5,792$$

$$\text{Step 2: Cash owed for interest: } \$100,000 \times (0.10 \times \tfrac{1}{2} \text{ year}) = \$5,000$$

$$\text{Step 3: Amortized amount: } \$5,792 - 5,000 = \$792$$

The journal entry at June 30, 2019 is:

	Debit	Credit
Interest expense (+E, −SE)	5,792	
Bond discount (+L)		792
Cash (−A)		5,000

Effective-interest amortization causes these amounts to change each period.

10-27

Bonds Issued at a Discount Using Effective-Interest Amortization 3

Interest expense for the next interest period must reflect the change in the bonds payable book value.

Interest expense for the second half of 2019 is calculated as follows:

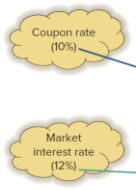
- Multiply the bonds payable book value on June 30, 2019 ($97,327) by the market rate of interest per period:
  $97,327 × (12% × ½ year) = $5,840
- With cash owed for interest equal to $5,000, the amount of the bond discount amortized on December 31, 2019, is $840.

The journal entry at December 31, 2019 is:

	Debit	Credit
Interest expense (+E,−SE)	5,840	
Bond discount (+L)		840
Cash (−A)		5,000

10-28

Bond Discount Amortization Schedule



BOND DISCOUNT AMORTIZATION SCHEDULE

Date	(a)	(b)	(c)	(d)
	Cash Owed for Interest	Interest Expense	Amortization of Bond Discount	Bonds Payable Book Value
	$100,000 × (10% × ½ year)	Beginning of Period Book Value × (12% × ½ year)	(b) – (a)	Beginning Book Value + (c)
01/01/2019				$ 96,535
06/30/2019	$5,000	$5,792	$792	97,327
12/31/2019	5,000	5,840	840	98,167
06/30/2020	5,000	5,890	890	99,057
12/31/2020	5,000	5,943	943	100,000

10-29

Exercise 10-2

Boardwalk Corporation is planning to issue bonds with a face value of $510,000 and a coupon rate of 7.5 percent.

The bonds mature in four years and pay interest semiannually every June 30 and December 31.

All of the bonds were sold on January 1 of this year.

Boardwalk uses the effective-interest amortization method and also uses a discount account.

Assume an annual market rate of interest of 8.5 percent.

Required:

1. Provide the journal entry to record the issuance of the bonds.
2. Provide the journal entry to record the interest payment on June 30 of this year.
3. What bond payable amount will Boardwalk Corporation report on its June 30 balance sheet?

10-30

Computations:

Interest:

$510,000× 7.5%× ½	=	$19,125

Present value:

$510,000× 0.71679	=	$365,563
$19,125× 6.66378	=	127,445
Issue price	=	$493,008

Present Value of $1

Periods	1.0%	2.0%	3.0%	3.75%	4.0%	4.25%
7	0.93272	0.87056	0.81309	0.77963	0.75992	0.74207
8	0.92348	0.85349	0.78941	0.75160	0.73069	0.71178
9	0.91434	0.83676	0.76642	0.72451	0.70259	0.68295
10	0.90529	0.82035	0.74409	0.69842	0.67556	0.65510

Present Value of Annuity of $1

Periods	1.0%	2.0%	3.0%	3.75%	4.0%	4.25%
7	6.72819	6.47199	6.23028	6.05790	6.00205	5.94699
8	7.65168	7.32548	7.01969	6.80280	6.73274	6.66378
9	8.56602	8.16224	7.78611	7.52077	7.43533	7.35135
10	9.47130	8.98259	8.53020	8.21279	8.11090	8.01089

Requirement 1

January 1:	Debit	Credit
Cash (+A)	493,008	
Bond Discount (−L)	16,992	
Bonds Payable (+L)		510,000

10-31

Computations:

Interest:

$510,000× 7.5%× ½	=	$19,125

Present value:

$510,000× 0.71679	=	$365,563
$19,125× 6.66378	=	127,445
Issue price	=	$493,008

*8.5% ÷ 2 periods = 4.25%; Table factor for Present Value of $1 for 8 periods at 4.25%

Face Value	$510,000
Less: Issue Price	493,008
Discount on Bond	$ 16,992

Requirement 1

January 1:	Debit	Credit
Cash (+A)	493,008	
Bond Discount (−L)	16,992	
Bonds Payable (+L)		510,000

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Requirement 2

June 30:	Debit	Credit
Interest Expense* (+E, –SE)	20,953	
Bonds Discount (+L)		1,828
Cash** (–A)		19,125

* $493,008× 8.5%× 1/2 = $20,953

** $510,000× 7.5%× 1/2 = $19,125

Requirement 3

Balance sheet:

Long-term Liabilities

Bonds payable $494,836*

*This is the book value of the bonds payable. It is computed in one of following two ways:

(1) By subtracting the unamortized discount ($16,992 – $1,828) from the face value of the bonds ($510,000), or
(2) By adding the amount of the discount amortized on June 30 ($1,828) to the book value of the bonds at the beginning of the period ($493,008).

10-33

Exercise 10-3

On January 1 of this year, Altos Company issued a bond with a face value of $16,000 and a coupon rate of 2 percent bond. The bond matures in three years and pays interest each December 31.
When the bond was issued, the annual market rate of interest was 3 percent.
Altos Company uses the effective-interest amortization method.

Required:

1. Complete a bond amortization schedule for all three years of the bond's life.
2. What amounts will be reported on the income statement and balance sheet at the end of Year 1 and Year 2?

10-34

Requirement 1

BOND DISCOUNT AMORTIZATION SCHEDULE (EFFECTIVE-INTEREST)				
Date	(a)	(b)	(c)	(d)

Present Value of Annuity of $1

Present Value of $1

Periods	1.0%	2.0%	3.0%	3.75%
1	0.99010	0.98039	0.97087	0.96386
2	0.98030	0.96117	0.94260	0.92902
3	0.97059	0.94232	0.91514	0.89544
4	0.96098	0.92385	0.88849	0.86307
5	0.95147	0.90573	0.86261	0.83188

Present value computation:

Principal:	$16,000 × 0.91514	=	$14,642
Interest:	$320 × 2.82861	=	905
	Issue price		$15,547

10-35

Requirement 1

BOND DISCOUNT AMORTIZATION SCHEDULE (EFFECTIVE-INTEREST)				
Date	(a)	(b)	(c)	(d)
	Cash Owed for Interest	Interest Expense	Amortization of Bond Discount	Bonds Payable Book Value
	$16,000 x (2% x 1 year)	Beginning of Period Book Value x (3% x 1 year)	(b) − (a)	Beginning Book Value + (c)
Jan. 1, Year 1				$15,547
Dec. 31, Year 1	$320	$15,547 × 0.03 = $466	$146	15,693
Dec. 31, Year 2	$320	$15,693 × 0.03 = $471	151	15,844
Dec. 31, Year 3	$320	$15,844 × 0.03 = $475	155	15,999*

* $1 rounding error

Present value computation:

Principal:	$16,000 × 0.91514	=	$14,642
Interest:	$320 × 2.82861	=	905
	Issue price		$15,547

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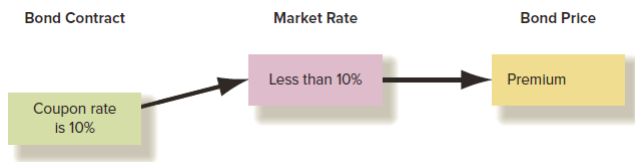
Requirement 2

	Year 1	Year 2
December 31:		
Interest expense	$466	$471
Bonds payable	$15,693	$15,844

10-37

溢价发行Bonds Issued at a Premium 1



10-38

Bonds Issued at a Premium 2

On January 1, 2019, Amazon issues bonds with a coupon rate of 10 percent and a face value of $100,000. The bonds start accruing interest on January 1, 2019, and will pay interest each June 30 and December 31. The bonds mature in two years on December 31, 2020.

The coupon rate (10%) is more than the market interest rate (8%) on the date of issuance so the bonds sell at a **premium**.

To calculate the cash issue price using the tables in Appendix E:

	Present Value
Single principal payment at maturity: $100,000 × 0.85480	$85,480
+ Annuity cash interest payment: $5,000 × 3.62990	18,150
Issue (sale) price of bonds	$103,630

Bonds Issued at a Premium 3

Accounting for bonds issued at a premium is similar to accounting for bonds issued at a discount.

Companies can explicitly use a bond premium account in their journal entries or implicitly keep track of the premium amount.

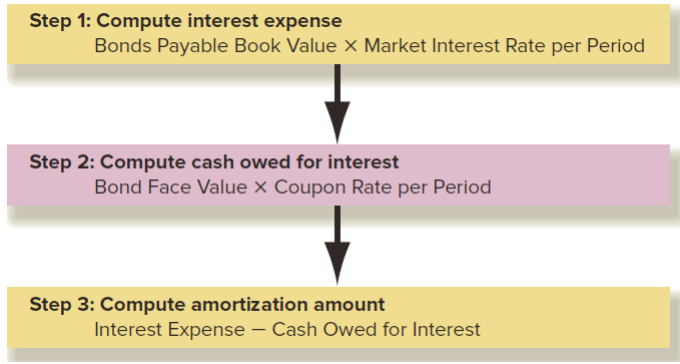
The journal entries to record the sale of Amazon's bonds issued at a premium are:

WITH PREMIUM ACCOUNT			WITHOUT PREMIUM ACCOUNT		
	Debit	Credit		Debit	Credit
Cash (+A)	103,630		Cash (+A)	103,630	
Bond premium (+L)		3,630	Bonds payable (+L)		103,630
Bonds payable (+L)		100,000			

Bond premium is sometimes called an adjunct-liability account

Reporting Interest Expense on Bonds Issued at a Premium Using Effective-Interest Amortization (with Premium Account) 1

Under the effective-interest amortization method, a company computes interest expense in a given period by **multiplying the bonds payable book value times the market rate of interest** on the date of issuance.



10-41

Bonds Issued at a Premium Using Effective-Interest Amortization 2

The cash owed for interest is computed by multiplying the bond's face value ($100,000) by the coupon rate per period (10% × ½ year).

Thus, Amazon owes bondholders cash of $5,000 each June 30 and again on December 31. The first interest payment on the bonds is made on June 30, 2019.

$$\text{Step 1: Interest expense: } \$103,630 \times (0.08 \times \tfrac{1}{2} \text{ year}) = \$4,145$$

$$\text{Step 2: Cash owed for interest: } \$100,000 \times (0.10 \times \tfrac{1}{2} \text{ year}) = \$5,000$$

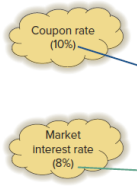
$$\text{Step 3: Amortized amount: } \$4,145 - 5,000 = \$855$$

The journal entry at June 30, 2019 is:

	Debit	Credit
Interest expense (+E,–SE)	4,145	
Bond premium (–L)	855	
Cash (–A)		5,000

10-42

Bond Premium Amortization Schedule



BOND PREMIUM AMORTIZATION SCHEDULE

Date	(a) Cash Owed for Interest	(b) Interest Expense	(c) Amortization of Bond Premium	(d) Bonds Payable Book Value
	$100,000 × (10% × ½ year)	Beginning of Period Book Value × (8% × ½ year)	(b) – (a)	Beginning Book Value + (c)
01/01/2019				$103,630
06/30/2019	$5,000	$4,145	$(855)	102,775
12/31/2019	5,000	4,111	(889)	101,886
06/30/2020	5,000	4,075	(925)	100,961
12/31/2020	5,000	4,039*	(961)	100,000

10-43

Exercise 10-4

Abbott Corporation is planning to issue bonds with a face value of $939,400 and a coupon rate of 8 percent.

The bonds mature in four years and pay interest semiannually every June 30 and December 31.

All of the bonds were sold on January 1 of this year.

Abbott uses the effective-interest amortization method and also uses a premium account. Assume an annual market interest rate of 6 percent.

Required:

1. Provide the journal entry to record the issuance of the bonds.
2. Provide the journal entry to record the interest payment on June 30 of this year.
3. What bond payable amount will Abbott report on its June 30 balance sheet?

10-44

Computations:

Interest:

$939,400 × 8% × 1/2	=	$37,576

Present value:

$939,400 × 0.78941	=	$ 741,572
$37,576 × 7.01969	=	263,772
Issue price	=	$1,005,344

Present Value of $1

Periods	1.0%	2.0%	3.0%	3.75%
7	0.93272	0.87056	0.81309	0.77283
8	0.92348	0.85349	0.78941	0.74490

Premium on Bond = Issue Price $1,005,335 – Face Value $939,400 = $65,944

Requirement 1

January 1:	Debit	Credit
Cash (+A)	1,005,344	
Bonds Premium (+L)		65,944
Bonds Payable (+L)		939,400

10-45

Computations:

Interest:

$939,400 × 8% × 1/2	=	$37,576

Present value:

$939,400 × 0.78941	=	$ 741,572
$37,576 × 7.01969	=	263,772
Issue price	=	$1,005,344

Premium on Bond = Issue Price $1,005,335 – Face Value $939,400 = $65,944

Requirement 1

January 1:	Debit	Credit
Cash (+A)	1,005,344	
Bonds Premium (+L)		65,944
Bonds Payable (+L)		939,400

10-46

Requirement 2

	Debit	Credit
June 30:		
Interest Expense (+E, −SE)	30,160	
Bonds Premium (−L)	7,416	
Cash* (−A)		37,576

$1,005,344 × 6% × 1/2 = $30,160

$939,400 × 8% × 1/2 = $37,576

Requirement 3

Balance sheet:

Long-term Liabilities

Bonds payable	$997,928

*This is the book value of the bonds payable. It is computed in one of two ways:
(1) By adding the unamortized premium ($65,944 – $7,416) from the face value of the bonds ($939,400), or
(2) By subtracting the amount of the premium amortized on June 30 ($7,416) from the book value of the bonds at the beginning of the period ($1,005,344).

10-47

Exercise 10-5

On January 1 of this year, El Paso Company issued a bond with a face value of $14,000 and a coupon rate of 5 percent. The bond matures in three years and pays interest each December 31.
When the bond was issued, the annual market rate of interest was 4 percent.
El Paso uses the effective-interest amortization method.

Required:

1. Complete a bond amortization schedule for all three years of the bond's life.
2. What amounts will be reported on the income statement and balance sheet at the end of Year 1 and Year 2?

10-48

Requirement 1

BOND PREMIUM AMORTIZATION SCHEDULE (EFFECTIVE-INTEREST)				
Date	(a)	(b)	(c)	(d)
	Cash Owed for Interest	Interest Expense	Amortization of Bond	Bonds Payable Book Value

Present Value of Annuity of $1

Periods	1.0%	2.0%	3.0%	3.75%	4.0%
1	0.99010	0.98039	0.97087	0.96386	0.96154
2	1.97040	1.94156	1.91347	1.89287	1.88609
3	2.94099	2.88388	2.82861	2.78831	2.77509
4	3.90197	3.80773	3.71710	3.65138	3.62990
5	4.85343	4.71346	4.57971	4.48326	4.45182

* $1 rounding error

Present value computation:

Principal:	$14,000 × 0.88900	=	$12,446
Interest:	$700 × 2.77509	=	1,943
	Issue price		$14,389

10-49

Requirement 1

BOND PREMIUM AMORTIZATION SCHEDULE (EFFECTIVE-INTEREST)				
Date	(a)	(b)	(c)	(d)
	Cash Owed for Interest	Interest Expense	Amortization of Bond Premium	Bonds Payable Book Value
	$14,000 x (5% x 1 year)	Beginning of Period Book Value x (4% x 1 year)	(b) − (a)	Beginning Book Value + (c)
Jan. 1, Year 1				$14,389
Dec. 31, Year 1	$700	$14,389 × 0.04 = $576	($124)	14,265
Dec. 31, Year 2	$700	$14,265 × 0.04 = $571	(129)	14,136
Dec. 31, Year 3	$700	$14,136 × 0.04 = $565	(135)	14,001*

* $1 rounding error

Present value computation:

Principal:	$14,000 × 0.88900	=	$12,446
Interest:	$700 × 2.77509	=	1,943
	Issue price		$14,389

10-50

Requirement 2

	Year 1	Year 2
December 31:		
Interest expense	$576	$571
Bonds payable	$14,265	$14,136

10-51

Journal Entry to Retire the Bonds at Maturity

Regardless of whether a company issues bonds at par, at a discount, or at a premium, the company will enter the same journal entry when it retires the bonds at maturity.

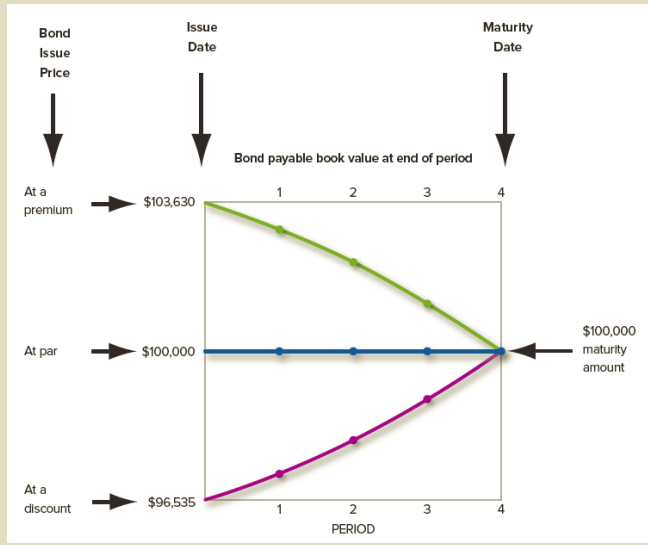
For our Amazon example, the journal entry would be

	Debit	Credit
Bond payable (−L)	100,000	
Cash (−A)		100,000

Assets		=	Liabilities		+	Stockholders' Equity
Cash	−100,000		Bond payable	−100,000		

10-52

Exhibit 10.2
The Book Value of a Bond Over Time



10-53

Zero Coupon Bonds零息票据

FINANCIAL ANALYSIS

$$$

Zero coupon bonds do not pay periodic cash interest.

Investors will price the bond so that they earn the market rate of interest.

Because there is no periodic cash paid for interest:

PV of the Principal = Issue Price of the Bonds

Zero coupon bonds are always issued at a deep discount (substantially less than maturity value).

Accounting for a zero coupon bond is no different than accounting for other bonds issued at a discount.

10-54

Reporting Interest Expense Using Straight-Line Amortization直线法

GAAP requires that companies use the effective-interest method to amortize bond discounts and bond premiums.

GAAP permits companies to use straight-line amortization when results do not materially differ from results computed using the effective-interest method.

With straight-line amortization, a company simply takes the total amount of the discount or the premium at issuance, divides it by the number of periods in the bond's life, and amortizes that amount each period.

BOND PREMIUM AMORTIZATION SCHEDULE (STRAIGHT-LINE AMORTIZATION)				
Date	(a)	(b)	(c)	(d)
	Cash Owed for Interest	Interest Expense	Amortization of Bond Premium	Bonds Payable Book Value
	$100,000 × (10% × ½ year)	(a) – (c)	$3,630 ÷ 4 periods	Beginning Book Value + (c)
01/01/2019				$103,630.00
06/30/2019	$5,000.00	$4,092.50	$(907.50)	102,722.50
12/31/2019	5,000.00	4,092.50	(907.50)	101,815.00
06/30/2020	5,000.00	4,092.50	(907.50)	100,907.50
12/31/2020	5,000.00	4,092.50	(907.50)	100,000.00

10-55

Debt-to-Equity

KEY RATIO ANALYSIS

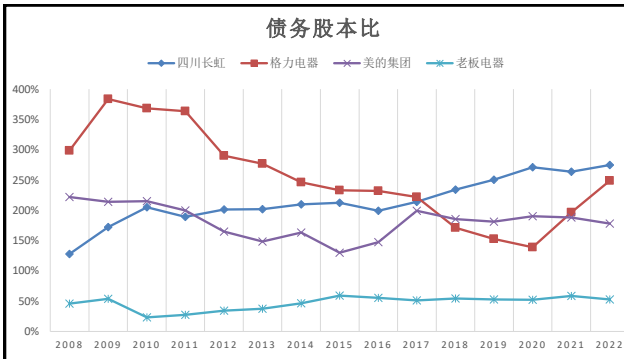
Debt-to-Equity = Total Liabilities ÷ Total Stockholders' Equity

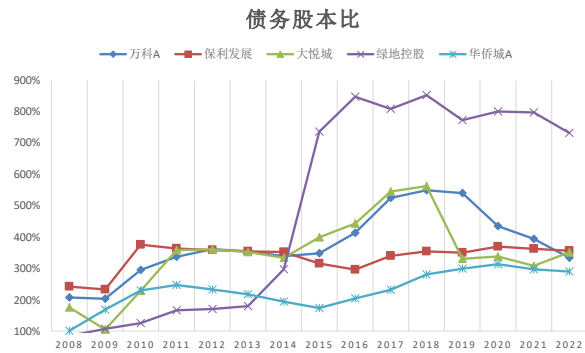
债务股本比，也称为**负债股权比率**

In general, a high ratio indicates that a company relies heavily on debt financing relative to equity financing.

This increases the risk that a company may not be able to meet its contractual financial obligations during a business downturn.

10-56





10-57

Early Retirement of Bonds

Some bonds have a call feature that allows the issuing company to call (retire) the bonds early. The call amount often is stated as a percentage of the bond's face value.

Book Value > Cash Paid to Retire Bonds = **GAIN**

Book Value < Cash Paid to Retire Bonds = **LOSS**

In some cases, a company may elect to retire bonds early by purchasing them on the open market, just as an investor would.

10-58

Exercise 10-6

Several years ago, Alexia Company issued bonds with a face value of $1,200,000 for $980,000.

As a result of declining interest rates, the company has decided to call the bond at a call premium of 7 percent over par.

The bonds have a current book value of $999,000. Record the retirement of the bonds, using a discount account.

10-59

Cash paid to retire bonds = Face value × (100% + Call premium)

Cash paid to retire bonds = $1,200,000 × 107%

= $1,284,000

	Debit	Credit
Bond payable (–L)	1,200,000	
Loss on bond call (+E, –SE)	285,000	
Cash (–A)		1,284,000
Bond discount (+L)		201,000

Gain (loss) on bond call = Face value of bonds – Cash paid to retire bond

= $1,200,000 – $1,284,000

= $(85,000)

10-60

Cash paid to retire bonds = Face value × (100% + Call premium)

Cash paid to retire bonds = $1,200,000 × 107%

= $1,284,000

	Debit	Credit
Bond payable (–L)	1,200,000	
Loss on bond call (+E, –SE)	285,000	
Cash (–A)		1,284,000
Bond discount (+L)		201,000

Gain (loss) on bond call = Book value of bonds – Cash paid to retire bonds

= $999,000 – $1,284,000

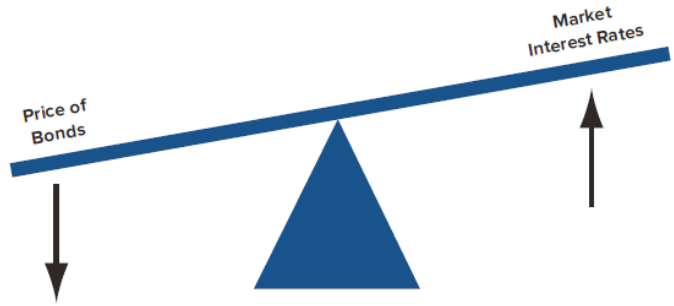
= ($285,000)

10-61

Price of Bonds versus Market Interest Rates

Bond prices move in the opposite direction of interest rates.

If interest rates go up, bond prices fall, and vice versa.



If interest rates go up enough, a company may decide that it makes good economic sense to retire its bonds early by purchasing them on the open market.

10-62

Bonds Payable

FOCUS ON CASH FLOWS

	Effect on Cash Flows
Financing activities:	
Cash received from bondholders when bonds are issued	+
Cash paid to bondholders when bonds mature or are retired	–

Payment of interest under U.S. GAAP is an operating cash outflow.

Interest expense is reported on the income statement and is a component of net income. As a result, GAAP requires that interest payments be reported as operating activities on the statement of cash flows.

10-63

Chapter Supplement: Accounting for Bonds without a Discount Account or Premium Account

For financial reporting purposes, it is not necessary to use a discount (or premium) account when recording the sale of bonds.

The journal entries to record the sale of bonds issued at a discount are:

WITH DISCOUNT ACCOUNT			WITHOUT DISCOUNT ACCOUNT		
	Debit	Credit		Debit	Credit
Cash (+A)	96,535		Cash (+A)	96,535	
Bond discount (–L)	3,465		Bond payable (+L)		96,535
Bonds payable (+L)		100,000			

The journal entry to record interest expense, without the discount account:

Effective-interest amortization causes these amounts to change each period.

	Debit	Credit
Interest expense (+E, –SE)	5,792	
Bonds payable (+L)		792
Cash (–A)		5,000

10-64

Exercise 10-7

Boardwalk Corporation is planning to issue bonds with a face value of $510,000 and a coupon rate of 7.5 percent.

The bonds mature in four years and pay interest semiannually every June 30 and December 31.

All of the bonds were sold on January 1 of this year.

Boardwalk uses the effective-interest amortization method and does not use a discount account.

Assume an annual market rate of interest of 8.5 percent.

Required:

1. Provide the journal entry to record the issuance of the bonds.
2. Provide the journal entry to record the interest payment on June 30 of this year.
3. What bond payable amount will Boardwalk Corporation report on its June 30 balance sheet?

Computations:

Interest:

$510,000 × 7.5% ×½	=	$19,125

Present value:

$510,000 × 0.71679	=	$365,563
$19,125 × 6.66378*	=	127,445
Issue price	=	$493,008

*8.5% ÷ 2 periods = 4.25%; Table factor for Present Value of $1 for 8 periods at 4.25%

Face Value	$510,000
Less: Issue Price	493,008
Discount on Bond	$ 16,992

Requirement 1

January 1:	Debit	Credit
Cash (+A)	493,008	
Bonds Payable (+L)		493,008

Computations:

Interest:

$510,000 × 7.5% ×½	=	$19,125

Present value:

$510,000 × 0.71679	=	$365,563
$19,125 × 6.66378*	=	127,445
Issue price	=	$493,008

*8.5% ÷ 2 periods = 4.25%; Table factor for Present Value of $1 for 8 periods at 4.25%

Face Value	$510,000
Less: Issue Price	493,008
Discount on Bond	$ 16,992

Requirement 1

January 1:	Debit	Credit
Cash (+A)	493,008	
Bonds Payable (+L)		493,008

10-67

Requirement 2

June 30:	Debit	Credit
Interest Expense* (+E, – SE)	20,953	
Bonds Payable (+L)		1,828
Cash* (–A)		19,125

* $493,008 × 8.5% × ½ = $20,953
$510,000 × 7.5% × ½ = $19,125

Requirement 3

Balance sheet:

Long-term Liabilities

Bonds payable	$494,836*

*This is the book value of the bonds payable. It is computed by adding the amount of the discount amortized on June 30 ($1,828) to the book value of the bonds at the beginning of the period ($493,008).

10-68

HW10

P559 E10-3

P560 E10-8

P561 E10-11

P561 E10-13

公司债券发行人信息披露违法

福建福晟信息披露违法违规案

一、未在法定期限内披露公司债券2019年年度报告、2020年半年度报告

二、未按规定披露重大诉讼事项

2019年1月1日至检查结束日（2020年9月11日），公司及合并范围内子公司福建六建集团有限公司、福州市长乐区福晟房地产开发有限公司、福建华商房地产开发有限公司等存在9笔本金超过5000万元的重大诉讼事件，涉案金额合计17.31亿元。

三、重大债务逾期违约未及时披露

2019年度，公司及合并范围内子公司长乐福晟、福建华商、惠州市原合房地产有限公司等存在10笔重大债务逾期违约，金额合计17.27亿元。

- 其中，被债权人起诉且已判决的有9笔，共计4.47亿元；
- 被债权人申请强制执行的有1笔，金额为12.80亿元。

四、重大资产冻结未披露

2019年1月1日至检查结束日，公司及合并范围内子公司有54笔股权资产被司法冻结且尚未解除。

- 其中，截至2019年12月3日被司法冻结金额为25.31亿元，首次超过2018年末净资产的10%（19.97亿元）；
- 截至2019年12月31日、2020年6月30日和2020年9月11日被司法冻结金额分别为33.72亿元、35.29亿元和74.05亿元，分别占公司2019年末净资产的16.26%、17.02%和35.72%

公司债券市场中介机构未履职尽责

国海证券未勤勉尽责案（中国证监会行政处罚决定书〔2022〕11号）
大公国际未勤勉尽责案（中国证监会行政处罚决定书〔2022〕16号）
鲁成所未勤勉尽责案（中国证监会行政处罚决定书〔2022〕40号）

国海证券有限责任公司、大公国际资信评估有限公司、山东鲁成律师事务所在为山东胜通集团股份有限公司发行公司债券、债务融资工具提供承销、评级、法律等服务时，未按照相关规则开展尽职调查工作，导致出具的承销文件、评级报告、法律意见书存在虚假记载。

本案表明，督促中介机构提升债券业务执业质量，是夯实债券市场高质量发展的重要基础，监管部门坚持“一案多查”，压实中介机构“看门人”职责。