

# Module 9

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## RAISING CAPITAL AND VALUING SECURITIES

# Background

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- Major source of funds for most firms
  - Cash generated from operations
    - When internally generated cash is insufficient
      - Firm has to raise additional funds from external sources
        - Debt and/or equity capital
- Focus of this Module
  - Description of various forms of debt and equity capital
  - Methods used to raise these funds
  - Valuation of the most common types of securities

# Background

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- After reading this Module, students should understand:
  - How to estimate the amount of external funds a firm needs to finance its growth
  - How the financial system works and what functions it performs
  - The differences between the various sources of debt and equity capital
  - How firms raise capital in the financial markets
  - How to value the securities issued by firms

# Estimating The Amount Of Required External Funds

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- If firm's assets are expected to grow by more than the firm's **internally generated funds**
  - External funds will need to be raised to make up the difference
    - Most firms raise the external funds they need through borrowing
- To obtain the firm's internally generated funds, depreciation expenses must be added to retained earnings

## EXHIBIT 9.1:

# OS Distributors' Balance Sheet on December 31, 1999.

Figures in millions of dollars

DECEMBER 31, 1999

Invested Capital or Net Assets	
• Cash	\$12.0
• Working capital requirement (WCR)	63.0
• Net fixed assets	51.0
Gross value	\$90.0
Accumulated depreciation	(39.0)
<b>Total</b>	<b><u>\$126.0</u></b>
Capital Employed (Debt and Owners' Equity)	
• Short-term debt	\$22.0
• Long-term debt <sup>1</sup>	34.0
• Owners' equity	70.0
<b>Total</b>	<b><u>\$126.0</u></b>

<sup>1</sup> Long-term debt is repaid at the rate of \$8 million per year.

## EXHIBIT 9.2a:

# OS Distributors' 2000 Pro Forma Financial Statements.

Figures in millions of dollars

### PRO FORMA (PROJECTED) BALANCE SHEET INVESTED CAPITAL SIDE

DECEMBER 31, 2000

#### Invested Capital or Net Assets

• Cash	\$8.0
• Working capital requirement (WCR)	77.0
• Net fixed assets	53.0
Gross value <sup>1</sup>	\$93.0
Accumulated depreciation	(40.0)

**TOTAL**

**\$138.0**

<sup>1</sup> In 2000, a warehouse will be enlarged at a cost of \$12 million and existing assets, bought for \$9 million in the past, are expected to be sold at their book value of \$2 million.

## EXHIBIT 9.2b:

# OS Distributors' 2000 Pro Forma Financial Statements.

Figures in millions of dollars

### 2000 PRO FORMA (PROJECTED) INCOME STATEMENT

• Net sales		\$480.0
Cost of goods sold	(\$400.0)	
• Gross profit		80.0
Selling, general, & administrative expenses	(48.0)	
Depreciation expenses	(8.0)	
• Operating profit		24.0
Extraordinary items	0	
• Earnings before interest and tax (EBIT)		24.0
Net interest expenses <sup>2</sup>	(7.0)	
• Earnings before tax (EBT)		17.0
Income tax expense	(6.8)	
• Earnings after tax (EAT)		<u>\$10.2</u>
Dividends	(\$3.2)	
• Retained earnings		\$7.0

<sup>2</sup> There is no interest income, so net interest expenses are equal to interest expenses.

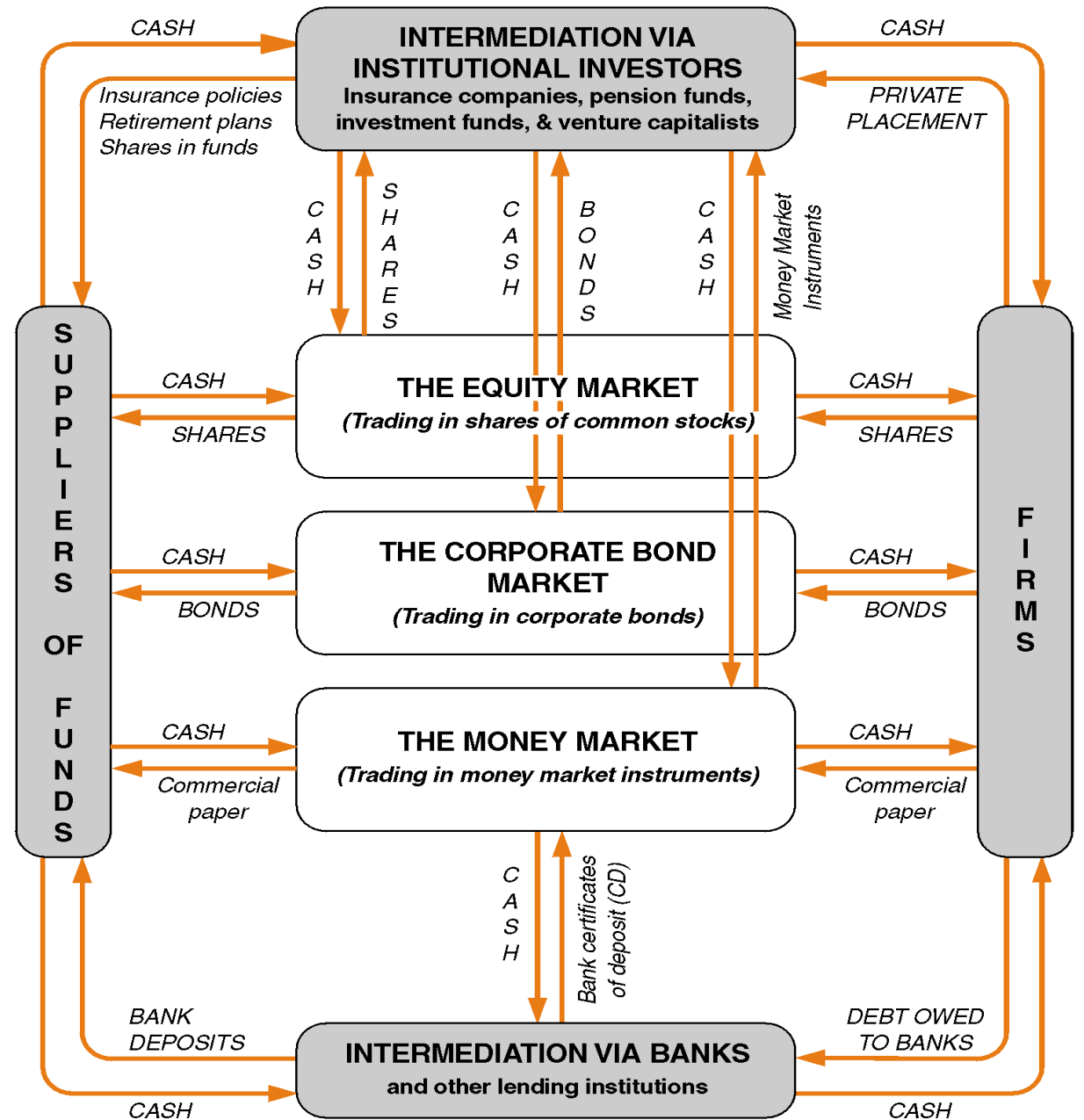
# The Financial System: Its Structure And Functions

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- Financial system
  - The institutions and processes that facilitate the transfer of funds between the suppliers of capital and firms that need cash
- Two alternative financing channels, known as **direct** and **indirect** financing, are examined



**EXHIBIT 9.4:**  
**The**  
**Financial**  
**System.**



# Direct Financing

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- One obvious way for firms to raise money is to sell securities directly to savers for cash
- Security
  - Certificate issued by a firm that specifies the conditions under which the firm received the money
    - Equity—stock
      - Represents ownership
    - Bond
      - Represents a creditor relationship

# Indirect Or Intermediated Financing

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- Firms that are not able to access the financial market directly
  - Rely on *indirect* financing through **financial intermediaries**
- Commercial banks typically offer short- to medium-term loans
  - Longer-term debt and equity capital can be obtained through **private placement** of securities
- In direct financing, ultimate savers hold securities issued by *firms*
  - In indirect financing, ultimate savers hold securities issued by *banks* (**indirect securities**)

# Indirect Or Intermediated Financing

- Nonbanking intermediaries offer savers
  - Insurance and pension products
  - Convenient access to the securities markets
  - Risk diversification
  - Investment management
- Financing via intermediaries is the dominant channel through which companies raise money (see **Exhibit 9.5**)
- Banks play a *monitoring* role that provides bond buyers with additional protection
  - Protective **covenants** in the **indenture**
- Some bank borrowing may be needed to facilitate the firm's access to the debt market

## EXHIBIT 9.5: Relative Share of Assets Held by Financial Institutions in the United States from 1860 to 1993.<sup>1</sup>

TYPE OF FINANCIAL INTERMEDIARY	1860	1900	1939	1970	1980	1993
Banks <sup>2</sup>	89%	81%	65%	58%	56%	35%
Insurance companies <sup>3</sup>	11	14	27	19	16	17
Pension funds	0	0	2	13	17	24
Investment funds	0	0	2	4	4	15
Other	0	5	4	6	7	9
<b>Total (percentage)</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Total (billion dollars)</b>	<b>\$1</b>	<b>\$16</b>	<b>\$129</b>	<b>\$1,328</b>	<b>\$4,025</b>	<b>\$13,952</b>

<sup>1</sup> Adapted from Kaufman and Mote, *Economic Perspectives* (pp. 2–21, May/June 1994) Federal Reserve Bank of Chicago.

<sup>2</sup> Includes commercial and savings banks.

<sup>3</sup> Includes life and property and casualty insurance companies.

# Securities Markets

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- Securities markets, shown in the center of **Exhibit 9.4**, can be classified along several dimensions
  - Primary or secondary market
  - Equity or debt markets
  - Organized or over-the-counter markets
  - Domestic or international markets
- Primary versus secondary markets
  - Primary market
    - Initial public offering (IPO)
    - Seasoned issue
    - Secondary public offering
  - Secondary market
- Efficient securities markets
  - Prices are fair

# Securities Markets

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- **Equity versus debt markets**
  - Stock markets; organized stock exchanges and over-the-counter (OTC) markets
  - Dealers and brokers
  - Unlisted securities
  - Institutional investors
  - Credit markets; money market; bond market
  - Corporate notes; corporate bonds; commercial paper
- The upper part of **Exhibit 9.6** provides information on the volume of securities issued in the U.S. financial markets in 1990, 1992, and 1994

## EXHIBIT 9.6: Securities Issued in the U.S.

Figures in billions of dollars

Type of Security	1990	1992	1994	1996	1998
Debt instruments	105	311	363	545	1,053
Common stocks	15	73	61	115	116
Seasoned issues	5	33	27	65	72
IPOs	10	40	34	50	44
Preferred stocks (non convertible)	4	21	10	31	29
Convertible debt and preferred stocks	5	15	11	15	15
Total	129	420	445	706	1,213



# Securities Markets

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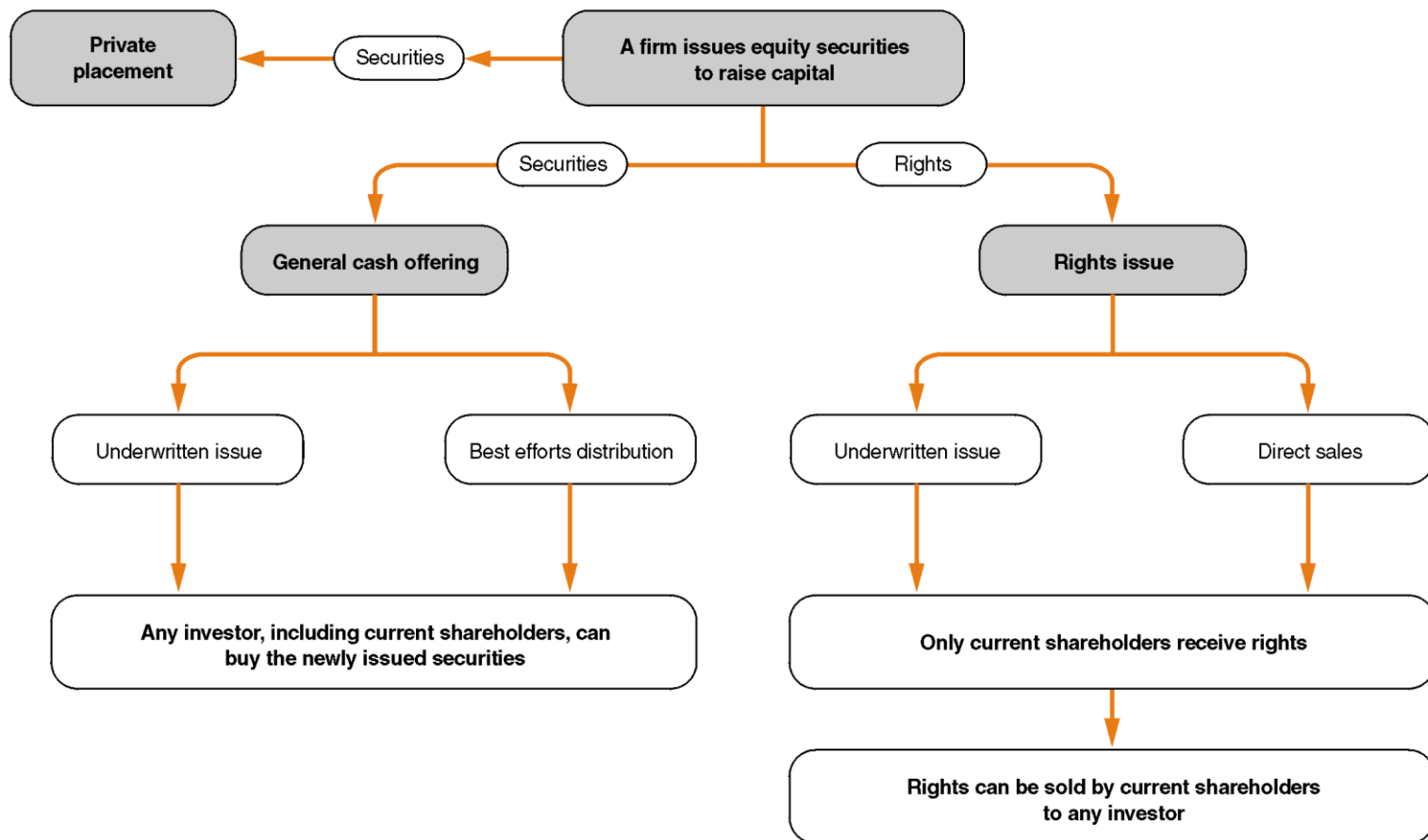
- **Domestic versus international markets**
  - Large and well-established firms can raise funds outside their domestic financial markets
    - Securities can be denominated in the currency of the foreign country or in the currency of the issuer's country
      - Foreign bonds; eurobonds
      - Bearer bonds
      - Foreign exchange risk
      - Euroequity

# How Firms Issue Securities

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- Firms can sell their debt and equity
  - To the public at large through a **public offering**
    - **Public offerings**
      - When offering securities to the public, firms use the services of an **investment bank**
      - **Exhibit 9.7** illustrates the process of distributing a new equity issue
    - To **qualified investors** through a private placement
      - Private placement does not have to be registered
        - Drawback—absence of organized trading in privately placed securities
- Aside from private placements, there are **general cash offerings** and **rights offerings**

# EXHIBIT 9.7: Alternative Methods Used by Firms and Their Investment Banks to Distribute Equity Securities.



# How Firms Issue Securities

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## ■ **General cash offerings**

- Best efforts basis
- Underwriter
- Underwriting syndicate
- Spread
- Selling concession
- Certification role

## ■ **Rights issues**

- Dilution
- Subscription price
- Rights-on shares
- Ex-rights shares

# How Firms Issue Securities

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- Setting an appropriate subscription price
- Number of rights required to buy one new share
- The ex-rights price of a share and the value of a right
- Effect of the rights issue on the wealth of existing shareholders (see **exhibit 9.8**)
- The role of investment banks in rights offerings

# EXHIBIT 9.8: Effects of Rights Issue on Wealth of Existing Shareholder.

INITIAL WEALTH	DECISION	ENDING WEALTH
	<i>Case 1:</i>	5 shares @ \$96 = \$480
	Tender four rights and	Cash = 0
	buy one new share @ \$80	Total = <u>\$480</u>
Four shares @ \$100 = \$400		
Cash = 80		
Total = <u>\$480</u>		
	<i>Case 2:</i>	4 shares @ \$96 = \$384
	Sell 4 rights @ \$4 each	Cash (\$80 + \$16) = 96
		Total = <u>\$480</u>

# How Firms Issue Securities

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## ■ Issuance costs of public offerings

- U.S. data indicate that issuance costs of public offerings are higher for small issues than for larger ones
- Rights offerings are less expensive than underwritten issues
  - Rights offerings without standby agreements are the least expensive method to raise new equity

# Debt Capital: Characteristics And Valuation

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## ■ Borrowing through bank loans

### ■ Short-term bank loans

- Bank loans, particularly short-term loans, are the dominant source of debt
  - Self-liquidating loans; cleanup clause; unsecured loans; collateral
  - Transaction loan; line of credit; revolving credit agreement
  - Bank prime rate

### ■ Medium- and long-term loans

- Known also as term loans; annuity
- Mortgage loan; equipment financing loan
- Captive finance subsidiary; asset-based borrowing



# Debt Capital: Characteristics And Valuation

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- **Borrowing through lease agreements**
  - **Operating leases**
  - **Financial leases**
    - Direct lease
    - Sale and lease-back
    - Leverage lease
- **Leasing as an alternative to borrowing**
  - Lease payments, like interest payments are fixed obligations
    - Thus, a financial lease is just an alternative to borrowing

# Debt Capital: Characteristics And Valuation

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- **Deciding whether to lease or borrow**
  - The NPV rule can be applied to the decision of whether to lease or to borrow and buy
    - One way to do that is to compute the NPV of the *difference* in cash flows between leasing and buying
      - Known as the **net advantage to leasing** or **NAL**
        - If NAL is positive, the asset should be leased; otherwise, it should be bought

## EXHIBIT 9.9: Summary of Difference in Cash Flows When Forklifts Are Leased Rather Than Purchased.

LEASE VERSUS BUY	NOW	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Aftertax lease payments	-\$9,000	-\$9,000	-\$9,000	-\$9,000	-\$9,000	
Loss of tax savings on depreciation		-8,000	-8,000	-8,000	-8,000	-8,000
Loss of the aftertax scrap value						-10,000
Cash saved because the forklifts are not bought	+100,000					
<b>Total differential cash flows</b>	<b>+\$91,000</b>	<b>-\$17,000</b>	<b>-\$17,000</b>	<b>-\$17,000</b>	<b>-\$17,000</b>	<b>-\$18,000</b>

**Exhibit 9.9** summarizes the *difference* between cash flows from leasing and the cash flows from buying ten forklifts by a firm that has decided to change the forklifts and is considering leasing the new ones instead of purchasing them.

# Debt Capital: Characteristics And Valuation

- **Borrowing by issuing short-term securities**
  - Large firms can raise short-term funds by issuing commercial paper (CP)
    - Usually unsecured but is almost always backed by bank lines of credit
    - Normally slightly cheaper and more flexible than a short-term bank loan
- **Borrowing by issuing corporate bonds**
  - An alternative to borrowing medium and long-term funds through bank loans and lease agreements
  - Coupon payment, coupon rate; maturity date; par value
  - Floatation costs; original price discount

# Debt Capital: Characteristics And Valuation

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- **Security, seniority, sinking funds, and call provisions**
  - **Security**
    - Secured bond; mortgage bond; trustee; unsecured bonds (debentures)
  - **Seniority**
    - Senior bond; subordinated debt
  - **Sinking Fund Provision**
  - **Call Provision**

# Debt Capital: Characteristics And Valuation

- **Finding the yield of a bond when its price is known**
  - Market yield (yield to maturity)
  - Current yield
- **The yield of a bond is determined by its risk**
  - Major sources of risk to a bondholder
    - **Market risk and credit risk**
      - Credit rating; investment grade bonds; speculative grade bonds
  - The yield investors require depends on the bond's rating and the rate at which the government is borrowing for the same maturity
  - Yield spread; basis point

## EXHIBIT 9.10: Example of Comparison Between Bond Ratings and Market Yields.

BOND RATING	MARKET YIELD	SPREAD OVER GOV'T
Government	5.67%	-
AAA	6.79%	1.12% (112 basis points)
A	7.35%	1.68% (168 basis points)
BBB	7.89%	2.22% (222 basis points)
B	11.96%	6.29% (629 basis points)

An example of the credit risk structure is shown in [Exhibit 9.10](#).

# Debt Capital: Characteristics And Valuation

- **Finding the price of a bond when its yield is known**
  - The price of an outstanding bond depends on the yield at which new corporate bonds, *similar* to that particular bond, are currently being issued
  - Premium; discount
- Appendix 9.1 provides the derivation of a shortcut bond valuation formula

$$B = F \left[ \frac{C}{y} + \left( 1 - \frac{C}{y} \right) \frac{1}{(1+y)^N} \right]$$

- where B = bond's price
- F = face value
- C = coupon rate
- y = market yield
- N = term to maturity



# Debt Capital: Characteristics And Valuation

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## ■ Zero-coupon bonds

$$B = F \left[ \frac{1}{(1+y)^N} \right]$$

## ■ Perpetual bonds

$$B = F \left[ \frac{C}{y} \right]$$

# Debt Capital: Characteristics And Valuation

- **How changes in market yield affect bond prices**
  - **Exhibit 9.11** illustrates how the market yield affects bond prices
    - Price of bonds is *inversely* related to the market yield
    - *Longer* the term to maturity, the *higher* the bond's price sensitivity to a change in the market yield
    - *Lower* the coupon rate, the *higher* the bond's price sensitivity to a change in the market yield

# EXHIBIT 9.11: The Relationship Between Market Yields and Bond Prices for Different Types of Bonds.

	<b>COUPON BEARING BOND<sup>1</sup></b>	<b>ZERO COUPON BOND<sup>2</sup></b>	<b>PERPETUAL BOND<sup>3</sup></b>
<b>• Bond characteristics</b>			
Coupon rate	10%	0%	10%
Maturity	10 years	10 years	infinite
Face value	\$1,000	\$1,000	\$1,000
<b>• Bond prices</b>			
Market yield at:			
9.5%	\$1,031.39	\$403.51	\$1,052.63
10.0%	1,000.00	385.54	1,000.00
10.5%	969.93	368.45	952.38
<b>Sensitivity of the bond prices to changes in the market yield</b>			
$\frac{\text{Price}_{9.5\%} - \text{Price}_{10.5\%}}{\text{Price}_{10\%}}$	<u>6.15%</u>	<u>9.09%</u>	<u>10.03%</u>

<sup>1</sup> Bond price calculated according to equation 9.4.

<sup>2</sup> Bond price calculated according to equation 9.5.

<sup>3</sup> Bond price calculated according to equation 9.6.

# Debt Capital: Characteristics And Valuation

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- **Floating rate and variable rate bonds**
  - Floating rate bonds; LIBOR
  - Variable rate bonds
- **Convertible bonds**
  - Equity kicker
  - Conversion ratio
  - Conversion price
  - Conversion premium
  - Bond value

# Equity Capital: Characteristics and Valuation

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- External equity capital comes from two sources:
  - Common stock
  - Preferred stock

# EXHIBIT 9.12a: Comparative Characteristics of Common and Preferred Stocks.

CHARACTERISTIC	COMMON STOCKS	PREFERRED STOCKS
• <b>Control and voting rights</b>	Common stockholders have full control and voting rights.	Preferred stockholders have no control but some voting rights only if the firm skips dividend payments for a specified number of periods.
• <b>Dividend payments:</b>		
— <b>Seniority</b>	Can only be paid after payment to preferred stockholders.	Paid before payment to common stockholders but after interest payments to debtholders.
— <b>Are they cumulative?<sup>1</sup></b>	No.	Most preferred are cumulative.
— <b>Can they vary?</b>	Yes, according to the firm's dividend payment policy.	Yes, with payments often linked to money market rates.
— <b>Is there a minimum payment?</b>	No.	There is usually an upper limit.
— <b>Are they tax deductible for the issuing corporation?</b>	No.	No.

<sup>1</sup> Cumulative dividends means that if the firm skips the payment of dividends for a period of time, it will have to pay the missed dividends (called **arrearage**) when it resumes paying dividends.

# EXHIBIT 9.12b: Comparative Characteristics of Common and Preferred Stocks.

CHARACTERISTIC	COMMON STOCKS	PREFERRED STOCKS
<ul style="list-style-type: none"> <li>• <i>Provisions:</i> <ul style="list-style-type: none"> <li>— Any sinking fund provision?</li> <li>— Is it callable by the firm?</li> <li>— Is it convertible into another type of security?</li> </ul> </li> <li>• <i>Why and when are they usually issued?</i></li> </ul>	<p>No.</p> <p>Cannot be called.</p> <p>Cannot be converted.</p> <p>To raise permanent equity capital to fund the firm's growth.</p>	<p>Some preferred have sinking funds.</p> <p>Some preferred are callable.</p> <p>Some preferred are convertible into common stocks.</p> <p>Allow owners to raise quasi-equity without losing control. Often used as a payment when buying another company.</p>
<ul style="list-style-type: none"> <li>• <i>Pricing</i></li> </ul>	<p>See common stock valuation in Appendix 9.2.</p>	<p>A straight preferred is priced like a perpetual bond (fixed dividend divided by market yield). See equation 9.7.</p>
<ul style="list-style-type: none"> <li>• <i>Flexibility to issuing firm</i></li> </ul>	<p>The most flexible type of security a firm can issue.</p>	<p>More flexible than bonds but less flexible than common stocks.</p>
<ul style="list-style-type: none"> <li>• <i>Risk</i></li> </ul>	<p>Higher than preferred stocks and bonds.</p>	<p>Higher than bonds but lower than common stocks.</p>

# The Valuation Of Preferred Stocks

- Straight preferred stocks are priced like perpetual bonds

$$P = \text{Face value of preferred share} \times \left[ \frac{\text{Dividend rate}}{\text{Market yield}} \right]$$

- Prices of callable and convertible preferred shares are adjusted by the value of the corresponding options



# The Valuation Of Common Stocks

- Dividend discount model (DDM)
  - **The constant growth dividend discount model**

$$S = \frac{\text{Div}_1}{k_E - g}$$

- **Market efficiency and equity pricing**
  - In an efficient market, the observed share price is the best estimate of the value of a share

# Tracking Stock

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- Special class of common stock
  - Carries claim on cash flows of a particular segment of a company
  - Holders do not legally own the segment's assets
    - Examples: EDS segment of GM, Wireless Group of AT&T

# Equity Warrants

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- Exercise price
- Call option
- An issue of straight bonds sold with warrants is similar to a convertible bond issue
  - However, when investors exercise their warrants, equity is issued, but debt is not retired

# Contingent Value Rights (CVR)

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- CVRs are **put options** sold by companies in conjunction with a stock issue as insurance to the subscribers