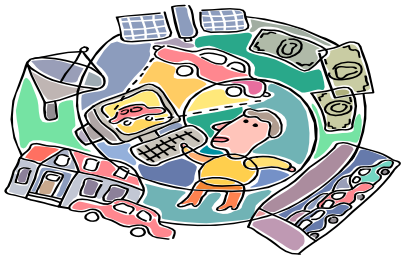
Chapter 7 Lecture - Equity Markets and Stock Valuation



Learning Objectives

After studying this chapter, you should be able to:

LO1 Understand how stock prices depend on future dividends and dividend growth

LO2 Be able to compute stock prices using the dividend growth model

LO3 Understand how corporate directors are elected

LO4 Understand how stock markets work

LO5 Understand how stock prices are quoted

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The Stock Market

Equity securities represent an ownership interest in a corporation. Holders of equity securities are entitled to the earnings of the corporation when those earning are distributed in the form of dividends; they are also entitled to a prorata share of the remaining equity in case of liquidation.

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Cash Flows for Stockholders

- If you own a share of stock, you can receive cash in two ways
  - The company pays dividends
  - You sell your shares, either to another investor in the market or back to the company
- As with bonds, the price of the stock is the present value of these expected cash flows
  - Dividends → cash income
  - Selling → capital gains

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One Period Example

- Suppose you are thinking of purchasing the stock of Moore Oil, Inc.
  - You expect it to pay a $2 dividend in one year
  - You believe the dividend payment will increase 5% per year.
  - You believe you can sell the stock for $14 at that time.
  - You require a return of 20% on investments of this risk
  - What is the maximum you would be willing to pay?

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One Period Example

- D_1 = $2 dividend expected in one year
- R = 20%
- P_1 = $14
- CF_1 = $2 + $14 = $16
- Compute the PV of the expected cash flows

$$P_0 = \frac{(2+14)}{1.20} = \$13.33$$

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Two Period Example

- What if you decide to hold the stock for two years? We assume stock price at that time will grow by same rate as dividend.
  - D_1 = $2.00 CF_1 = $2.00
  - D_2 = $2.10
  - P_2 = $14.70
  - CF_2 = $2.10 + $14.70 = $16.80
  - Now how much would you be willing to pay?

$$P_0 = \frac{2}{1.20} + \frac{(2.10+14.70)}{(1.20)^2} = \$13.33$$

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Three Period Example

- What if you decide to hold the stock for three years?
  - D_1 = $2.00 CF_1 = $2.00
  - D_2 = $2.10 CF_2 = $2.10
  - D_3 = $2.205
  - P_3 = $15.435
  - CF_3 = $2.205 + $15.435 = $17.640
  - Now how much would you be willing to pay?

$$P_0 = \frac{2}{1.20} + \frac{2.10}{(1.20)^2} + \frac{(2.205+15.435)}{(1.20)^3} = \$13.33$$

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Developing The Model

- You could continue to push back when you would sell the stock
- You would find that the price of the stock is really just the *present value of all expected future dividends*

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Stock Value = PV of Dividends

$$\hat{P}_0 = \frac{D_1}{(1+R)^1} + \frac{D_2}{(1+R)^2} + \frac{D_3}{(1+R)^3} + \ldots + \frac{D_\infty}{(1+R)^\infty}$$

$$\hat{P}_0 = \sum_{t=1}^{\infty} \frac{D_t}{(1+R)^t}$$

How can we estimate all future dividend payments?

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Estimating Dividends Special Cases

- Constant dividend/Zero Growth
  - Firm will pay a constant dividend forever
  - Like preferred stock
  - Price is computed using the perpetuity formula
- Constant dividend growth
  - Firm will increase the dividend by a constant *percent* every period
- Supernormal growth
  - Dividend growth is not consistent initially, but settles down to constant growth eventually

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Zero Growth

- Dividends expected at regular intervals forever = perpetuity

$$P_0 = \frac{D}{R}$$

- Suppose stock is expected to pay a $0.50 dividend every quarter and the required return is 10% with quarterly compounding. What is the price?

$$P_0 = \frac{0.50}{.10/4} = \$20$$

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Constant Growth Stock

One whose dividends are expected to grow forever at a constant rate, g.

$D_1 = D_0(1+g)^1$

$D_2 = D_0(1+g)^2$

$D_t = D_0(1+g)^t$

D_0 = Dividend JUST PAID

D_1 to D_t = Expected dividends

Projected Dividends

- D_0 = $2.00 and constant g = 6%
- $D_1 = D_0(1+g) = 2(1.06) = \$2.12$
- $D_2 = D_1(1+g) = 2.12(1.06) = \$2.2472$
- $D_3 = D_2(1+g) = 2.2472(1.06) = \$2.3820$

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Dividend Growth Model

$$\hat{P}_0 = D_0 \sum_{t=1}^{\infty} \frac{(1+g)^t}{(1+R)^t}$$

This can be rewritten as:

$$\hat{P}_0 = \frac{D_0(1+g)}{R-g} = \frac{D_1}{R-g}$$

"Gordon Growth Model"

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DGM – Example 1

- Suppose Big D, Inc. just paid a dividend of $.50. It is expected to increase its dividend by 2% per year. If the market requires a return of 15% on assets of this risk, how much should the stock be selling for?
- D_0= $0.50
- g = 2%
- R = 15%

$$P_0 = \frac{D_0(1+g)}{R-g}$$

$$P_0 = \frac{0.50(1+.02)}{.15-.02} = \$3.92$$

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DGM – Example 2

- Suppose TB Pirates, Inc. is expected to pay a $2 dividend in one year. If the dividend is expected to grow at 5% per year and the required return is 20%, what is the price?
- D_1 = $2.00
- g = 5%
- r = 20%

$$P_0 = \frac{D_1}{R-g}$$

$$P_0 = \frac{2.00}{.20-.05} = \$13.33$$

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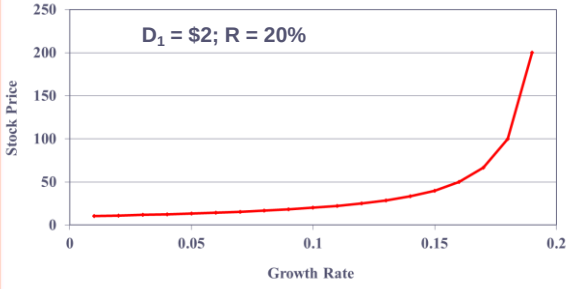
Stock Price Sensitivity to Dividend Growth, g



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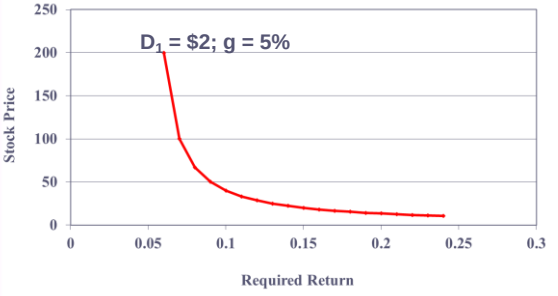
Stock Price Sensitivity to Required Return, R



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Valuation Using Multiples

- For stocks that don't pay dividends (or have erratic dividend growth rates), we can value them using the price-earnings (PE) ratio and/or the price-sales ratio:

Price at time $t = P_t$
= Benchmark PE ratio X Earnings per share$_t$

Price at time $t = P_t$
= Benchmark price-sales ratio X Sales per share$_t$

  - *The price-sales ratio can be especially useful when earnings are negative.*

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Valuation Using Multiples Example

- Suppose we are trying to value the company Inactivision, a video game developer that does not pay dividends. If the appropriate industry PE for this type of company is 20 and you predict earnings to be $2.50 per share for the coming year, then the forecasted stock price for a year from now, or *target* price, is the following:

Target price = 20 x $2.50 = $50

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Problems with Market Multiple Methods

- It is often hard to find comparable firms.
- The average ratio for the sample of comparable firms often has a wide range.
  - For example, the average P/E ratio might be 20, but the range could be from 10 to 50.
- How do you know whether your firm should be compared to the low, average, or high performers?

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Summary of Stock Valuation

I. The general case
In general, the price today of a share of stock, P_0, is the present value of all of its future dividends, $D_1, D_2, D_3, \ldots$:

$$P_0 = \frac{D_1}{(1+R)^1} + \frac{D_2}{(1+R)^2} + \frac{D_3}{(1+R)^3} + \cdots$$

where R is the required return.

II. Constant growth case
If the dividend is constant and equal to D, then the price can be written as:

$$P_0 = \frac{D}{R}$$

If the dividend grows at a steady rate, g, then the price can be written as:

$$P_0 = \frac{D_1}{R-g}$$

This result is called the *dividend growth model*.

III. Nonconstant Growth
If the dividend grows steadily after t periods, then the price can be written as:

$$P_0 = \frac{D_1}{(1+R)^1} + \frac{D_2}{(1+R)^2} + \cdots + \frac{D_t}{(1+R)^t} + \frac{P_t}{(1+R)^t}$$

where

$$P_t = \frac{D_t \times (1+g)}{(R-g)}$$

IV. Valuation Using Multiples
For stocks that don't pay dividends (or have erratic dividend growth rates), we can value them using the PE ratio and/or the price-sales ratio:

P_t = Benchmark PE ratio × EPS$_t$
P_t = Benchmark price-sales ratio × Sales per share$_t$

V. The required return, R, can be written as the sum of two things:

$$R = D_1/P_0 + g$$

where D_1/P_0 is the *dividend yield* and g is the *capital gains yield* (which is the same thing as the growth rate in dividends for the steady growth case).

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The Stock Market Once Again

- There are two types of equity securities: common stock and preferred stock
- The key distinction between these two forms of equity securities is the degree to which they may participate in any distribution of earnings and capital and the priority given to each in the distribution of earnings.
- Typically, preferred stockholders are entitled to a fixed dividend that they receive before common stockholders may receive dividends.
- Preferred stock is referred to as a senior corporate security in the sense that preferred stock interests are senior to the interests of common stockholders

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Common Stock: Owners, Directors, and Managers

- Common Stock Represents ownership.
- Ownership implies control.
- Stockholders elect directors.
- Directors hire management.
- Since managers are "agents" of shareholders, their goal should be: Maximize stock price.
- May be various classes of stock, but will depend on firm

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Features of Common Stock

- Voting Rights
  - Stockholders elect directors
  - Cumulative voting vs. Straight voting
  - Boards are often staggered, or "classified"
  - Proxy voting
- Classes of stock
  - Founders' shares
  - Class A and Class B shares
- Other Rights
  - Share proportionally in declared dividends
  - Share proportionally in remaining assets during liquidation
  - Preemptive right
    - Right of first refusal to buy new stock issue to maintain proportional ownership if desired

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Dividend Characteristics

- Dividends are not a liability of the firm until declared by the Board of Directors
  - A firm cannot go bankrupt for not declaring dividends
- Dividends and Taxes
  - Dividends are not tax deductible for firm
  - Taxed as ordinary income for individuals
  - Dividends received by corporations have a minimum 70% exclusion from taxable income

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Preferred Stock

- Hybrid security.
- Similar to bonds in that preferred stockholders receive a fixed dividend which must be paid before dividends can be paid on common stock.
- However, unlike bonds, preferred stock dividends can be omitted without fear of pushing the firm into bankruptcy.

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Features of Preferred Stock

- Dividends
  - Must be paid before dividends can be paid to common stockholders
  - Not a liability of the firm
  - Can be deferred indefinitely
  - Most preferred dividends are cumulative
    - Missed preferred dividends have to be paid before common dividends can be paid
- Preferred stock generally does not carry voting rights

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Primary Market for Securities

- The first time shares are sold in the market is an initial public offering (IPO); additional shares may be sold later as a seasoned offering.
- Equities may be:
  - sold directly to investors by the firm
  - purchased and sold at a higher price (underwriter's spread) by investment bankers in an underwriting offering
  - sold to existing shareholders in a rights offering
- The size of the underwriter's spread is:
  - Breadth of the market or the number of varied traders of the stock
  - Depth of the market or the extent to which there are conditional orders to buy and sell below and above the current price, respectively

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The Secondary Market for Equity Securities -- Subsequent Trading in Securities

- Stock may trade on:
  - Exchanges
  - Over the counter

http://finance.yahoo.com

- Broker -gets buyer and seller together
- Dealer - takes ownership
- A buyer may incur search costs and find a seller on their own, called a direct search.
- A broker may bring buyer and seller together, charging a commission.
- A dealer may sell/buy (bid/ask) securities from an inventory of securities, reducing search costs. The dealer's return is the bid/ask spread.
- An auction market allocates the selling shares to the highest bidder, providing a buyer/seller.

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Foreign Securities

- Some Differences:
  - terminology
  - frequency of dividend payments
  - limitations on ownership
  - corporate financial structure
  - depreciation methods

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New York Stock Exchange (NYSE)

- **NYSE** https://www.nyse.com/index
  - Merged with Euronext in 2007
  - NYSE Euronext merged with the American Stock Exchange in 2008
- **Members (Historically)**
  - Buy a trading license (own a seat)
  - Designated market makers, DMMs (formerly known as "specialists")
  - Floor brokers
  - Supplemental liquidity providers (SLPs)

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Chapter 7 Lecture - Equity Markets and Stock Valuation

NASDAQ

- NASDAQ OMX (merged 2007)
  http://ir.nasdaqomx.com
- Computer-based quotation system
- Multiple market makers
- Electronic Communications Networks
- Three levels of information
  - Level 1 – median quotes, registered representatives
  - Level 2 – view quotes, brokers & dealers
  - Level 3 – view and update quotes, dealers only
- Large portion of technology stocks

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Reading Stock Quotes

- What information is provided in the stock quote?
- Go to YahooFinance.com or Bloomberg.com, etc. for current stock quotes.

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Bonds and Stocks: Similarities

- Both provide long-term funding for the organization
- Both are future funds that an investor must consider
- Both have future periodic payments
- Both can be purchased in a marketplace at a price "today"

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Bonds and Stocks: Similarities

- From the firm's perspective: a bond is a long-term debt and stock is equity
- From the firm's perspective: a bond gets paid off at the maturity date; stock continues indefinitely.
- We will discuss the mix of bonds (debt) and stock (equity) in a future chapter entitled capital structure
- A bond has coupon payments and a lump-sum payment; stock has dividend payments forever
- Coupon payments are fixed; stock dividends change or "grow" over time

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What is a Mutual Fund?

A mutual fund is a collection of stocks, bonds and other securities owned by a group of investors and managed by a professional investment advisory firm. This investment advisor (also called the mutual fund's manager) collects money from many investors and invests the pool of money for all of them.

What Advantages Are There to Investing in Mutual Funds?

- Mutual funds provide professional management. The fund's manager makes the buy and sell decisions, based on the fund's management philosophy.
- Mutual funds offer diversification. A mutual fund often invests in one hundred or more securities.

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What Types of Funds are Available?

- Mutual funds are also called open-end funds. This means that the fund will usually sell as many shares as investors want to buy.
- Closed-end funds, like mutual funds, are collections of securities managed by a professional investment advisor. But unlike mutual funds, there are a fixed number of shares available and these shares are traded on the stock exchange.
- Exchange-traded funds, are also like mutual funds in that they are collections of securities managed by a professional advisor, and like closed-end funds are traded on the stock exchange.

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There are Many Types of Mutual Funds:

- Stock funds
- Bond funds
- Sector funds
- International Funds
- Money market funds
- Hybrid funds (also known as balanced and life cycle funds)

How Do You Make Money on a Mutual Fund?

A mutual fund investor can make money in several ways:

1. The fund earns income from interest or dividends on its investments which it distributes to its investors.

2. The fund produces capital gains by selling securities at a profit and distributes those gains to its investors.

3. You sell your shares of the mutual fund at a higher price than you paid for them.

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