**FI 393**

**Chapter 6—Equity Markets & Stock Valuation**

**Notes Outline**

1. When a business is started, it is usually either a:
   * ***Sole Proprietorship***
   * ***Partnership***
   * ***Corporation***
     + When a business incorporates, a separate legal entity is formed and \_\_***Share certificates (stock) are issued to show who owns the corporation***
     + There are different kinds of stock—\_\_***Common and Preferred Stock***\_\_
2. When you buy a share of common stock, \_\_***You are buying part of townership in a corp***\_\_\_
   * As an owner, a common stockholder is typically entitled to two things:
3. If you buy a share of stock, you can receive cash in two ways:

(1)***The company pays Dividends***

(2)***You sell your shares***

1. As with bonds, the price of the stock is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. **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, and you believe that you can sell the stock for $14 at that time. If you require a return of 20% on investments of this risk, what is the maximum you would be willing to pay?
2. **Two Period Example.** Now, what if you decide to hold the stock for two years? In addition to the dividend in one year, you expect a dividend of $2.10 in two years and a stock price of $14.70 at the end of year 2. Now how much would you be willing to pay?
3. **Three Period Example.** Finally, what if you decide to hold the stock for three years? In addition to the dividends at the end of years 1 and 2, you expect to receive a dividend of $2.205 at the end of year 3 and the stock price is expected to be $15.435. Now how much would you be willing to pay?
4. **Developing the Model.** You could continue to push back the year in which you will sell the stock. You would find that the price of the stock is really just the: **\_*PV of all expected future dividends* \_\_.**

Where *Dt = dividend at year t*

*e.g., D3 = dividend at year 3*

1. So, how can we estimate all future dividend payments? There are three special cases we will examine:
2. **Constant Dividend**

* The firm will pay a constant dividend forever. (Zero Growth)
* This is like a \_***Perferred Stock***\_\_\_\_\_
* The price is computed using the \_\_***Perpetuity***\_\_ formula.

1. **Constant Dividend Growth**

* The firm will increase the dividend by a constant *percent* every period.
* The price is computed using the \_***Growing Perpetuity*** model.

1. **Supernormal Growth (Non-constant Growth)**

* Dividend growth is not constant initially, but settles down to constant growth eventually.
* The price is computed using a \_***Mulitstage***\_ model.

1. **Constant Dividend (Zero Growth).** If **constant** dividends are expected at regular intervals forever, then this is a perpetuity and the present value of expected future dividends can be found using the perpetuity formula:

**P0 = Div1 / r**

1. **Constant Dividend Example. Practice Problem #5 on HW:** Lane, Inc., has an issue of preferred stock outstanding that pays a $3.15 dividend every year in perpetuity. If this issue currently sells for $92 per share, what is the required return?

**P0 = 3.15 / 92 = 0.0342 = 3.42%**

1. **Constant Dividend Growth Stock.** 
   * One whose dividends are expected to grow at a constant *rate* forever. We abbreviate this constant growth rate *“g.”*
   * For example, the constant growth rate may be 10%.
     + So, *g = 10%*
     + Then each dividend is 10% bigger than the previous.
   * Since each dividend is *g* times larger than the previous, we can define each dividend in terms of the previous one:

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1. **Constant Dividend Growth Stock.**

Since D1 is a function of D0 and all future dividends are some percentage larger than D1, we can *also* write all future dividends as a function of D0:

🡪 Substitute the previous line in for D1:

🡪 Substitute the previous line in for D2:

🡪 Substitute the previous line in for D3:

Thus:

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Where *Dt = dividend at year “t”*

*And Dt+1 = dividend at year“t+1”*

*e.g., if t = 3, then Dt = dividend at year 3 and Dt+1 = dividend at year”3+1” or year 4*

1. **Dividend Growth Model.** The present value (P0) of a constant dividend growth stock is then:

With a little algebra and some series work, this reduces to:

Since , this can be rewritten:

This formula works for the price at ANY time period and can be generalized:

Since =, this can be rewritten:

Price at time *“t”* can also be written as a function of .

Since =:

1. **Student Caution:** With the Dividend Growth Model above:

What happens if g > r?

***It becomes Negative***

What happens if g = r?

***Can’t do it it’s undefined***

1. To use the Dividend Growth Model (aka the Gordon Model), you must meet all three requirements:
2. The \_\_***Growth***\_\_ of all future dividends must be \_\_***Constant***\_\_\_,
3. The \_\_\_***Growth Rt***\_\_ must be \_\_\_\_\_\_\_\_\_\_\_\_\_ than the discount rate (g < r), and
4. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ must not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the discount rate (g ≠ r).
5. **DGM—Example 1. Practice Problem #1 on HW:** The Jackson–Timberlake Wardrobe Co. just paid a dividend of $2.10 per share on its stock. The dividends are expected to grow at a constant rate of 5 percent per year indefinitely. Investors require a return of 14 percent on the company's stock.

What is the current stock price?

***P0 = D0(1+g) / r – g***

***= 210(1.05) / (0.14 – 0.05)***

***= 210(1.05) / 0.09***

***= 220.5 / 0.09=24.50***

What will the stock price be in 3 years?

***D3 = D4 / (r – g) = 255.2563 / 0.09 = 28.36***

***D4 = D0(1 +g)^4 = 255.2563***

What will the price be in 9 years?

D8 = D9 / 0.09 = 325.7789 / 0.09 = 36.20

D9 = D0(1.05)^9 = 325.7789

**WRONG SHOULD BE D10 38.01**

1. **DGM—Example 2. Practice Problem #3 on HW:** Staal Corporation will pay a $2.66 per share dividend next year. The company pledges to increase its dividend by 5 percent per year indefinitely. If you require a return of 10 percent on your investment, how much will you pay for the company’s stock today?
2. **Using the DGM to Find *r*.** Start with the DGM:

Rearrange and solve for *r*:

* D1/P0 is the \_\_\_***Dividends Yield***\_\_\_
* *g is the \_\_****Capital Gains****\_\_\_\_*

1. **DGM—Example 3. Practice Problem #2 on HW:** The next dividend payment by Blue Cheese, Inc., will be $1.64 per share. The dividends are anticipated to maintain a growth rate of 8 percent forever. If the stock currently sells for $31 per share, what is the required return?
2. **Constant Growth Model Implications.** 
   1. Dividend expected to grow at *\_****g****\_\_****FOREVER****\_\_\_*.
   2. Stock price expected to grow at \_\_\_***g Forever***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   3. Expected dividend yield is ­­­­­­­­­­­­­­­­­­­­­­­­­­­­\_\_***Constant***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   4. Expected capital gains yield is constant and equal to \_***g***\_\_\_\_\_.
   5. Expected total return (R):

= expected dividend yield (DY) + expected growth rate (g)

= dividend yield + *g*

1. **Non-Constant Growth.** Again, dividend growth not constant initially, but settles down to constant growth eventually. How do we handle this?

* Compute the super-normal dividends **separately**.
* Determine when the growth rate levels off and use the **Dividend Growth Model** to find the price of the stock at that time.
* The value of the stock is the \_\_***PV of all these cash flows*** \_\_.

1. **Non-Constant Growth Problem. Practice Problem #10 on HW:** Janicex Co. is growing quickly. Dividends are expected to grow at a rate of 20 percent for the next three years, with the growth rate falling off to a constant 8 percent thereafter. If the required return is 11 percent and the company just paid a dividend of $1.45, what is the current share price?

Compute the dividends until growth levels off:

***Step 1: Find the CF***

***Step 2: Find PV od CFs PV =*** ***Div1/(1+r)^1 + Div2/(1+r)^2 + Div3+P3/(1+r)^3***

D1 = ***1.45(1.20) = $1.74***

D2 = ***1.74(1.20) = $2.088***

D3 = ***2.088(1.20) = $2.5056***

Find the expected price in year 3, at which point growth levels off to 8% per year forever:

\*\* *P3* is the value, at year 3, of all expected dividends year 4 and on.\*\*

Find the **present value** of the expected future cash flows:

You may use the CF key on calculator:

1. **Constant Dividend for Finite Period. Practice Problem #4 on HW:** Apocalyptica Corp. pays a constant $9.35 dividend on its stock. The company will maintain this dividend for the next 10 years and will then cease paying dividends forever. If the required return on this stock is 10 percent, what is the current share price?

What kind of cash flow stream is this?

Can use calculator TVM keys to solve:

1. **Stock Valuation Alternative.** What if a company doesn’t pay dividends? How can we value the stock?

***We can use the PE ratio and/or the price-sales ratio:***

***Pt = Benchmark PE ratio x EPSt***

***Pt = Benchmark price-sales ratio x Sales per sharet***

**Valuation Using Multiples.**

We can use the PE ratio and/or the price-sales ratio:

1. Pt = Benchmark \_***PE***\_\_\_ Ratio x \_\_***EPSt***\_\_\_\_
2. Pt = Benchmark \_\_\_***price-sales***\_\_\_ Ratio x \_\_***Sharet***\_\_
3. **Example: Valuation Using Multiples.** **Practice Problem #6 on HW:** The Sleeping Flower Co. has earnings of $2.30 per share.

If the benchmark PE for the company is 16, how much will you pay for the stock?

***P = 16(2.30) = $36.80***

What if the benchmark PE were 19?

***P = 19(2.30) = $43.70***

1. **Features of Common Stock.**
2. **Voting Rights**
3. **Proxy Voting : *A ballot cast by one person on behalf of a shareholder***
   * Proxy fights occur \_\_***When a group of shareholders join forces and gather enough shareholder proxies to win a corporate vote***\_\_
   * Proxy fights are frequently used in \_\_\_\_\_\_\_\_\_\_\_\_\_:
   * Alternatively, proxy fights occur when \_\_\_***Shareholders are dissatisfied w/ the firm’s management & gather enough proxy votes to change the board of directors.***\_ \_\_
4. **Classes of Stock**
   * A firm may only have \_\_***”Class A” shares outstanding***\_\_
   * However, a firm \_***May have any number of classes of common stock***\_\_\_\_
   * Typically, the only difference between Class A stock and any other common stock is \_***The voting rights assigned.*** \_
     + When more than one class exists, firms traditionally designate \_***Class A and B shares, w/ Class A shares carrying more voting rights***\_
     + **Ex: Class A may carry 10 votes per share and Class B carries only 1 vote.**
5. **Other Rights:**

* Share proportionally in \_\_***Declared Dividends***\_
* Share proportionally in \_\_***Remaining assets during liquidation.*** \_
* **Preemptive right**— ***First shot at new stock issue to maintain proportional ownership if desired.***

1. **Dividend Characteristics.**

* Dividends are not a \_\_\_\_\_\_\_\_\_\_\_\_\_ of the firm until a dividend has been declared by the Board.
* Consequently: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* **Dividends and Taxes:**
* Dividend payments are not considered \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Therefore, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The taxation of dividends received by individuals depends on the \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_.
* Dividends received by corporations have a minimum \_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from taxable income.

1. **Features of Preferred Stock.** 
   * **Preferred stock: *A class of ownership in a corporation that has a higher claim on its assets and earnings than common stock.***
   * **Dividends:**
   * Investors are usually guaranteed \_***A fixed dividend into perpetuity*** \_
   * Preferred dividends must be paid before \_\_***Dividends can be paid to common stockholders.*** \_
   * Dividends are not a \_\_***Liability***\_ of the firm and preferred dividends can be \_\_***Deferred indefinitely***\_.
   * Most preferred dividends are **cumulative--**\_***Any missed preferred dividends have to be paid before common dividends can be paid***\_
   * **Other features:**
   * In the event of liquidation, preferred stockholders \_***Are paid off before common shareholders***\_
   * Preferred stock may be “\_***Callable***\_:”
   * Company has the option to \_\_***Re-purchase the preferred shares at any time for any reason (typically for a premium***\_
   * It usually carries **no** \_\_*Voting Rights*\_
   * Preferred stock is considered a hybrid between \_\_***Common stock and Bonds***\_\_
   * Bond characteristics of preferred stock:
     + Some have a \_\_\_***Par Value and Dividend RT***\_\_
     + Considered a \_\_***Fixed income invstmt*** \_ like bonds
     + More sensitive to \_\_***Interest rt risk than stock market risk***\_
     + \_\_***Default Risk Rts***\_ like bonds
   * Common stock characteristics of preferred stock:
     + \_\_***Traded and Quoted***\_\_ like common stock
     + \_***No Maturity***\_\_\_\_ like common stock
     + Preferred dividends are not a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. **Stock Market.** 
   * Publicly held common stock trade on stock exchanges.
   * Stock exchanges (markets) provide liquidity and allow investors to convert their shares into shares of another company or into cash easily.
   * The two largest stock markets in the US are the New York Stock Exchange (**NYSE**) and the National Association of Securities Dealers Automated Quotations (**Nasdaq**).

Primary vs. Secondary Markets

* **Primary: *New-Issue market***
  + ***Firms raise money by selling new securities in the primary market.***
* **Secondary: *Existing shares traded among investors***

Dealers vs. Brokers:

* + **Dealers:** ***Maintain inventory***

Ready to buy or sell at any time—buy at \_***Bid***\_\_, sell at \_***Ask***\_\_. (Think “used car dealer.”)

Dealers’ profit comes from the difference between \_\_***Bid & Ask***\_.

* + **Brokers: *Match buyers and sellers for a fee.***

(Think “real estate broker.”)

1. **New York Stock Exchange (NYSE)**
   * Merged with Euronext in 2007
   * NYSE Euronext merged with American Stock Exchange in 2008
   * Largest \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * License holders (Limited to 1,366)
     + Buy a trading license (own a seat)
     + Designated market makers, DMMs (formerly known as “specialists.”) oversee \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
     + Floor brokers—\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
     + Supplemental liquidity providers (SLPs)—investment firms that agree to be active participants in stocks assigned to them.
2. **NYSE Operations.**

* Operational goal = \_\_\_***Attract order flow***
* NYSE DMMs:
* Assigned broker/dealer
  + Each stock has one assigned DMM
  + All trading in that stock occurs at the DMM’s “\_***the crowd***\_.”
* Trading takes place between customer orders placed with the DMMs and “the \_\_\_\_\_\_\_\_\_\_.”
* “\_\_\_\_\_\_\_\_\_\_” = Floor brokers and SLPs.

1. **NASDAQ**

* NASDAQ OMX (merged in 2007)
* **Not** a \_***Physical Exchange***\_\_—rather a \_***Computer-based quotation system***\_
* Multiple market makers
* Electronic Communications Networks
  + Websites that allow investors to \_\_***Tarde directly w/ one another***\_.
  + NASDAQ opened access to ECNs in the late 1990s.
  + Thus, NASDAQ allows both \_***Market*** \_ and \_***Individual Investors*** to enter orders.
* Three levels of information:
  + Level 1—median quotes, available over the \_\_***Internet***\_\_
  + Level 2—view quotes, \_\_**Brokers**\_ & \_\_***Dealers***\_
  + Level 3—view and update quotes, \_\_***Quotes***\_ only
* Large portion of \_***Technology***\_ stocks.

**FI 393**

**Chapter 6—Stock Valuation**

**Remaining Practice Problems**

**\*\*The first 6 practice problems are covered in the PowerPoint and Notes Outline.**

1. Metallica Bearings, Inc., is a young start-up company. No dividends will be paid on the stock over the next nine years because the firm needs to plow back its earnings to fuel growth. The company will pay a $11 per share dividend in 10 years and will increase the dividend by 4 percent per year thereafter. If the required return on this stock is 12 percent, what is the current share price?
2. ***Find the Price @ yr 9 (b/c div starts @ yr10 & grows constantly)***

***P9 = D10 / (r-g) = 11/ (.012 - .04) = $137.50***

1. ***Find PV of P9(FV)***

***FV = 137.50***

***N = 9***

***PMT = 0***

***I/Y = 12 PV=? $49.58***

1. Lohn Corporation is expected to pay the following dividends over the next four years: $17, $13, $12, and $7.50. Afterward, the company pledges to maintain a constant 5 ercent growth rate in dividends forever. If the required return on the stock is 15 percent, what is the current share price?

***Use Constant Growth Model D5 to Infinity as of yr 4.***

***D1 = 17***

***D2 = 13 P4 = Div5 / (r-g) = Div4(1+g) / (r -g)***

***7.50(1.05) / (0.15 – 0.05) = 78.75***

***D3 = 12***

***D4 = 7.50***

***CF CF0 = 0***

**C01 = 17**

**Co2 = 13**

**CO = 12**

**CO4 = 7.50 +78.50**

**NPV I = 15 CPT NPV = ? 81.82**

1. Maloney, Inc., has an odd dividend policy. The company has just paid a dividend of $7 per share and has announced that it will increase the dividend by $5 per share for each of the next five years, and then never pay another dividend. If you require a return of 12 percent on the company’s stock, how much will you pay for a share today?
2. Practice Problem #10 is covered in Notes Outline (Point #22).
3. Antiques R Us is a mature manufacturing firm. The company just paid a dividend of $7.90, but management expects to reduce the pay out by 4 percent per year indefinitely. If you require a return of 10 percent on this stock, what will you pay for a share today?
4. E-Eyes.com has a new issue of preferred stock. The issue will pay an annual dividend of $25 per year, beginning 14 years from now. If you require a return of 3.9 percent on this stock, how much should you pay today?