Chapter 8

- **Stock Valuation**

Chapter Outline

- Some Features of Common and Preferred Stocks
- Common Stock Valuation
  - Understand how stock prices depend on future dividends and dividend growth
  - Be able to compute stock prices using the dividend growth model

Common Stock

- The true ownership of business firms are the common stockholders
- Residual owners – because they receive what is left after all other claims on the firms income and assets are satisfied.
- Stocks that has no special preference in paying dividend.

Preferred stock

- P/s have dividend priority over c/s
- Promise a fixed periodic payment (stated either as % or as a dollar amount)
- Are often issued by firms that are experiencing losses and need additional financing.

Features of Common Stock

- Voting Rights - generally each share of c/s entitles its holder to one vote in the election of directors.
- Proxy voting – is the grant of authority to s.o else to vote the shareholder's share.
- Classes of stock – the classes are created by unequal voting rights. Eg. Ford Motor Comp. class B c/s is not publicly traded, and has about 40% of voting power.
- Shareholders have the right to share proportionally in declared dividends

Dividend Characteristics

- Dividends are not a liability of the firm until a dividend has been declared by the Board
- Consequently, a firm cannot go bankrupt for not declaring dividends
- Dividends and Taxes
  - Dividend payments are not considered a business expense; therefore, they are not tax deductible (Dividends are paid out of the corp.'s aftertax profit)
  - Dividend received by individual shareholders are considered as ordinary income and are fully taxable.

Features of Preferred Stock

- Dividends
  - Stated dividend that 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
  - Preferred stock generally does not carry voting rights

Cash Flows for Stockholders

- If you buy 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

- A share of common stock is more difficult to value in practice than a bond. Why?

Common Stock Valuation

One Period

$$P_0 = \frac{D_1 + P_1}{1 + r}$$

P: Current Price of the Stock
D : Cash dividend paid at the end of period
r : Required return in the market on this invest.

Common Stock Valuation

Two Period

$$P_0 = \frac{D_1}{1 + r} + \frac{D_2 + P_2}{(1 + r)^2}$$

One Period Example 8.1

- Suppose you are thinking of purchasing the stock of Moore Oil, Inc. and 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?

Answer 8.1

One Period Example 8.2

- You are considering buying a share of stock today and plan to sell it next year. You somehow know that the stock will be worth $70 at that time. You predict that the stock will also pay a $10 per share dividend at the end of the year. If you require 25% of return on investment, what is the most you would pay for stock?

Answer 8.2

Two Period Example 8.3

- Now what if you decide to hold the stock for two years? In addition to the $2 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?

Answer 8.3

Three Period Example 8.4

- 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?

Answer 8.4

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 <u>all</u> expected future dividends*
- So, how can we estimate all future dividend payments?

Estimating Dividends: Special Cases

- Constant dividend
  - The firm will pay a constant dividend forever
  - This is like preferred stock
  - The price is computed using the perpetuity formula
- Constant dividend growth
  - The firm will increase the dividend by a constant % every period
- Supernormal growth
  - Dividend growth is not consistent initially, but settles down to constant growth eventually

Constant Dividend

<u>Zero Growth</u>

- If 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

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

Example 8.5

- 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?

Example 8.6

- Suppose that company has a policy of paying $10 per share dividend every year. If this policy is to be continued infinitely and the required return is 20%, what is the present value of the stock?

Dividends has a zero growth rate

- *Eg. A share of preferred stock – dividend has zero growth thus is constant through time*

$$D_1 = D_2 = D_3 = D = Constat$$

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

Dividends has a constant growth rate

- Dividends are expected to grow at a constant percent per period.

$$P_0 = \frac{D_0(1+g)}{1+R} + \frac{D_0(1+g)^2}{(1+R)^2} + \frac{D_0(1+g)^3}{(1+R)^3} + \ldots\ldots\ldots$$

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

$$P_0 = \frac{D_0(1+g)}{R-g} = \frac{D_1}{R-g}$$

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

DGM – Example 8.7

- 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?

DGM – Example 8.8

- 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?

Example 8.9

- Gordon Growth Company is expected to pay a dividend of $4 next period and dividends are expected to grow at 6% per year. The required return is 16%.
- What is the current price?

Nonconstant Growth Problem Statement – Example 8.10

- Suppose a firm is expected to increase dividends by 20% in one year and by 15% in two years. After that dividends will increase at a rate of 5% per year indefinitely. If the last dividend was $1 and the required return is 20%, what is the price of the stock?
- Remember that we have to find the PV of *all* expected future dividends.

Answer 8.10

Using the DGM to Find R

- Start with the DGM:

$$P_0 = \frac{D_0(1+g)}{R-g} = \frac{D_1}{R-g}$$

rearrange and solve for R

$$R = \frac{D_0(1+g)}{P_0} + g = \frac{D_1}{P_0} + g$$

Dividend Yield, Capital Gain Yield and the requires return of the stock

- **Dividend Yield**
  - Dividend of next year / Current Price
- **Capital Gain Yield**
  - is the percentage increase in the stock price
  - is dividend growth rate
- **Required Return of a stock**
  - is made up of 2 parts 1 - the dividend yield
    2 - the capital gain
  - Required return of a stock=the dividend yield+the capital gain

Finding the Required Return – Example 8.11

- Suppose a firm's stock is selling for $10.50. They just paid a $1 dividend and dividends are expected to grow at 5% per year.
- What is the required return?
- What is the dividend yield?
- What is the capital gains yield?

Answer 8.11

Dividend Growth and Stock Valuation: Example 8.12 a

- a) The Brigapenski Co. has just paid a cash dividend of $2 per share. Investors require a 16% return from investment such as this. If the dividend is expected to grow at a steady 8% per year, what is the current value of the stock? What will the stock be worth in five years?

Answer 8.12 a

Answer 8.12 a

Dividend Growth and Stock Valuation: Continued…

- b) What would the stock sell for today if the dividend was expected to growth at 20% per year for the next 3 years and settle down to 8% per year, indefinitely?

Answer 8.12 b

Example 8.13

- Suppose we observe a stock sellind for $40 per share. The next dividend will be $1 per share, and you think the dividend will growth at 12 % per year forever. What is the dividend yield in this case? The capital gain yield? The total required return?

Answer 8.13

Table 8.1 - 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 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. Supernormal 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. The Required Return

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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Sugested Problems

- 1-5, 7-9, 11-13, 15-17, 19, 21.