Lecture 4

Stocks and their valuation

Chapter 7/104

1

Topics Covered

- Stocks and the Stock Market
- Book Values, Liquidation Values and Market Values
- Valuing Preferred Stocks
- Valuing Common Stocks
  - + Dividend Discount Model (DDM)
  - + P/E Ratio
- Growth Stocks and Income Stocks

2

7.1.Stocks and Stock Market

- Primary Market – Place where the sale of new stock first occurs.
- Initial Public Offering (IPO) – First offering of stock to the general public.
- Seasoned Issue – Sale of new shares by a firm that has already been through an IPO.

3

Stocks and Stock Market (Contd)

- Common Stock – Ownership shares in a publicly held corporation.
- Secondary Market – market in which already issued securities are traded by investors.
- Dividend – Periodic cash distribution from the firm to the shareholders.
- P/E Ratio – Price per share divided by earnings per share.

4

7.2.Stocks and Stock Market (Contd)

- Book Value – Net worth of the firm according to the balance sheet.
- Liquidation Value – Net proceeds that would be realized by selling the firm's assets and paying off its creditors.

5

- **Market price:** is not the same as book value or liquidation value, treats the firm as a going concern.

6

Stock Pricing

- The price of a stock is the Present Value of all cash flows generated by the stock (i.e. dividend and market price) discounted at the required rate of return.

$$P_0 = \frac{Div_1}{(1+r)^1} + \frac{Div_2}{(1+r)^2} + \ldots + \frac{Div_H + P_H}{(1+r)^H}$$

7

7.3.Valuing Preferred Stocks

- Preferred stock – Stock that takes priority over common stock in regard to dividends and liquidation of assets.

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

8

Ex 1

- Preferred products has issued preferred stock with an $ 10 annual dividend that will be paid in perpetuity, If the discount rate is 12% at what price should the preferred sell?

9

Valuing Common Stocks

- Expected Return – The percentage yield that an investor forecasts from a specific investment over a set period of time. Sometimes called the holding period return (HPR).
- Ex: If Investor invest 1 year, We receive 2 amout money

$$\text{Expected Return} = r = \frac{Div_1 + P_1 - P_0}{P_0}$$

Div1: Dividend after 1st year
P_1: selling price ; P_0: buying price

10

Valuing Common Stocks (Contd)

- The formula can be broken into two parts:

Dividend Yield + Capital Gain (Capital Aprreciation)

$$\text{Expected Return} = r = \frac{Div_1}{P_0} + \frac{P_1 - P_0}{P_0}$$

11

Valuing Common Stocks (Contd)

- **Dividend Discount Model** – The price of a stock is the present value of the dividends it will pay over the investor's horizon plus the present value of the expected stock price at then end of that horizon.

$$P_0 = \frac{Div_1}{(1+r)^1} + \frac{Div_2}{(1+r)^2} + \ldots + \frac{Div_H + P_H}{(1+r)^H}$$

H - Time horizon for your investment.

12

Valuing Common Stocks (Contd)

Example

Current forecasts are for XYZ Company to pay dividends of $3, $3.24, and $3.50 over the next three years, respectively. At the end of three years you anticipate selling your stock at a market price of $94.48. What is the price of the stock given a 12% expected return?

13

Valuing Common Stocks (Contd)

Example

Current forecasts are for XYZ Company to pay dividends of $3, $3.24, and $3.50 over the next three years, respectively. At the end of three years you anticipate selling your stock at a market price of $94.48. What is the price of the stock given a 12% expected return?

$$PV = \frac{3.00}{(1+.12)^1} + \frac{3.24}{(1+.12)^2} + \frac{3.50+94.48}{(1+.12)^3}$$

$$PV = \$75.00$$

14

Ex 1

- Amazon.com to pay pay dividends of $2, $4,$4 and $5 over the next fourth years, respectively. At the end of fourth years you anticipate selling your stock at a market price of $110.48. What is the price of the stock given a 12% expected return?

15

7.4.Valuing Common Stocks (Contd)

- **DDM with No Growth** – If we forecast no growth, and plan to hold out stock indefinitely, we will then value the stock as a **PERPETUITY**.

$$Perpetuity = P_0 = \frac{Div_1}{r} \text{ or } \frac{EPS_1}{r}$$

Assumes all earnings are paid to shareholders.

EPS: Earning per share

16

Valuing Common Stocks (Contd)

- **Constant Growth DDM** – A version of the dividend growth model in which dividends grow at a constant rate *(Gordon Growth Model)*.

$$P_0 = \frac{Div_1}{r - g}$$

Div_1: dividend next year
g: growth rate
r: expected rate of return
$Div1 = Div_o(1+g)$

Given any combination of variables in the equation, you can solve for the unknown variable.

17

Valuing Common Stocks (Contd)

Example 1

What is the value of a stock that expects to pay a $3.00 dividend next year, and then increase the dividend at a rate of 8% per year, indefinitely? Assume a 12% expected return.

18

Valuing Common Stocks (Contd)

Example 1

What is the value of a stock that expects to pay a $3.00 dividend next year, and then increase the dividend at a rate of 8% per year, indefinitely? Assume a 12% expected return.

$$P_0 = \frac{Div_1}{r - g} = \frac{\$3.00}{.12 - .08} = \$75.00$$

19

Ex 1

- Steady As She goes,Inc, will pay a year-end dividend of $4 per share. Investors expect the dividend to grow at a rate of 4% indefinitely,if the stock currently sell for $40 per share, what is expected rate of return on the stock?

20

Valuing Common Stocks (Contd)

Example- continued

If the same stock is selling for $100 in the stock market, what might the market be assuming about the growth in dividends?

$$\$100 = \frac{\$3.00}{.12 - g}$$

$$g = .09$$

Answer

The market is assuming the dividend will grow at 9% per year, indefinitely.

21

Valuing Common Stocks (Contd)

Disadvantages of Dividend Discount Model:

- Dividend = 0 ?
- Does not account for risk
- Just depends on dividend payout policy

22

Valuing Common Stocks using P/E ratio

$$P/E = \frac{\text{Price per share}}{\text{Earning per share } (EPS)}$$

- Price per share of a company = P/E ratio of industry x EPS of the company

23

Ex1

- No-Growth Indutries pays out all of its earnings as dividends. It will pay its next $4 per share dividend in a year. The discount rate is 12%. What is the price earning ratio of the company?
- What would the P/E ratio be if the discount rate were 10%?

24

7.5.Growth stocks and Income stocks

- If a firm elects to pay a lower dividend, and reinvest the funds, the stock price may increase because future dividends may be higher.
- **Payout Ratio** – Fraction of earnings paid out as dividends
- **Plowback Ratio** – Fraction of earnings retained by the firm.

25

Growth stocks and Income stocks (Contd)

- Growth can be derived from applying the return on equity to the percentage of earnings plowed back into operations.

g = return on equity X plowback ratio

26

Growth stocks and Income stocks (Contd)

Example

Our company forecasts to pay a $5.00 dividend next year, which represents 100% of its earnings. This will provide investors with a 12% expected return. Instead, we decide to plow back 40% of the earnings at the firm's current return on equity of 20%. What is the value of the stock before and after the plowback decision?

27

Growth stocks and Income stocks (Contd)

Example

Our company forecasts to pay a $5.00 dividend next year, which represents 100% of its earnings. This will provide investors with a 12% expected return. Instead, we decide to plow back 40% of the earnings at the firm's current return on equity of 20%. What is the value of the stock before and after the plowback decision?

No Growth

$$P_0 = \frac{5}{.12} = \$41.67$$

With Growth

$$g = .20 \times .40 = .08$$

$$P_0 = \frac{3}{.12 - .08} = \$75.00$$

28

Growth stocks and Income stocks (Contd)

Example – continued

If the company did not plowback some earnings, the stock price would remain at $41.67. With the plowback, the price rose to $75.00.

The difference between these two numbers (75.00-41.67=33.33) is called the Present Value of Growth Opportunities (PVGO).

29

Valuing Common Stocks (Contd)

- Present Value of Growth Opportunities (PVGO): Net present value of a firm's future investments.
- Sustainable Growth Rate: Steady rate at which a firm can grow.

  g = plowback ratio X return on equity

30

Ex 1

- WB projectd a rate of return of 15% on new projects, management plans to plow back 20% of all earning into the firm. To intend Earning first year will be $3 per share and investors expect a 12% rate of return on stocks facing the same risks as WB?

a.What is the growth rate?
b.What is the stock price?
c.What is the present value of growth opportunities?

31

Ex 2

- Above Ex 1

d. What is the P/E ratio?
e. What would the price and P/E ratio be if the firm paid out all earnings as dividends?
f. What do you conclude about the relationship between growth opportunities and P/E ratio?

32

7.6.there are no fee lunches on wall street
7.7.market Anomalies and Behavioral Finance

- Market Anomaties
- The Earning Announcement Puzzie
- The New- Issue Puzzle.
- Behaviour Finance

33


Thanks for
your attention
34