Topic 5. Stock market

Stock prices

- par value
- book value
- market value

Some shareholder ratios

- Payout ratio = Div/Net profit
- Plawback (retention) ratio = 1 - Payout ratio
- Dividend yield = Div/Market price of a share
- EPS = Net profit/Number of shares
- P/E ratio = Market price of a share/EPS
- ROE = Net profit/Equity
- Gearing (leverage) = LT debt/Equity

Valuing stocks

⇨Expected Return (r) - The percentage return that an investor expects to get from a specific investment over a set period of time (drop $E_0[\ ]$ notation after this slide)

$$r = \frac{E_0[Div_1 + P_1] - P_0}{P_0}$$

- Holding period return

⇨ The return formula can be broken into two parts: dividend yield and capital appreciation

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

⇨Return Measurements:

$$\text{Dividend Yield} = \frac{Div_1}{P_0}$$

$$\text{Return on Equity (ROE)} = \frac{EPS}{\text{Book Equity Per Share}}$$

DDM

- Dividend Discount Model: Computation of today's stock price which states that share value equals the present value of all expected future dividends

$$P_0 = \frac{Div_1}{(1+r)^1} + \frac{Div_2}{(1+r)^2} + \ldots + \frac{Div_T + P_T}{(1+r)^T}$$

T: Time horizon for your investment

- If we forecast no growth, and plan to hold out stock indefinitely, we will then value the stock as a PERPETUITY

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

Assumes all earnings are paid to shareholders

- N.B. To estimate the value of the perpetuity today use next period's cash flows in the numerator

- Constant Growth DDM: A version of the dividend discount model in which dividends grow at a constant rate (Gordon Growth Model)
- Use perpetuity with growth formula:

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

Example

- Company Z's earnings and dividends per share are expected to grow indefinitely by 5 percent a year. If next year's earnings are £15, dividend is £10 and the market capitalization rate is 8 percent, what is the current stock price?
- What if the growth of this company would stop after year 4 and starting with year 5 it will pay out all earnings as dividends?

Solution:

- P_0=10/(.08-.05)=£333.33.
- By year 5, earnings will grow to £18.23 per share. Forecasted price per share at year 4 is 18.23/.08=£227.91
- $$P_0 = \frac{10}{1.08} + \frac{10.50}{(1.08)^2} + \frac{11.03}{(1.08)^3} + \frac{11.58}{(1.08)^4} + \frac{227.91}{(1.08)^4} =$$
  $$= £203.04$$

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

$$g = \text{return on equity} \times \text{plowback ratio}$$

Example

- First company forecasts to pay a $8.33 dividend next year, which represents 100% of its earnings. This will provide investors with a 15% expected return. Second company decides to plow back 40% of the earnings at the firm's current return on equity of 25%. What are the values of the stocks of both companies?

Answer:

- First company (no growth):

$$P_0 = \frac{8.33}{.15} = \$55.53$$

- Second company (with growth):

$$g = .25 \times .40 = .10$$

$$P_0 = \frac{5.00}{.15 - .10} = \$100.00$$

The difference in stock prices =

= Present Value of Growth Opportunities (PVGO) =

$$PVGO = 100.00 - 55.53 = \$44.47$$

Valuing stocks

$$P_0 = \frac{EPS}{r} + PVGO$$

$$\frac{EPS}{P_0} = r \cdot \left(1 - \frac{PVGO}{P_0}\right)$$

Underestimates r if PVGO is positive..

Question:

- Remember the example about the company Z growing at an annual 5% with the next year's dividend at £10 and the market capitalization rate at 8%
- If this company were to redistribute all its earnings, it could maintain a level dividend stream of $15 a share. How much is the market actually paying per share for growth opportunities?

Answer:

- P_0=15/.08+PVGO=£333.33; therefore, PVGO=£145.83