



Universidad del Desarrollo
Universidad de Excelencia

Finance I

Fall 2012

Session 24:

Common Stock Valuation



- ▶ **Valuing stocks is fairly similar to valuing bonds.**
- ▶ **Formulae are different, but the concepts are the same.**
- ▶ **To calculate the present value of future cash flows, we “discount” the future value according the cost of opportunity it implies.**
- ▶ **Higher the cost of opportunity, higher the discount, thus, lower the present value.**
- ▶ **The cost of opportunity depends on the risk free return, the market risk and the portion of non diversifiable risk held by the assets.**

2. Common Stock Valuation

- ▶ The value (present value) of a stock is equal to the present value of expected dividends plus the present value of the expected resale price
- ▶ If there are only 2 periods, today's price is:

$$Price = P_0 = \frac{Div_1 + P_1}{(1 + r)}$$

- ▶ Where r is the opportunity cost of equity for the company
- ▶ Alternatively, the expected return on equity can be calculated from the expected dividends, expected future price and current price:

$$r = \frac{Div_1 + P_1 - P_0}{P_0} \text{ or } \frac{Div_1 + P_1}{P_0} - 1$$

2. Common Stock Valuation

- ▶ So how do we calculate P1?

$$P_1 = \frac{Div_2 + P_2}{(1 + r)}$$

- ▶ What about P2?

$$P_2 = \frac{Div_3 + P_3}{(1 + r)}$$

- ▶ ... you get the idea, right?

- ▶ Therefore today's price is equal to:

$$P_0 = \frac{Div_1}{(1+r)} + \frac{Div_2}{(1+r)^2} + \frac{Div_3}{(1+r)^3} + \dots \dots \frac{Div_n + P_n}{(1+r)^n}$$

2. Common Stock Valuation

- ▶ As n grows to infinity, the present value of the resale of the stock approaches zero, therefore we can simplify the formula to:

$$P_0 = \sum_1^n \frac{Div_i}{(1+r)^i}$$

- ▶ If the dividends are constant, the cost of opportunity is constant and the number of periods approach infinity, we could use the annuity formula:

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

- ▶ This implies that the expected return is:

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

- ▶ If the dividend grows at a rate “g” each period, the formula is adjusted to:

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

- ▶ This implies that the expected return is:

$$r = \frac{Div}{P_0} + g$$

2. Common Stock Valuation

- ▶ The growth rate is rarely known, so we often have to estimate it
- ▶ In order to grow, a company should invest
- ▶ If a company generates earnings, it can choose to distribute those earnings or keep them and invest them back in the company
- ▶ The amount the company reinvests (retention rate, or plowback rate) should yield the same return as the rest of the equity (return on equity, ROE).
- ▶ Therefore, the growth rate is equal to the retention rate multiplied by the return on equity

$$g = \text{retention rate} \times \text{ROE}$$

2. Common Stock Valuation

▶ Example 1:

▶ **A company generates USD 1 EPS (Earnings per share) and 10% ROE... it means that for every share, the company generated 1 dollar in earnings... and that for every dollar of equity it generated 10 cents of earnings.**

- The company could distribute that dollar and NOT reinvest.
- Next period, if everything else remains constant, the earnings would be one dollar again...
- Since the equity is constant, and the return on equity is constant, the earnings are constant

- But, let's suppose the company reinvests 50% of the earnings.
- Next period, although the return on equity IS constant, the amount of equity GREW... 50 cents per share... so:
- The company generates 1 dollar from the original equity AND an additional 5 cents from the new equity (50 cents) multiplied by the ROE (10%)...
- The growth rate is 5% ($\text{Retention} \times \text{ROE} = 50\% \times 10\%$)

2. Common Stock Valuation

- ▶ **Example 2:**
- ▶ **A company generates USD 2 EPS (Earnings per share) and 15% ROE. Assume that the dividends per share are USD 1.2 and the cost of equity is 10%. What should be the price of the stock?**

2. Common Stock Valuation

- ▶ **An obvious limitation of this methodology is that it assumes dividends or growth rates constant FOREVER**

- ▶ **Company usually have different growth rates, due to different reinvestment rate, but also due to changes in the competitive environment (changes in demand, competition, technologies, depletion of projects, etc)**

- ▶ **The solution is still simple. It just breaks down (separates) the cash flows into different “stages” of growth**
 - High growth
 - Medium growth
 - No growth
 - An then uses DCF as always (see page 96)

2. Common Stock Valuation

- ▶ **Finally, we have assumed that the stock is held to eternity (or many periods), as to reduce the impact of the resale value of the stock (capital gain).**

- ▶ **Sometimes that will not be the case, so we'll need to determine a “terminal” or “horizon” value for the stock.**

- ▶ **Again, we have simple ways to do so:**
 - Assume the company will continue forever and use DCF to come up with a number
 - Use a Price to Equity ratio from comparable companies
 - Use a market to book ratio from comparable companies
 - All are accepted, but none are trusted... still, many practitioners, including Brealey Myers Allen PREFER ratios over DCFs, because they represent MARKET valuations, instead of Excel forecasts

▶ **Next TA session:**

- Exercises on common stock valuation

▶ **Next Monday, special class by John Edmunds at 16:00**

▶ **Quiz 8 on Wednesday... LAST QUIZ!!!!**

- 40% exercises
- 60% special presentation by John Edmunds