



**Universidad del Desarrollo**  
Universidad de Excelencia

# **Finance I**

## **Fall 2012**

### **Session 23:**

### **Common Stock Valuation**



- ▶ To calculate the present value of future cash flows, we “discount” the future value according to 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.
- ▶ Several formulas can be used as short-cuts to calculate present values of perpetuities and annuities.

## 2. Common Stock Valuation

▶ **The term common refers to stocks with no additional preference**

- Some stocks (preferred) have additional benefits:
- Extra votes,
- Guaranteed dividends
- Minimum dividends
- Additional redemption rights
- Liquidation preference rights,
- Etc...

▶ **We'll refer to common stocks as stocks that have limited liability and pay a proportional dividend if the company has a positive cumulative return.**

## 2. Common Stock Valuation

- ▶ .....Recap
- ▶ 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.
- ▶ ..... So, valuing stocks is fairly similar to valuing bonds.... The formulae are different, but the concept is the same

## 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:

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

## 2. Common Stock Valuation

- ▶ 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

### ► Example:

- A stock will pay a dividend of \$5 each year. The dividend is expected to grow at a rate of 5% each year. The cost of opportunity for the equity of the company is 15%.
- What should be the price of the stock today?

$$P_0 = \frac{5}{15\% - 5\%}$$

$$P_0 = 50$$

## 2. Common Stock Valuation

### ► Example:

- What is the expected return if:
  - $P_0 = \$50$
  - Dividends = \$5
  - Growth rate of dividends ( $g$ ) = 5%

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

$$r = \frac{5}{50} + 5\%$$

$$r = 15\%$$

- ▶ **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.**

▶ **In a few minutes you will receive:**

- Link to this week's assignment (individual response)

▶ **Next class:**

- Estimating the growth rate
- Other approaches

▶ **Quiz 7 on Wednesday. BRING YOUR CALCULATOR**

▶ **Next Monday, special class by John Edmunds**