

FN 201 : Lecture Note 10-11

Cost of Capital and Capital Structure

Dr. Winai Homsombat

Bachelor of Economics, International Program

Thammasat University

The Cost of Capital

- The terms ***required return***, ***discount rate***, and ***cost of capital*** all refer to the cost of capital in an investment project
- The cost of capital represents **the overall cost of financing** to the firm
 - use “Weighted Average Cost of Capital: WACC”
- Cost of capital estimates are used for: *capital budgeting decisions, financing decisions, operating decisions, etc.*
- A firm’s financial policy is about **choosing its capital structure** – the mixture of debt and equity
- A firm’s **overall cost of capital reflects the required return on the firm’s assets as a whole** – a mixture of the returns needed to compensate its creditors and its shareholders

Weighted Average Cost of Capital: WACC

- The company cost of capital is the **weighted average** of required returns from all source of firm's capital (WACC)

$$WACC = W_D R_D (1 - T) + W_E R_E + W_{PS} R_{PS}$$

Outline

- Estimate the components of cost of capital:
 - Cost of equity
 - Cost of debt
 - Cost of preferred stock
- Calculate the weighted average cost of capital of the firm (WACC)

Cost of Equity

- Common stock equity is available through retained earnings (R/E) or by issuing new common stock:

Common equity = Retained Earning + New common stock

- Why is there a cost for **retained earnings**?
 - Earnings can be **reinvested or paid out** as dividends
 - Investors could **buy other securities**, and earn a return.
 - Thus, there is an ***opportunity cost*** if earnings are retained

Cost of Equity

- **Dividend Growth Model Approach**
- **Capital Asset Pricing Model (CAPM)**

Cost of Equity – Dividend Growth Model Approach

- PV of dividend growing perpetuity
- According to the *constant growth (Gordon)* model

From: $P_o = \frac{D_1}{R_E - g}$ Rearranging: $R_E = \frac{D_1}{P_o} + g$

Example:

1) Summerdahl Resort's common stock is currently trading at \$36 a share. The stock is expected to pay a dividend of \$3.00 a share at the end of the year ($D_1 = \$3.00$), and the dividend is expected to grow at a constant rate of 5% a year. What is its cost of common equity?

Cost of Equity – Dividend Growth Model Approach

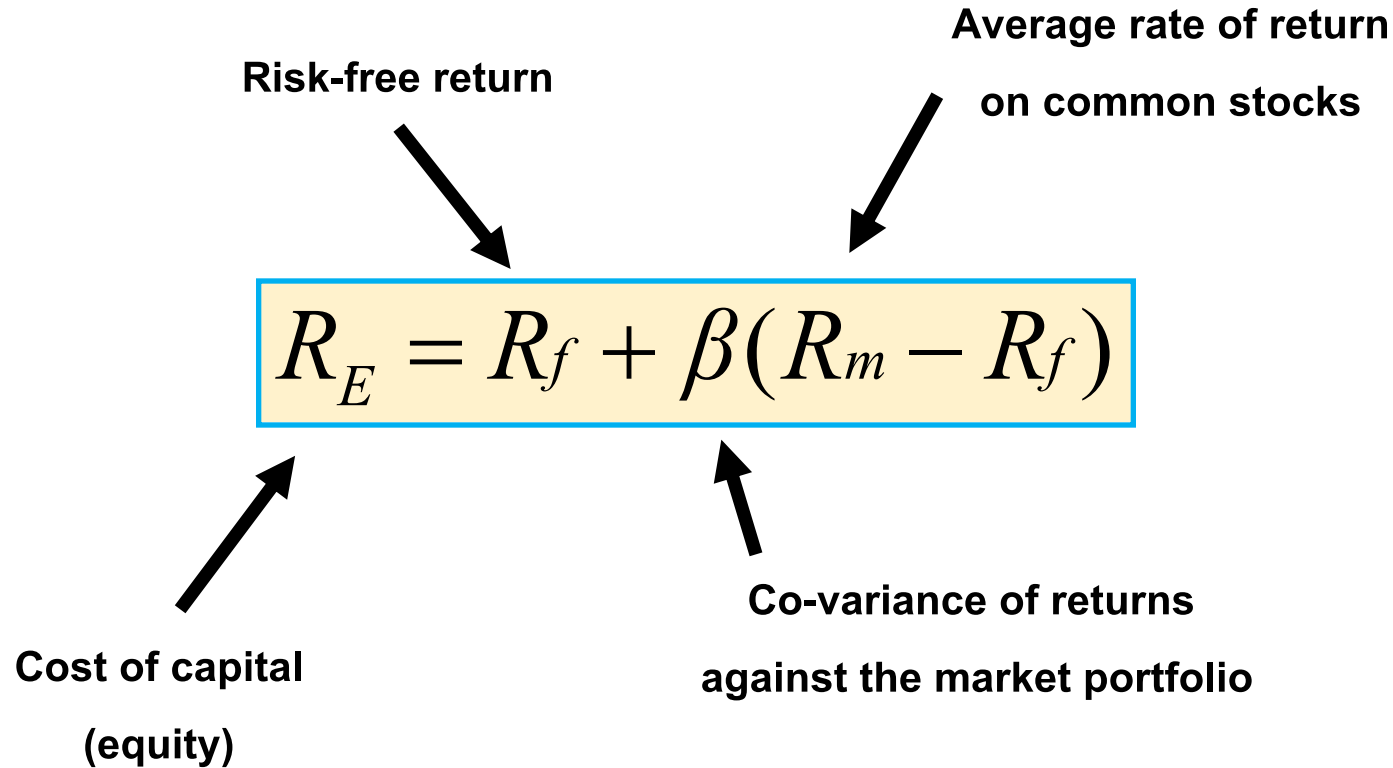
- **Advantages:**

- Very Simple

- **Disadvantages:**

- Applicable only for **dividend paying firms**
(otherwise can use earnings growth)
- Uses **historical data** to predict future growth
- Very **sensitive to the estimated growth rate**
- The approach does **not explicitly consider risk**

Cost of Equity – CAPM



Cost of Equity – CAPM

Example:

- The earnings, dividends, and stock price of Shelby Inc. are expected to grow at 7% per year in the future. Shelby's common stock sells for \$23 per share, its last dividend was \$2.00, and the company will pay a dividend of \$2.14 at the end of the current year.
 - a. Using the discounted cash flow approach, what is its cost of equity?
 - b. If the firm's beta is 1.6, the risk-free rate is 9%, and the expected return on the market is 13%, then what would be the firm's cost of equity based on the CAPM approach?

Cost of Equity – CAPM

- **Advantages:**

- It explicitly **adjusts for risk**
- It is **more applicable** to companies other than those
with steady dividend growth / do not pay dividend

- **Disadvantages:**

- If the estimates of **the market risk premium and beta are poor**,
the resulting cost of equity can be *inaccurate*
- **Uses historical data** to predict future returns

Cost of Debt – why using debt is better?

	<u>with stock</u>	<u>with debt</u>
EBIT	400,000	400,000
- interest expense	<u>0</u>	<u>(50,000)</u>
EBT	400,000	350,000
- taxes (34%)	<u>(136,000)</u>	<u>(119,000)</u>
EAT	264,000	231,000

- Now, suppose the firm pays \$50,000 in dividends to the shareholders

Cost of Debt – why using debt is better?

	<u>with stock</u>	<u>with debt</u>
EBIT	400,000	400,000
- interest expense	<u>0</u>	<u>(50,000)</u>
EBT	400,000	350,000
- taxes (34%)	<u>(136,000)</u>	<u>(119,000)</u>
EAT	264,000	231,000
- dividends	<u>(50,000)</u>	<u>0</u>
Retained earnings	214,000	231,000

Cost of Debt

- The cost of debt is the return required by lenders (observable)
 - = **yield to maturity** on the firm's bonds outstanding
 - = **actual interest rate** on the firm's loan

Since interest is tax deductible to the firm, the actual cost of debt is less than the yield to maturity:

$$\text{After-tax cost of debt} = \text{Cost Rate} \times (1 - \text{tax rate})$$

Cost of Preferred Stock

- Preferred stocks are stocks **with dividend priority over common stocks**.
- They pay a **fixed dividend rate**, every period, as long as the firm exists.
- A share of preferred stock is essentially a **perpetuity**.

The cost of preferred stock, R_p , is therefore:

$$P_0 = \frac{D}{R_{PS}} \quad \Rightarrow \quad R_{PS} = \frac{D}{P_0}$$

Example:

- Duggins Veterinary Supplies can issue perpetual preferred stock at a price of \$50 a share with an annual dividend of \$4.50 a share.

Weighted Average Cost of Capital: WACC

Example:

- Gallagher Corporation estimates the following costs for each component in its capital structure:*

<i>Source of Capital</i>	<i>Cost</i>
Bonds (after tax)	$R_D \times (1-t) = 6.0\%$
Preferred Stock	$R_{PS} = 11.9\%$
Common Stock	$R_S = 16.25\%$

Assume that Gallagher's desired capital structure is 40% debt, 10% preferred and 50% common equity. Given **Gallagher's tax rate is 40%**. What is firm's WACC?

Weighted Average Cost of Capital: WACC

Longstreet Communications Inc. (LCI) has the following capital structure, which it considers to be optimal: debt = 25%, preferred stock = 15%, and common stock = 60%. LCI's tax rate is 40%, and investors expect earnings and dividends to grow at a constant rate of 6% in the future. LCI paid a dividend of \$3.70 per share last year (D_0), and its stock currently sells at a price of \$60 per share. Ten-year Treasury bonds yield 6%, the market risk premium is 5%, and LCI's beta is 1.3. The following terms would apply to new security offerings.

Preferred: New preferred could be sold to the public at a price of \$100 per share, with a dividend of \$9. Flotation costs of \$5 per share would be incurred.

Debt: Debt could be sold at an interest rate of 9%.

Common: New common equity will be raised only by retaining earnings.

- a. Find the component costs of debt, preferred stock, and common stock.
- b. What is the WACC?

Note

- Flotation cost effect
- Market value or Book value of capital structure

Question?