

Chapter Outline

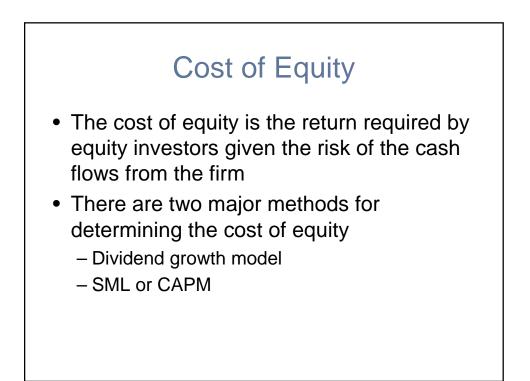
- The Cost of Capital: Some Preliminaries
- The Cost of Equity
- The Costs of Debt and Preferred Stock
- The Weighted Average Cost of Capital
- Divisional and Project Costs of Capital

Why Cost of Capital is Important

- We know that the return earned on assets depends on the risk of those assets
- The return to an investor is the same as the cost to the company
- Our cost of capital provides us with an indication of how the market views the risk of our assets
- Knowing our cost of capital can also help us determine our required return for capital budgeting projects

Required Return

- The required return is the same as the appropriate discount rate and is based on the risk of the cash flows
- We need to know the required return for an investment before we can compute the NPV and make a decision about whether or not to take the investment
- We need to earn at least the required return to compensate our investors for the financing they have provided



The Dividend Growth Model Approach

 Start with the dividend growth model formula and rearrange to solve for R_E

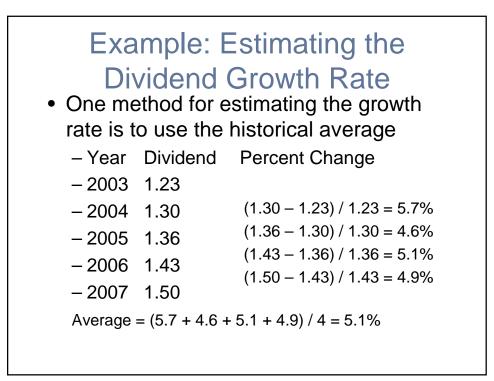
$$P_{0} = \frac{D_{1}}{R_{E} - g}$$

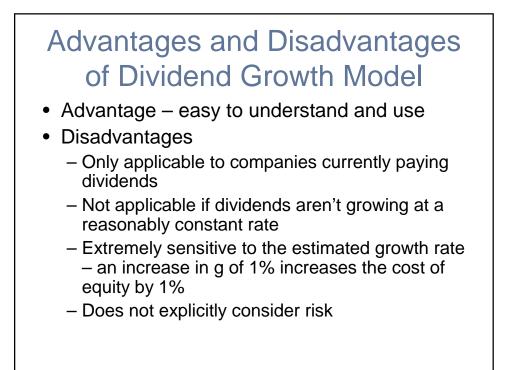
$$R_{E} = \frac{D_{1}}{P_{0}} + g$$

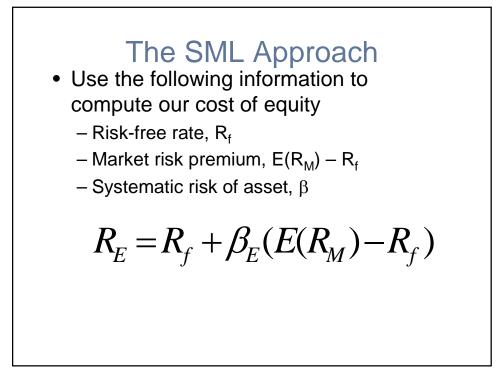
Example: Dividend Growth

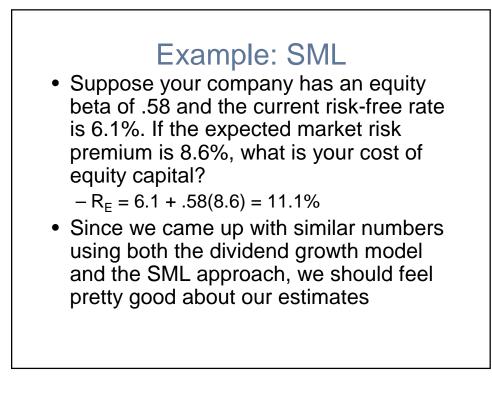
• Suppose that your company is expected to pay a dividend of \$1.50 per share next year. There has been a steady growth in dividends of 5.1% per year and the market expects that to continue. The current price is \$25. What is the cost of equity?

$$R_E = \frac{1.50}{25} + .051 = .111$$



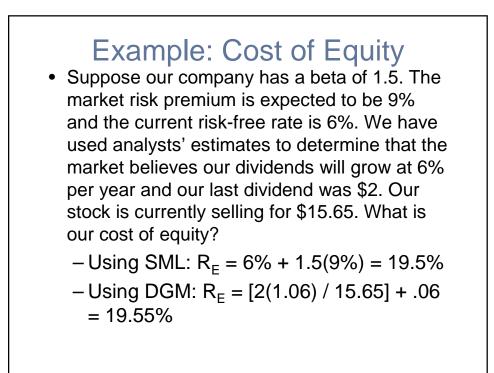


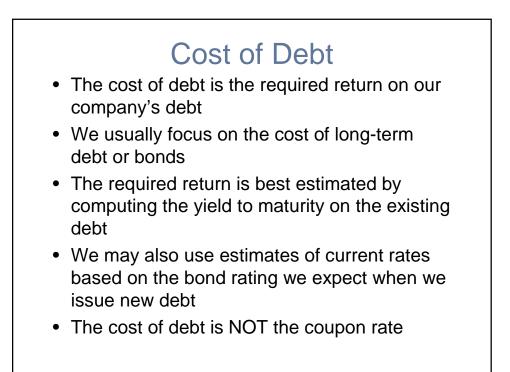


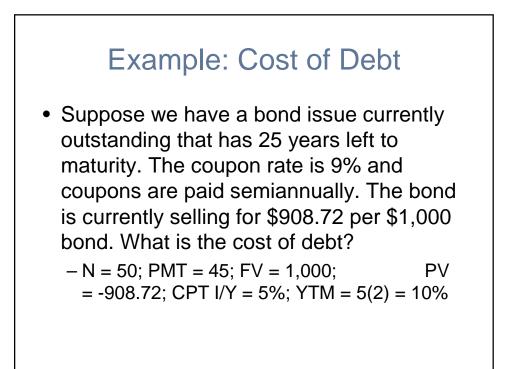


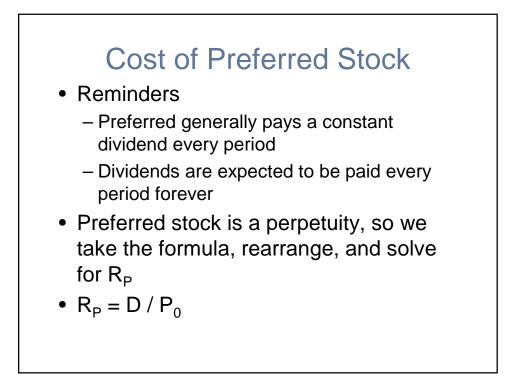
Advantages and Disadvantages of SML

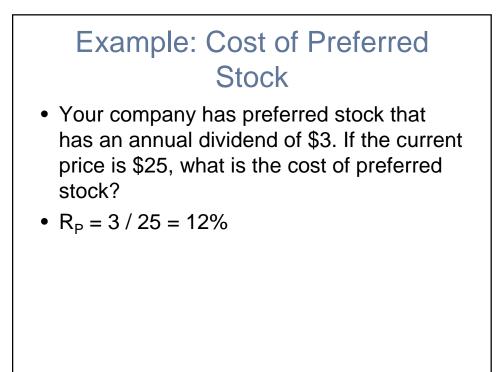
- Advantages
 - Explicitly adjusts for systematic risk
 - Applicable to all companies, as long as we can compute beta
- Disadvantages
 - Have to estimate the *expected* market risk premium, which does vary over time
 - Have to estimate beta, which also varies over time
 - We are relying on the past to predict the future, which is not always reliable











Weighted Average Cost of Capital

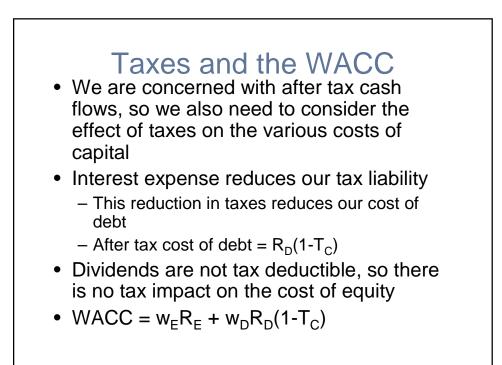
- Capital
 We can use the individual costs of capital that we have computed to get our "average" cost of capital for the firm.
- This "average" is the required return on the firm's assets, based on the market's perception of the risk of those assets
- The weights are determined by how much of each type of financing is used

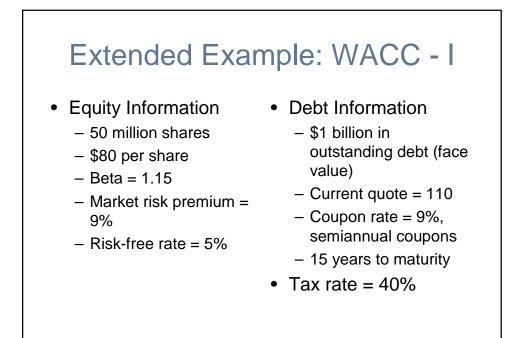


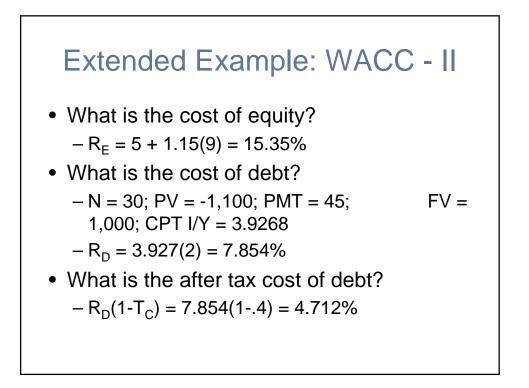
- Notation
 - E = market value of equity = # outstanding shares times price per share
 - D = market value of debt = # outstanding bonds times bond price
 - -V = market value of the firm = D + E
- Weights
 - $-w_E = E/V =$ percent financed with equity
 - $w_D = D/V = percent financed with debt$

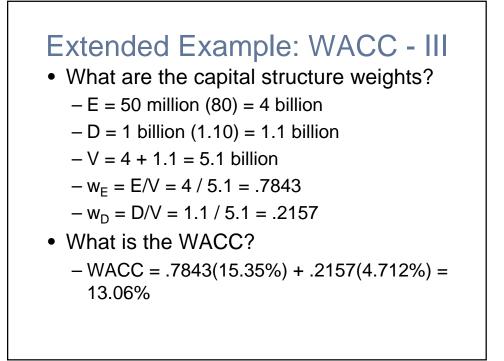
Example: Capital Structure Weights

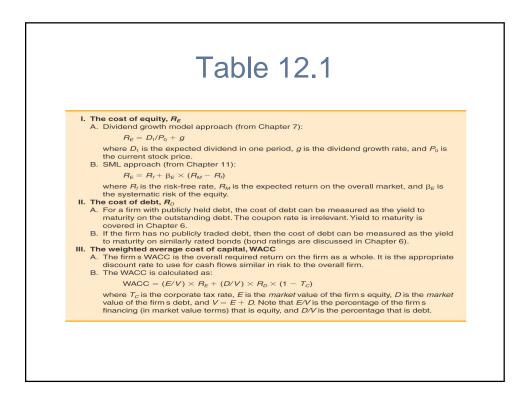
- Suppose you have a market value of equity equal to \$500 million and a market value of debt = \$475 million.
 - What are the capital structure weights?
 - V = \$500 million + \$475 million = \$975 million
 - w_E = E/D = \$500 / \$975 = .5128 = 51.28%
 - w_D = D/V = \$475 / \$975 = .4872 = 48.72%





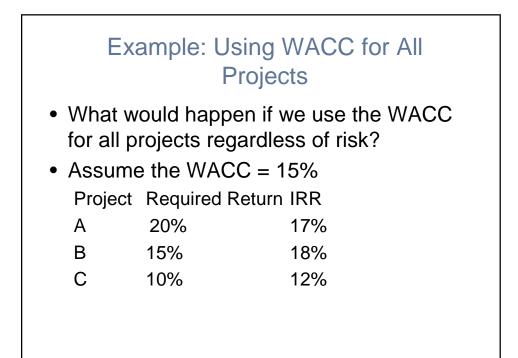






Divisional and Project Costs of Capital

- Using the WACC as our discount rate is only appropriate for projects that are the same risk as the firm's current operations
- If we are looking at a project that is NOT of the same risk as the firm, then we need to determine the appropriate discount rate for that project
- Divisions also often require separate discount rates



Pure Play Approach

- Find one or more companies that specialize in the product or service that we are considering
- Compute the beta for each company
- Take an average
- Use that beta along with the CAPM to find the appropriate return for a project of that risk
- Often difficult to find pure play companies

Subjective Approach

- Consider the project's risk relative to the firm overall
- If the project is riskier than the firm, use a discount rate greater than the WACC
- If the project is less risky than the firm, use a discount rate less than the WACC
- You may still accept projects that you shouldn't and reject projects you should accept, but your error rate should be lower than not considering differential risk at all

Risk Level	Discount Rate
Very Low Risk	WACC – 8%
Low Risk	WACC – 3%
Same Risk as Firm	WACC
High Risk	WACC + 5%
Very High Risk	WACC + 10%