National Association of Regulatory Utility Commissioners
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Cost of Capital

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Sources of Capital

- **Financial Capital**
  - The funds that are used to finance the purchases and/or construction of physical capital (gross plant and equipment), materials and supplies, inventories of fuel, and to provide cash working capital
- **Investor-Provided Financial Capital**
  - Debt (Long-term & Short-term – liabilities that come due within a year)
    - Debt is borrowed money which must be returned with interest Holders of bonds receive fixed interest payments
  - Preferred stock
    - Preferred Stock is a hybrid between common stock and debt. Holders of preferred stock receive fixed dividend payments
  - Common Equity (Common stock plus retained earnings)
    - Equity, or common stock represents ownership in the utility. Holders of common stock (ownership) receive variable dividend payments.

Standard for Fair Rate of Return

- In 1944, in FPC vs. Hope Natural Gas, the Supreme Court of USA ruled that:
  - From the investor or company point of view, it is important that (just) prices are set such that there be enough revenue not only for operating expenses but also for the capital costs of the business – these include service on the debt (interest) and dividends on stock
  - The return to the equity/stock owners should be
    - commensurate with the returns on investments in other enterprises with similar risks
    - sufficient to assure confidence in the financial integrity of the utility so as to maintain its credit and to attract capital.
- There is no single scientifically correct method for determining the proper return. Capital Cost is one of the most controversial parts of a rate case largely because of significant dollars involved.

Weighted Average Cost of Capital

- Capital Structure is the relative portions of debt and equity. Utilities typically have capital structure with debt and equity, usually between 40% to 60%.
- The cost of capital is a weighted average costs of all elements in the capital structure.
- An example:
  - A company is financed by 40% debt, 10% preferred stock, and 50% equity. Debt interest is 7.0%, cost of preferred stock is 8.5%, and the cost of equity is 10.0%. The overall weighted average cost of capital is:

WACC: 7.0% x 40% + 8.5% x 10% + 10.0% x 50% =8.65%

Cost of Debt and Equity

- Cost of debt is relatively easy to determine; typically use embedded cost of debt; after tax cost of debt is typically $(1-t)k_d$ where t = tax rate of the firm
- Cost of preferred stock is = D_{ps}/P where D_{ps} is the preferred dividend and P is the net issuing price
- Equity is issued, sold and traded in the form of shares through a stock exchange. Cost of equity is forward looking and more difficult to compute
- The Cost of Equity compensates investors for placing their money in the utility.
- Investors, by making the investment in the equity of a utility, forego the opportunity to invest elsewhere. Accordingly, they should be compensated such that their expected rate of return on the utility investment is equal to the returns they could expect on investments of comparable risk elsewhere.

Equity Cost Measurement

- Primary Techniques Employed:
  - Discounted Cash Flow Method
  - Capital Asset Pricing Model (CAPM)
  - Risk Premium Approach
  - Comparable Earnings Approaches

Discounted Cash Flow

- DCF assumes that the price of a stock is equal to the present value of all future cash flows –including expected dividends on the stock and capital appreciation

  $P_0 = D_1/(k-g)$

  $k = D_1/P_0 + g$

  Where k = expected rate of return

  D_1 = expected dividends

  P_0 = current stock price

  g = expected dividend growth rate

  Example: Expected dividend = \$2.40

  Stock price = \$32.00

  Forecasted growth rate = 7%

  Expected return = \$2.40/\$32.00 + 7% = 14.5%

Capital Asset Pricing Model

- In CAPM, the cost of equity equals the risk free rate + a risk premium that is measured in terms of the individual stock return's correlation with market returns, and market risk premium

  $k_i = k_{rf} + (k_m - k_{rf})*b_i$

  where k_i = required return on security i

  k_{rf} = risk free rate

  k_m = expected market return

  b_i = beta of security I

Example: risk free rate = 5%;

beta of a stock = .8

expected market return = 10%

required return on the stock = 5+.8(10-5) =9%

Risk Premium Approach

- The assumption in this approach is that riskier securities deserve a higher return than less risky securities

  $k = k_a + RP$

  k = required rate of return on equity

  k_a = long term cost of debt

  RP = risk premium

  Example: LT cost of debt = 7%

  Risk premium = 4%

  Cost ofequity = 7% + 4% = 11%

  Typically risk premium is in a range, leading to a ball park estimate for equity cost

Comparable Earnings Approach

- Allowable returns on equity should be commensurate with returns on investments in other companies having comparable risks
- Implementation:
  - Select a reference group of comparable risk companies
    - risk variables considered include beta, quality rating etc.
  - Compute the return on equity for those firms
  - Make any needed adjustments and determine the cost of equity for the firm in question
    - adjustments for risk, quality etc., differences between reference group and firm in question

Cost of Equity

- All models involve a tremendous amount of judgment from both the witness sponsoring the testimony and the Commission in arriving at a decision on the appropriate rate.
- Analysts using the same model often have widely diverse results because of the judgments they make regarding the various inputs to include in the formulae.
- Often more than one model is provided to test the results of the favored model.
- Other financial indicators may be considered such as bond ratings, market-to-book ratios, interest and dividend coverages, debt-to-equity ratios.

Rate of Return

- An insufficient rate of return can affect quality of service because the Company may cut back on maintenance or other operating costs to increase net income.
- A perception by the financial market that the Commission is penalizing shareholders may lead to lower debt ratings and may adversely affect the market price of stock. Both could lead to higher interest costs and the need for a greater rate of return.

Is ROR Guaranteed?

- NO
- It is simply an allowed rate of return; the actual rate of return a company earns could be different from what is allowed. The rates are set in such a manner that the company could make this return if all forecasts come perfectly true.
- Typically the actual vs forecast revenues and costs will be different and hence the actual ROR could be different from allowed ROR.

Factors Affecting WACC

- Factors company cannot control:
  - Level of interest rates
  - Taxes
- Factors company can control:
  - Capital Structure
  - Dividend Policy
  - Investment Policy