



SECTION - 2

COST OF CAPITAL

This Section includes

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2.1 COST OF CAPITAL-KEY CONCEPTS

- 2.1.1 Cost of capital refers to a rate which represents the average cost at which a firm raises its finances. It is also called the discount rate or hurdle rate and represents the vital link between financing and investment decisions of a firm.
- 2.1.2 Cost of capital is very important as it represents the minimum return that a firm expects in all its investment projects. It is used to discount the future cash flows from a project to arrive at the Net Present Value. Incorrect computation of cost of capital leads to wrong investment decisions.
- 2.1.3 Cost of capital is composed of cost of equity capital, preference share capital and cost of debt capital

2.2 COST OF DEBT CAPITAL

- 2.2.1 Cost of debt capital is the interest rate charged by the lender.
- 2.2.2 It can also be estimated by dividing the total interest paid by the average debt. Cost of debt is always computed post tax as interest payable on the debt is tax deductible.

2.3 COST OF EQUITY CAPITAL

- 2.3.1 Dividend rate is not the cost of equity capital as it is normally understood.
- 2.3.2 Cost of equity represents the expected return that a firm has to pay to its present and prospective shareholders.
- 2.3.3 Cost of equity is determined by two methods:
(a) Dividend discount model and (b) Capital asset pricing model (CAPM)

2.4 DIVIDEND DISCOUNT MODEL

- 2.4.1 Under the dividend discount model, cost of equity is inferred from the current share price of a firm, which represents the present value of the future expected dividends



from a firm. For dividend discount model, we need the expected future dividend stream, its growth rate and the present share price to infer the cost of equity which equates the present value of the future dividend stream to the current share price.

Cost of equity = $[D1/P + G]$,

Where,

D1 is the expected next year's dividend,

P is the present share price, and

G is the growth rate in dividends.

2.5 CAPITAL ASSET PRICING MODEL

2.5.1 The Capital asset pricing model is the most widely used method for determining cost of equity capital.

2.5.2 Capital asset pricing model is based on the following principles:

- a. Equity share holders have to be paid the minimum risk free rate of return $[R_f]$ and a risk premium.
- b. The risk free rate of return represents the rate of interest on a government security, typically a treasury bill.
- c. The risk premium has two components; the market risk premium $[R_m]$ which is the average long term return from the stock market, typically computed based on the long term returns on a market index like the sensex, minus the risk free rate of return $[R_f]$ and the Beta.
- d. Beta represents the systematic risk component for a firm, measured as the rate of change of share price returns with reference to the market returns (sensex returns).
- e. Beta measures the sensitivity of a share price with reference to the market.
- f. Systematic risk is also known as the non-diversifiable risk which the shareholders can not diversify through a portfolio. Hence, the shareholders have to be compensated for this. Non-diversifiable risk affects all the firms in the system.
- g. Diversifiable risk is company specific risk, which the shareholders can diversify, hence need not be compensated for.
- h. Beta varies from company to company.
- i. A beta less than 1 typically means less risky stocks and greater than 1 represents an aggressive stock.
- j. A beta less than 1, means when the market fluctuates, the share price fluctuates less than the market.
- k. A beta more than 1, means that the share price rises or falls at a rate higher than the market rate of change



2.5.3 Under capital asset pricing model,

Cost of equity = $R_f + \text{beta} (\text{Market risk premium})$

Cost of equity = $R_f + \text{beta}(R_m - R_f)$

2.6 WEIGHTED AVERAGE COST OF CAPITAL

2.6.1 The cost of equity capital and cost of debt capital are multiplied by the market value weights to arrive at the weighted average cost of capital [WACC].

2.6.2 Market value weights means the current market value of the debt and equity is used to arrive at the weights and not the book value of debt and equity. This is because the WACC should represent the minimum expected rate that a firm should provide to both its present and prospective shareholders.

2.6.3 WACC also varies depending on the mix of debt of equity of a firm i.e the financial leverage of a firm.

2.7 ILLUSTRATIONS

Cost of debt:

1. If the pre-tax cost of debt is 12% and the tax rate is 40%, what is the post tax cost of debt?

The post tax cost of debt = Pretax cost of debt $\times$ (1-tax rate)

Post tax cost of debt = $12\% \times (1-40\%) = 7.20\%$

2. A firm pays an interest of 27 lakhs and its balance sheet shows an opening balance of debt of 50 lakhs and closing balance of debt of 100 lakhs? If the tax rate is 40%, what is its post tax cost of debt?

The pre tax cost of debt equals = $[\text{interest} / \text{average debt}]$

Average debt = $(50+100)/2$

= $[27/75] = 36\%$

Post tax cost of debt = $0.36 \times (1-40) = 21.6\%$

Cost of equity

Dividend discount model

3. Dividends just paid by a firm amounts to Rs. 24 per share and the growth rate in dividends is expected to be 5%. If the current share price is Rs.120, what is the cost of equity?

Cost of equity = $[D_1/P] + G$

$D_1 = \text{Expected dividend next year} = 24 \times (1.05) = 25.2$

Cost of equity = $(24/120) + 0.05 = 25\%$

Capital Asset Pricing Model

Cost of equity = $R_f + \text{beta} (R_m - R_f)$



4. The risk free rate of return for an economy is 8% and the expected return from equity market is 18%. The beta of ABC Company is 1.2. What is its cost of equity?

$$\begin{aligned}
 \text{Cost of equity} &= R_f + \text{beta} (R_m - R_f) \\
 &= 8\% + 1.2(18\% - 8\%) \\
 &= 8\% + 1.2(10\%) \\
 &= 20\%
 \end{aligned}$$

Weighted Average Cost of Capital (WACC)

5. Compute the weighted average cost of capital from the following data:

Capital structure of a company			
Rs 1 ordinary shares		12	million
8% preference shares		6	million
Bank loan		7.2	million
Total		25.2	

Other data:			
Market price	Ordinary shares	2.25	Rupees
Market price	8% preference shares	0.92	Rupees
	Tax rate	0.3	
	Beta	1.75	
	Risk free rate of interest	0.08	
	Market risk premium	0.04	
	Interest cost of the year	1055640	
	Loan at the start of the year	8	million

Type of finance	Market value	Cost	Weightage	WC
Share capital	27.00	15.00%	67.98%	10.20%
Pref shares	5.52	8.70%	13.90%	1.21%
Bank loan	7.20	9.72%	18.13%	1.76%
	39.72			13.17%

The weighted average cost of capital is 13.17%

Note:

- Cost of share capital is computed using Capital Asset Pricing Model



- Cost of preference share is arrived at by dividing preference dividend by the current market price (.08 / .92)
- Cost of debt is arrived at by dividing the interest by average debt

Glossary of terms

- Hurdle rate
- Discount rate
- Weighted average cost of capital
- Risk free rate of return
- Risk premium
- Beta
- Systematic risk
- Unsystematic risk
- Diversifiable risk
- Non-diversifiable risk
- Portfolio
- Dividend discount model
- Post tax cost of debt