

Cost of capital

The cost of capital is the minimum rate of return required on the investment projects to keep the market value per share unchanged.

In other words, the cost of capital is simply the rate of return the funds used should produce to justify their use within the firm in the light of the wealth maximisation objective.

Future cost and Historical cost:

It is commonly known that, in decision-making, the relevant costs are future costs are not the historical costs. The financial decision-making is no exception. It is future cost of capital which is significant in making financial decisions.

Specific cost and combined cost:

The cost of each component of capital (ex-common shares, debt etc.,) is known as specific cost of capital. The combined or composite cost of capital is an inclusive: cost of capital from all sources. It is, thus, the weighted average cost of capital.

Explicit cost and implicit cost:

The explicit cost of capital is the internal rate of return of the financial opportunity and arises when the capital is raised. The implicit of capital arises when the firm considers alternative uses of the funds rained. The methods of calculating the specific costs of different sources of funds are discussed.

1. Cost of debt:

It is relatively easy to calculate cost of debt, it is rate of return or the rate of interest specified at the time of debt issue. When a bond or debenture is issued at full face value and to be redeemed after some period, then the before tax cost of debt is simply the normal rate of interest.

Before tax cost of debt, $K_d = \text{Interest} / \text{Principal}$

2. Cost of preference capital:

The measurement of the cost of preference capital poses some conceptual difficulty. In the case of debt, there is a binding legal obligation on the firm to pay interest and the interest constitutes the basis to calculate the cost of debt.

However, when reference to the preference capital, it may be stated that the payment of dividends on preference capital is not legally binding on the firm and even if the dividends are paid, it is not a charge on earnings, rather it is a distribution or appropriation of earnings to a class of owners. It may, therefore, be concluded, that the dividends on preference capital do not constitute cost. This is not true.

The cost of preference capital is a function of the dividend expected by investors; preference capital is never issued with an intention not to pay dividends. Although it is not legally binding

upon the firm to pay dividends on preference capital, yet it is generally paid when the firm makes sufficient profits.

3. Cost of equity capital:

It is sometimes argued that the equity capital is free of cost. This is not true. The reason for advancing such an argument is that it is not legally binding on the company to pay dividends to the common shareholders. Also, unlike the interest rate on debt or the rate of dividend on preference capital, the dividend rate to the common shareholders is not fixed. However, the shareholders invest their money in common shares with an expectation of receiving dividends.

The market value of the share depends on the dividends expected by the shareholders. Therefore, the required rate of return which equates the present value of the expected dividends with the market value of share is the equity capital).

For the purpose of measuring the cost of equity, the equity capital will be divided into two parts
a) external equity b) retained earnings.

a) External equity:

The minimum rate of return which is required on the new investment, financed by the new issue of common shares, to keep the market value of the share unchanged is the cost of new issue of common shares (or external equity).

b) Retained earnings:

The companies are not required to pay any dividends on retained earnings. Therefore, it is sometimes observed that this source of finance is cost free. But retained earnings is the dividend foregone by the share holders.

The cost of retained earnings is measured by the following equation:

$$K_r = D/P_o + g$$

Where K_r = Cost of retained earnings

D = Dividend

g = growth rate

P_o = Market price of the share

4. Cost of convertible securities:

In recent times, companies are raising finance by a new financial instrument called the “convertible security”. It may be a bond or a debenture or a preference share. Convertible security is considered as a means of deferred equity, financing and its cost should, therefore, be treated so.

The expected stream of receipts from a convertible security will consist of interest/ dividend plus the expected conversion price. The expected conversion price can be represented by the expected future market price per equity share at some future date times the number of shares into which the security is convertible.

The cost of a convertible security, therefore is the discount rate which equates the after tax interest or preference dividend plus the expected conversion price with the issue price of the convertible security.

If it is assumed that all investors will convert their bonds on the same day, the cost of a convertible bond can be found by the following equation.

$$V_c = \sum_{t=1}^n \frac{R(1-t)}{(1+k)^t} + \frac{C_n}{(1+K)^n}$$

Where V_c = issue price of convertible bond at time 0

R = Annual interest Payment

Importance of Cost of Capital

Computation of cost of capital is significant part of the financial management to decide the capital structure of the business concern.

Importance to Capital Budgeting Decision: Capital budget decision mainly depends on the cost of capital of each source. According to net present value method, present value of cash inflow must be more than the present value of cash outflow. Therefore, cost of capital is used for capital budgeting decision.

Importance to Structure Decision: Capital structure is the mix or proportion of the different types of long term securities. Company uses particular type of sources if the cost of capital is suitable. Therefore, cost of capital supports to take decision regarding structure.

Importance to Evolution of Financial Performance: Cost of capital is imperative to determine which affects the capital budgeting, capital structure and value of the firm. It helps to estimate the financial performance of the firm.

Importance to Other Financial Decisions: Cost of capital is also used in some other areas such as, market value of share, earning capacity of securities etc. hence; it plays a major part in the financial management.

Computation of cost of capital:

Computation of cost of capital has two important parts:

1. Measurement of specific costs
2. Measurement of overall cost of capital

Measurement of Cost of Capital:

It refers to the cost of each specific sources of finance such as:

- Cost of equity
- Cost of debt

- Cost of preference share
- Cost of retained earnings

Cost of Equity: Cost of equity capital is the rate at which investors discount the expected dividends of the firm to determine its share value. Theoretically, the cost of equity capital is described as the "Minimum rate of return that a firm must earn on the equity financed portion of an investment project in order to leave unchanged the market price of the shares". Cost of equity can be calculated from the following approach:

- Dividend price (D/P) approach.
- Dividend price plus growth (D/P + g) approach.
- Earning price (E/P) approach.
- Realized yield approach.

Dividend Price Approach: The cost of equity capital will be that rate of expected dividend which will maintain the present market price of equity shares. Dividend price approach can be measured with the following formula:

$$K_e = \frac{D}{N_p}$$

Where,

K_e = Cost of equity capital
 D = Dividend per equity share
 N_p = Net proceeds of an equity share

Dividend Price Plus Growth Approach: The cost of equity is calculated on the basis of the expected dividend rate per share plus growth in dividend (R M Srivastava, 2008). It can be measured by the following formula:

$$K_e = \frac{D}{N_p} + g$$

Where,

K_e = Cost of equity capital
 D = Dividend per equity share
 g = Growth in expected dividend
 N_p = Net proceeds of an equity share

Earning Price Approach: Cost of equity regulates the market price of the shares. It is based on the future earnings forecasts of the equity (R M Srivastava, 2008). The formula for calculating the cost of equity according to this approach is as follows.

$$K_e = \frac{E}{N_p}$$

Where,

K_e = Cost of equity capital
 E = Earnings per share

N_p = Net proceeds of an equity share
 Realized Yield Approach: It is simple method to compute cost of equity capital (R M Srivastava, 2008). Under this method, cost of equity is calculated by

$$K_e = PVf \times D$$

Where,

K_e = Cost of equity capital.
 PVf = Present value of discount factor.
 D = Dividend per share.

II. Cost of Debt: Cost of debt is the after tax cost of long-term funds through borrowing. Debt may be issued at par, at premium or at discount and also it may be perpetual or redeemable. Debt Issued at Par: Debt issued at par means, debt is issued at the face value of the debt. It may be calculated with the following formula

$$K_d = (1 - t) R$$

Where,

K_d = Cost of debt capital rate
 t = Tax rate
 R = Debenture interest rate

Debt Issued at Premium or Discount: If the debt is issued at premium or discount, the cost of debt is calculated with the following formula.

$$K_d = \frac{I}{N_p} (1 - t)$$

Where,

K_d = Cost of debt capital payable
 I = Annual interest
 N_p = Net proceeds of debenture
 t = Tax rate

Cost of Perpetual Debt and Redeemable Debt: It is the rate of return which the lenders expect. The debt carries a certain rate of interest.

$$K_{db} = \frac{I + 1/n(P - N_p)n}{1/n(P + N_p)/2}$$

Where,

I = Annual interest payable
 P = Par value of debt
 N_p = Net proceeds of the debenture
 n = Number of years to maturity
 K_{db} = Cost of debt before tax

Cost of debt after tax can be calculated with the following formula:

$$K_{da} = K_{db} \times (1-t)$$

Where,

K_{da} = Cost of debt after tax
 K_{db} = Cost of debt before tax
 t = Tax rate

III. Cost of Preference Share Capital: Cost of preference share capital is the annual preference share dividend by the net proceeds from the sale of preference share. There are two types of preference shares irredeemable and redeemable. Following formula is used to calculate the cost of redeemable preference share capital:

$$K_p = \frac{D_p}{N_p}$$

Where,

K_p = Cost of preference share
 D_p = Fixed preference dividend
 N_p = Net proceeds of an equity share
 Cost of irredeemable preference share is calculated with the following formula:

$$K_p = \frac{D_p + (P - N_p)/n}{(P + N_p)/2}$$

Where,

K_p = Cost of preference share
 D_p = Fixed preference share
 P = Par value of debt
 N_p = Net proceeds of the preference share
 n = Number of maturity period.

IV. Cost of Retained Earnings: Retained earnings is one of the sources of finance for investment proposal. It is dissimilar from other sources like debt, equity and preference shares. Cost of retained earnings is the same as the cost of an equivalent fully subscribed issue of additional shares, which is measured by the cost of equity capital. Cost of retained earnings can be calculated with the following formula:

$$K_r = K_e (1-t)(1-b)$$

Where,

K_r = Cost of retained earnings
 K_e = Cost of equity
 t = Tax rate

b = Brokerage cost

Measurement of Overall Cost of Capital:

It is also known as weighted average cost of capital and composite cost of capital. Weighted average cost of capital is the expected average future cost of funds over the long run found by weighting the cost of each specific type of capital by its proportion in the firm's capital structure.

The computation of the overall cost of capital (K_o) involves the following steps.

- Assigning weights to specific costs.
 - Multiplying the cost of each of the sources by the appropriate weights.
 - Dividing the total weighted cost by the total weights.
- The overall cost of capital can be calculated with the following formula;

$$K_o = K_d W_d + K_p W_p + K_e W_e + K_r W_r$$

Where,

K_o = Overall cost of capital
 K_d = Cost of debt
 K_p = Cost of preference share
 K_e = Cost of equity
 K_r = Cost of retained earnings
 W_d = Percentage of debt of total capital
 W_p = Percentage of preference share to total capital
 W_e = Percentage of equity to total capital
 W_r = Percentage of retained earnings

Weighted average cost of capital is calculated in the following formula also:

$$K_w = \frac{\sum XW}{\sum W}$$

Where,

K_w = Weighted average cost of capital
 X = Cost of specific sources of finance
 W = Weight, proportion of specific sources of finance.

To, summarize, cost of return is defined as the return the firm's investors could expect to earn if they invested in securities with comparable degrees of risk. The cost of capital signifies the overall cost of financing to the firm. It is normally the relevant discount rate to use in evaluating an investment. Cost of capital is important because it is used to assess new project of company and permits the calculations to be easy so that it has minimum return that investor expect for providing investment to the company.

Problem 1

Calculate the cost of capital in the following cases:

- X Ltd. issues 12% Debentures of face value Rs. 100 each and realizes Rs. 95 per Debenture. The Debentures are redeemable after 10 years at a premium of 10%.

ii) Y. Ltd. issues 14% preference shares of face value Rs. 100 each Rs. 92 per share. The shares are repayable after 12 years at par. Note: Both companies are paying income tax at 50%.

Problem 2

a) A company raised preference share capital of Rs. 1,00,000 by the issue of 10% preference share of Rs. 10 each. Find out the cost of preference share capital when it is issued at (i) 10% premium, and (ii) 10% discount.

b) A company has 10% redeemable preference share which are redeemable at the end of 10th year from the date of issue. The underwriting expenses are expected to be 2%. Find out the effective cost of preference share capital.

c) The entire share capital of a company consists of 1,00,000 equity shares of Rs. 100 each. Its current earnings are Rs. 10,00,000 p.a. The company wants to raise additional funds of Rs. 25,00,000 by issuing new shares. The flotation cost is expected to be 10% of the face value. Find out the cost of equity capital given that the earnings are expected to remain the same for coming years.

Problem 3

A company is considering raising of funds of about Rs. 100 lakhs by one of two alternative methods, viz., 14% institutional term loan or 13% non-convertible debentures. The term loan option would attract no major incidental cost. The debentures would have to be issued at a discount of 2.5% and would involve cost of issue of Rs. 1,00,000.