

# Cost of Capital

Cost of Capital means the minimum rate of return that a firm must earn on its investments such that value of the firm remains unchanged. In case of capital budgeting decisions, only those investment opportunities are considered where the rate of return is higher than cost of capital.

Cost of capital is also used as discounting rate to determine the PV of future cash inflows. If the firm accepts a proposal having a positive NPV or rate of return higher than the cost of capital, it implies that the proposal yields returns higher than minimum required by the investors and the prices of the shares will increase, leading to increase in shareholders wealth. On the other hand, the shareholder's wealth will decrease on the acceptance of the proposal where the rate of return is less than cost of capital.

A firm raises funds from many sources like equity capital, preference capital and debt. Because of risk differences and the contractual agreements between the firm and investors, the cost of capital for each source of finance will differ. The cost of capital for each source of capital is termed as specific cost.

**The combined cost of capital of all sources is termed as overall or average cost of capital. Specific costs of each source are combined as per the weights assigned to these sources of capital to arrive at average cost of capital, which is called as weighted average cost of capital.**

## Cost of Debt

A company may raise debt either from banks & financial institutions or from public in the form of debentures or public deposits for a fixed time period at certain rate of interest. The contractual rate of interest forms the basis for calculating cost of any form of debt. To arrive at the cost of debt we need to have following information—

- a) Net cash proceeds or inflows on sale of debentures. This is the issue price of the debentures/ loans minus floatation costs. The issue may be at par, discount or at a premium
- b) Net cash outflow in the form of periodic interest payment and repayment of the instalments or in lump sum on maturity

Note that interest payment is tax-deductible expense; the effective cash outflow is less than actual payment of interest made by the firm to the debt holders by the amount of tax shield on interest payment.

**Cost of Perpetual debt** – It is tax-adjusted return on debt and is denoted by below mentioned formula.

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

Where,

$K_d$  = Tax adjusted cost of debt

$I$  = Annual interest payment

$SV$  = Sale proceeds of bonds/ debentures

**Cost of redeemable debt-** In this case, one has to account for repayment of principal amount, in addition to interest payments. Principal may be in instalments or in lump sum.

**When principal is paid in lump sum, the cost of debt is computed as below –**

$$K_d = \frac{I(1-t) + (f + d + pr - pi)}{Nm} \cdot \frac{RV + SV}{2}$$

Where,

I = Annual interest payment

RV = Redemption value of debentures

SV = Net Sales proceeds from issue of debentures (net of floatation costs)

F = Floatation cost

D= discount on issue of debentures

Pr= premium on redemption of debentures

Pi= Premium on issue of debentures

T= Tax rate

When principal is repaid in number of instalments, instead of one lump sum payment, the formula is –

$$CI_0 = \frac{\sum COI_t + COP_n}{(1 + K_d)^t}$$

Where,

CI<sub>0</sub> = Net cash proceeds from issue of debentures

COI<sub>t</sub> = Cash outflow on interest payments in year 1,2...Upto the year of maturity after adjusting tax saving on interest

COP<sub>n</sub> = Principal repayment in year 1,2, ...upto year of maturity

**Cost of debt (K<sub>d</sub>) is that rate which equates the cash proceeds from issue of debentures with cash outflows on account of interest payment and repayment of principal.**

### **Cost of Preference Shares**

In case of debt, there is a legal obligation on the company to pay interest and it constitutes the basis to calculate the cost of debt. In case of preference capital, payment of dividends is not legally binding on the company and dividend is not a charge on profits and hence not tax-deductible. However, preference shareholders have preferential right as regards payment of dividends as well as repayment of principal. Moreover, preference shares are mostly cumulative which means that dividend gets accumulated till it is paid. As long it remains unpaid, no dividend can be received by equity shareholders. Cost of preference shares (K<sub>p</sub>) is the discount rate that equates net proceeds of the sale of preference shares with the PV of the future dividends and principal repayments.

$$P_0 = \sum_{t=1}^n \frac{dt}{(1+K_p)^t} + \frac{P_n}{(1+K_p)^n}$$

Where,

P<sub>0</sub> = Expected sales proceeds on issue of preference shares

D = dividend paid on preference shares

P<sub>n</sub> = Repayment of preference shares

## Cost of Equity Capital

Return on equity shares is dependent purely on the discretion of management and the equity shareholders are the last claimants on the assets of the company in event of liquidation of its business. Hence, equity shares involve highest degree of financial risk. However, since the risk exposure is the highest in case of equity, holders of such securities will expect higher rate of return, thereby leading to higher cost associated with them. **Cost of equity (Ke) is the minimum rate of return that a firm must earn on equity-financed portion of an investment project in order to leave unchanged the market value of shares.**

### Dividend Approach –

According to dividend approach, cost of equity is the discount rate that equates the PV of all expected future dividends per share with the net proceeds of the sale of equity shares (Current market value of shares). However, the computation of Ke is based on certain assumptions with investor behaviour and their ability to forecast the future values. The assumptions are as under –

- Market value of shares depends on expected dividends
- Initial dividend is greater than zero
- Dividend payout ratio is constant
- Investors can accurately measure the riskiness of the firm so as to agree on the rate at which to discount the dividends.

$$K_e = (D_1 / P_0) + g$$

Where,

D1= Expected dividend per share

P0= Net proceeds per share / current market price

g= expected growth in dividends

### Capital Asset Pricing Model (CAPM) –

CAPM explains the behaviour of security prices and describes the risk-return trade off for securities. Individual securities have different degrees of risk. Government bonds and treasury bills are risk-free securities as the risk of default and variability is zero. In such case, the investors expect a compensation only for the time factor of money. But corporate bonds and shares have a risk of default and high variability of return. So, for such securities investors expect a higher rate of return. Such rate would be the risk free rate plus risk premium. The amount of risk premium depends on the riskiness of the security, which in turn is measured by its beta. This approach is based on certain assumptions—

- All investors have same information about securities
  - All investors have common expectations regarding expected returns
  - There are no taxes and transactions
  - No single investor can significantly impact share prices
  - All investors prefer securities that provide the highest returns for a given level of risk or the lowest amount of risk for a given level of return ie investors are risk-averse
- The risks associated with equity investment are categorized as under—
- a) Systematic (Non-diversifiable)
  - b) Unsystematic (diversifiable)

**Systematic (Non-diversifiable) Risk-** These are risks, which arise out of external, uncontrollable factors like nature of markets, nature of industry and economic environment.

- **Market risk:** That which arises out of changes in demand and supply pressures in the market following the changing flow of information changes in investors' perception and other subjective factors.
- **Interest rate risk:** These arise out of changes in interest rates on various securities like debentures, bonds, and loans brought about by changes in monetary policy of the government, which are beyond the control of the investors.
- **Inflation risk:** Inflation leading to rise in input costs and lower margins would change purchasing power of the investors and the return expected by them

**Unsystematic (Diversifiable) Risk:**

These are the risks, which are controllable in nature and are internal or specific to the company. They are as under:

- **Business Risk:** Variability in cash flows, earnings and revenues might be the caused due to internal problems like labour unrest, shortage of inputs, inefficient operations. A company can improve its operating efficiency by bringing about changes in its policies and structure and thereby reduce business risk.
- **Financial Risks:** Financial risk is the risk to equity holders as a company increases its debt load. As debt load increases, interest expense also increases, leading to less income to be paid out to investors.
- **Default Risk:** Risk that issuer of securities may delay or default on payment of interest and principal due to managerial inefficiency in the company.

The beta coefficient measures the systematic or the non-diversifiable risk of a security. It is an index of the degree of responsiveness of return on an investment with that of the market return. Beta coefficient of 1 would imply risk of specified security is equal to market risk, the interpretation of zero indicates that there is no market related risk to the investment. A negative coefficient would mean a relationship in opposite direction.

Thus, the CAPM theory describes the relationship between the required rate of return or the cost of equity capital and the non-diversifiable risk of the firm as reflected in the beta. Symbolically,

$$K_e = R_f + \beta (R_f - R_m)$$

Where,

$K_e$ = Cost of equity;

$R_f$ = Risk-free rate of return;

$R_m$ = Rate of return on market portfolio

$\beta$ = Beta coefficient