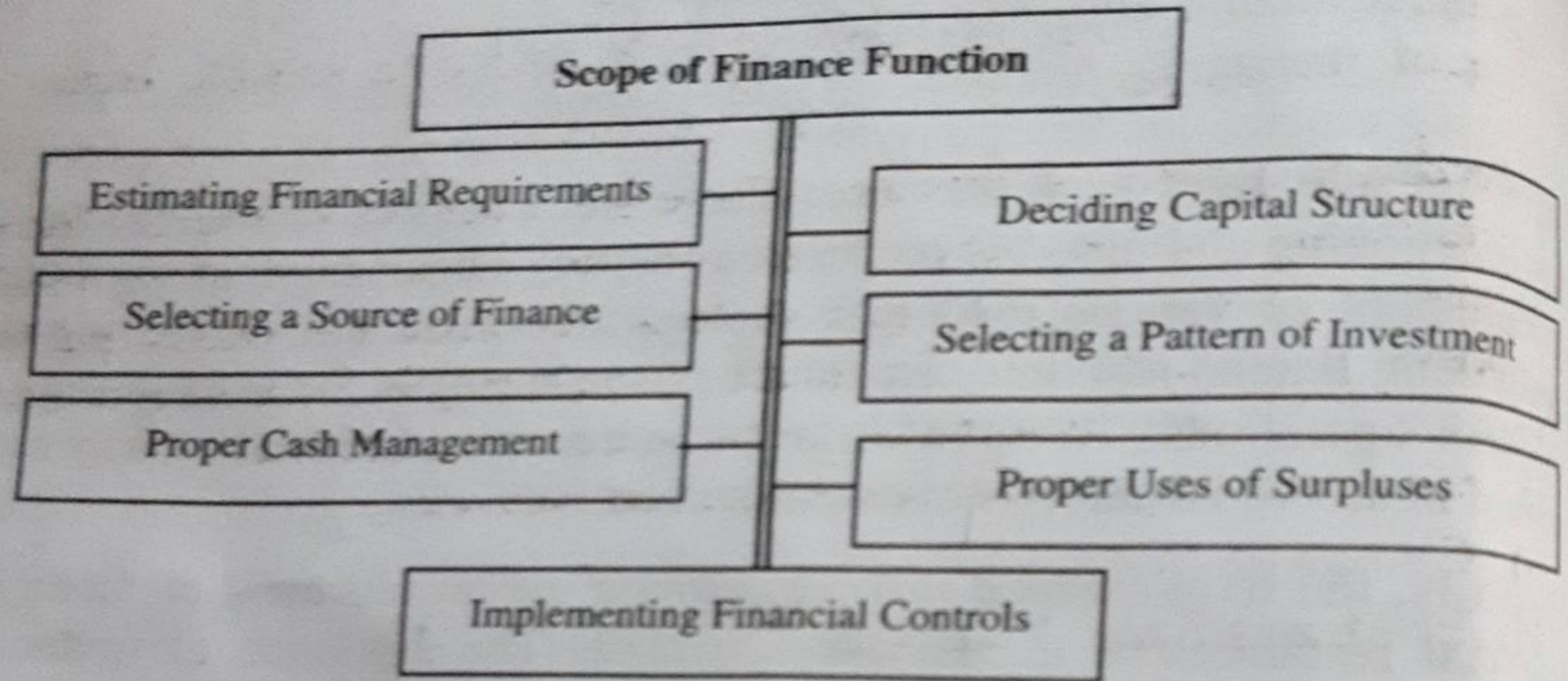


- 2) The second approach links finance to cash management. This approach is almost applicable in all the business areas. Thus, this gives a wide scope to finance function.
- 3) Last approach broadens the finance function purview and it summarizes that finance function is not only related to the procurement of the funds but is also concerned with the management of such funds with efficient manner.

### 1.1.3. Scope of Finance Function *Nature*

The finance function of a company has an extensive scope, which is discussed in the following paragraphs:



1) **Estimating Financial Requirements:** It is of paramount importance for a company to assess its long-term as well as the short-term capital needs in a precise manner. While making such assessment, the 'Finance Department' of the company needs to coordinate with other departments like purchase, production, marketing, sales, etc. and take into account the assessments of budgets prepared by them and only thereafter arrive at the final assessment. In the formative stage of a company, such coordination may not be necessary as the promoters have an overall idea of fund requirement of their company. However with the growth of the company in size and complexity, it becomes the responsibility of the 'Finance Department' to make overall assessment of the company's fund requirements in consultation with other departments. The projection with regard to capital requirements should be accurate or otherwise the business may run into trouble either due to shortage of funds or its excess. An accurate assessment of fund requirements would result in availability of funds (long-term as well as short-term) at the time of their requirements. Some of the factors like nature and size of the business, its planning with regard to modernisation, expansion, diversification, etc. are need to be considered at the time of estimation of funds process.

2) **Deciding Capital Structure:** Once the total fund requirement for a business is assessed, the next step is to decide the capital structure (the ratio of various components of the entire capital) of the company. The determination of an appropriate mix of various components of capital is a vital decision which would have a long lasting impact on the company's performance. The ratio in which (i) long-term and short-term funds, and (ii) debt, equity, hybrid funds, and (iii) borrowed funds, need to be raised may be decided carefully by the 'Finance Department' of the company. Following factors may be taken into account:

- i) Cost of raising funds from various sources.
- ii) Period for which the funds are required.
- iii) Risks and returns involved in each source (a suitable balance between the two needs to be maintained).

3) **Selecting a Source of Finance:** There are a number of sources from where funds can be raised by a company, e.g., issue of equities/debentures/bonds, borrowing from banks/financial institutions, public deposits, etc. Selection of the source of funds may be done with utmost care and following factors may be taken into consideration:

- i) Cost of funds and conditions attached therewith,
- ii) Charge on assets,
- iii) Burden of fixed charges,
- iv) Possibility of dilution of ownership and control, etc.

If a company is extremely particular about not diluting its ownership and control, it may altogether avoid the equity route of raising funds.

4) **Selecting a Pattern of Investment:** Once the funds have been raised, the next important decision to be taken is the appropriate application of funds. The decision regarding investment pattern may be taken on the basis of well established scientific techniques, like 'Capital Budgeting', 'Opportunity Cost Analysis', etc. Three cardinal principles, viz. safety, profitability and liquidity should not be ignored while spending on various assets.

5) **Proper Cash Management:** Availability of adequate supply of cash at appropriate time for the hassle-free conduct of the business may be ensured through proper cash management by the Finance Department. Cash requirement generally arises in order to meet expenses relating to:

- i) Purchase of raw materials,
- ii) Payments to creditors,
- iii) Payment of salaries/wages,
- iv) Miscellaneous day-to-day business expenses, etc.

Cash availability needs to be just enough, i.e., neither in excess nor in short supply. Shortage of cash may lead to 'Payment Crisis' or 'Reputational Risk' for the company, whereas maintenance of excess cash will lead to loss of money and hence should be avoided. If due to any reason excess cash is noticed at any point of time, the same may be promptly invested in highly liquid instruments (so that it may be converted into cash without any delay).

A cashflow statement is very handy to ascertain the exact level of cash requirement over a given time-horizon. It is, therefore, imperative on the part of the 'Finance Manager' to prepare 'Cashflow Statement' so that the twin objective of running a business, viz. profitability and liquidity is achieved.

- 6) **Proper Uses of Surpluses:** Subsequent to the payment of all statutory dues (taxes), the balance of profit earned is referred to as the 'Surplus' of the business. Its allocation is done for three purposes:
- i) Bonus distribution to the workmen and the company's contribution to other profit-sharing plans,
  - ii) Dividend distribution to the shareholders as a return on their investment in the company's shares, and
  - iii) Reinvestment in the business by ploughing back the remaining profit for the growth, expansion, and/or diversification of the business.

As regards the first purpose, the amount is generally either prescribed under law or by agreement and as such no issue is involved in allocation for this purpose. However, subjectivity and flexibility is important in second and third purposes and as such proper attention needs to be given to them.

The decision as to how much is to be distributed as dividend and how much is to be retained in the business requires a careful consideration by the management keeping in view the following factors:

- i) Trend noticed in the earning pattern of the company.
- ii) Trend in the market price of the company's shares.
- iii) Expansion, diversification and growth plans of the company.

- 7) **Implementing Financial Controls:** Monitoring of the financial performance of funds raised and invested by a company in the business is an important function of the finance department. For this purpose various analytical tools and techniques (e.g. Budgetary Control, Cost Control, Internal Audit, Ratio Analysis, Break-even Point Analysis etc.) are available, which should be used and implemented by every organisation. Besides the above, financial planning has also to play an important role, and therefore needs to be given proper attention.

- 4) **Impact on Social Welfare:** Increased profits may often lead to the organisation producing such products or services which may not be beneficial and useful to the society at large. Thus, such objective may sometimes fail to optimise social welfare.
- 5) **Ignores Financing and Dividend Aspects:** Another limitation of the profit maximisation objective is that the effects of financing and dividend decision areas on market price of shares are often ignored while pursuing the objective of profit maximisation.
- 6) **Change in Organisation Structure:** Earlier, an owner manages the business alone because at that time the competition was too less. The organisation structure that has single owner is referred as sole proprietor. The whole profits and liability belongs to him. But now, all the businesses are transforming their structure to compete.

### 1.1.9. Wealth Maximisation

Wealth maximisation is also known as **Value Maximisation** or **Net Present Worth Maximisation**. Wealth maximisation has all the features of certainty, quality benefits and timing benefits. The goal of wealth maximisation is the widely accepted goal of the business as it reconciles the varied, often conflicting interest of the stakeholders. Also, it is free from the limitations that other objectives are faced with.

According to **Ezra Solomon**, wealth maximisation goal is "The gross present worth of a course of action is equal to the capitalised value of the flow of future expected benefits, discounted (or capitalised) at a rate which reflects the uncertainty or certainty. Wealth or net present worth is the difference between gross present worth and the amount of capital investment required to achieve the benefits."

Shareholders being the true owners of the firm are entitled to the residual profit only. After meeting the commitment to all other stakeholders they get the remaining. Shareholders' claim cannot precede that of any other stakeholders. Thus, by maximisation of residual as the objective of the firm, it can safely be stated that all preceding commitments have been adequately satisfied. Pursuit of this all encompassing goals by the firm ensures that the interest of all the different stakeholders is taken care of in the process as this wealth maximisation as a goal is in congruence with the objectives of the varied stakeholders.

No firm can bring about sustained increase in the wealth of its owners without taking care of the interest of its other stakeholders. **For example,** deteriorating liquidity position of a firm makes the lenders, current and prospective, worried about its creditworthiness, which eventually gets reflected in its share prices and consequently the wealth of the shareholders. Similarly, a firm that cannot retain its existing customers will witness

decline in its sales and consequently the market price of shares. The wealth maximisation approach can be more explicitly defined in the following ways:

$$W = \frac{A_1}{(1+K)^1} + \frac{A_2}{(1+K)^2} + \frac{A_3}{(1+K)^3} + \dots + \frac{A_n}{(1+K)^n} - C = \sum_{i=1}^n \frac{A_i}{(1+K)^i} - C$$

where,

W = Net present worth

$A_1, A_2, \dots, A_n$  = Streams of benefits expected/Future cashflows

C = Cash outlay or cost of action/Cost of project

K = Discount rate/Capitalisation rate

### 1.1.9.1. Features of Wealth Maximisation

Wealth maximisation criterion has a far and wide range of acceptance because of its following salient features:

- 1) The idea and notion of wealth is distinct and simple to understand.
- 2) It serves as an important aid to investment decisions.
- 3) It refers to the time adjusted present value of benefits, thereby reducing the cost of investment.
- 4) Maximising economic well being of its shareholder is one of the parameters of wealth maximisation.
- 5) Wealth maximisation takes into concern both the quantity and quality standards of benefits.
- 6) It also integrates the time value of money, risk and uncertainty factors.
- 7) It considers that the shareholder's wealth is maximised only when the market price per share is maximised.
- 8) It also avoids agency issues in an organisation, as it encompasses the personal goals of executives, such as recognition, power, status, personal wealth, etc.
- 9) It eliminates the associated limitations of the profit maximisation objective of financial management.

### 1.1.9.2. Arguments in Favour of Wealth Maximisation

The following arguments can be given in favour of wealth maximisation as the objective of business:

- 1) Wealth maximisation is advanced and can be better compared to the objective of profit maximisation since the sole endeavour of the business firm is to enhance the value or wealth of the shareholders.
- 2) Wealth maximisation involves the comparison of the value to cost associated with the company.
- 3) Wealth maximisation takes into concern both time value and risk factors of the firm.
- 4) Wealth maximisation promotes and improves optimum and efficient utilisation of resources.
- 5) It aims to achieve and fulfil economic obligations of the society.

### 1.1.9.3. Limitations of Wealth Maximisation

Issues involved in implementing the goal of maximisation of shareholder's wealth:

- 1) **Incorrect Assumptions:** The Maximisation of Shareholder's wealth wrongly presumes that there is an efficient capital market. In reality, the Share Price in the market is subject to extensive fluctuations.
- 2) **Speculation:** Speculative business activities lead to variations in price of shares. Since, an investor is more concerned about the safety and security of his investment whereas a speculator is interested in appreciation of his capital and profits.
- 3) **Varied Objectives:** In every organisation, there are three basic stakeholders namely Shareholders, Professional Managers and Creditors. Thus, agency problem may arise, i.e., managers may place personal goals ahead of corporate goals.
- 4) **Justice to All Social Groups:** It is widely reasoned that a business organisation is not concerned with shareholders only. Employees, customers, creditors, local societies at large are also associated with the company. A business firm has to function in the social context responsibly. Obligations of the company towards different social groups should be honoured.

### 1.1.9.4. Profit Maximisation vs. Wealth Maximisation

The Profit Maximisation and Wealth Maximisation are two conceptually different phenomena. The differences between the two has been summarised in the following table:

Basis of Difference	Profit Maximisation	Wealth Maximisation
1) <b>Definition or Nature</b>	The term Profit Maximisation in simple terms means that a company either produces maximum output for a given input, or uses minimum inputs to produce a given output. Thus, it is optimisation of the input-output relationship.	The Wealth Maximisation for shareholders means maximising the wealth of shareholders by way of dividends and value-creation of a course of action in such a manner that the value of future inflows is maximised.
2) <b>Purpose or Concept</b>	The underlying concept of Profit Maximisation is to maximise the profitability of a company through the core business activity, the company is engaged in.	The underlying concept of Wealth Maximization is to increase the market value of the shares, which in turn would result in the Wealth Maximization for the company's shareholders.
3) <b>Formulae</b>	The concept of Profit Maximisation is based on the determination of maximisation of profits as reflected in the following formula: $\text{Profit} = \text{Total Revenue Receipts} - \text{Total Costs}$	The Wealth Maximisation of shareholders of a company depends on the share price and the number of shares held by a shareholder, as reflected in the following formula: $\text{Wealth} = \text{No. of Shares Owned} \times \text{Current Share Price per Share}$

### 1.1.10. Finance Manager

The post of a 'finance manager' in a company is a key position. He/she is the person solely responsible for carrying out the finance functions of a company. He/she is part of the 'Top Management' team and his/her role is to be extremely efficient in solving complicated fund management issues and also acting as the financial advisor to the top management.

#### Functions/Role of Finance Manager

Financial Manager's role has been undergoing a lot of changes and in the present day scenario; he/she is responsible and empowered to carry out the following functions:

- 1) **Raising Funds of Company Finance:** The prime responsibility of a financial manager is to estimate his/her company's short-term and long-term requirements, explore the possibilities of raising funds from various sources and exercising the best available option (the most reasonable one with acceptable terms and conditions). He/she is responsible and also empowered to frame the company's appropriate capital structure.
- 2) **Taking Maximum Benefits from Leverage:** The Financial Manager has powers to utilise leverages, both 'Financial' and 'Operating', to the maximum advantage of the company.
- 3) **International Financial Decision:** the financial manager of a company is expected to keep him/her abreast of latest developments taking place in the international market. The opportunities available in the form of various derivatives or financial instruments like 'Credit Default Swap', 'Interest Rate Swap', 'Currency Swap', etc., need to be tapped by him with the aim to make profit for his company.
- 4) **Investment Decisions:** The financial manager plays an important role in 'Capital Budgeting' exercise by applying various available tools and techniques. Net Present Value (NPV) is one of such technique, which is very popular amongst the Financial Managers. This technique includes calculation of NPV of each proposal of a given project and comparison thereof. A proposal with highest NPV is considered to be the best one. Financial Managers have an expertise in the calculation of NPV and it is their responsibility to finalise the best proposal for a project to be implemented.
- 5) **Risk Management:** Risk is the part and parcel of a project or venture undertaken by a company, although at times it is clearly visible and sometimes it is hidden. Avoidance of risks altogether during the conduct of a business is next to impossible. What is required is its identification and efficient management (mitigation and control) of risk, which is the responsibility of financial managers. They are free to

As the dividend on preference shares is paid subsequent to the payment of corporate taxes, there is no need for any adjustment in the above calculation.

**Example 1:** XYZ & Co. issues 20,000 12% preference shares of ₹100 each at par. Calculate the cost of preference share capital.

**Solution:** Cost of preference share capital  $K_p = \frac{D}{NP}$

Where,

Preference dividend (D) = 20,000 Shares × ₹100 × 12% = ₹2,40,000  
 Net proceed (NP) = 20,000 Shares × ₹100 = ₹20,00,000

Cost of preference share capital  $K_p = \frac{2,40,000}{20,00,000} \times 100 = 12\%$

**Example 2:** A company issues 10,000 10% Preference Shares of ₹100 each. Cost of issue is 2%. Calculate cost of preference capital if these shares are issued (a) at par, (b) at a premium of 10%, (c) at a discount of 5%.

**Solution:** Cost of Preference Capital,  $K_p = \frac{D}{NP}$

1) **Issued at Par**

Where,

Preference dividend (D) = 10,000 Shares × ₹100 × 10% = ₹1,00,000

Net proceed (NP) = Face value – cost of issue  
 = 10,000 Shares × ₹100 – ₹20,000 (10,000 Shares × ₹100 × 2%)

Cost of preference share capital  $K_p = \frac{1,00,000}{10,00,000 - 20,000} \times 100 = 10.2\%$

2) **Issued at a Premium of 10%**

Where,

Preference dividend (D) = 10,000 Shares × ₹100 × 10% = ₹1,00,000

Net proceed (NP) = Face value + premium – cost of issue  
 = 10,000 Shares × ₹100 + ₹1,00,000 (10,000 Shares × ₹100 × 10%) – ₹20,000 (10,000 Shares × ₹100 × 2%)

Cost of preference share capital

$K_p = \frac{1,00,000}{10,00,000 + 1,00,000 - 20,000} \times 100 = \frac{1,00,000}{10,80,000} \times 100 = 9.26\%$



## 3) Issued at a Discount of 5%

Where, Preference dividend (D) = 10,000 Shares × ₹100 × 10%  
= ₹1,00,000

Net proceed (NP) = Face value - discount - cost of issue  
10,000 Shares × ₹100 - ₹50,000 (10,000 Shares × ₹5)  
- ₹20,000 (10,000 Shares × ₹2)

Cost of preference share capital  
$$K_p = \frac{1,00,000}{10,00,000 - 50,000 - 20,000} \times 100 = 10.75\%$$

## 2.1.8.2.

## Cost of Redeemable Preference Share

Redeemable preference shares are not perpetual (continual); they have a maturity date, on which they are redeemed. They may be issued at a discount or at a premium. Cost of redeemable preference shares is calculated by applying the following formula:

Cost of preference share (redeemable) capital 
$$K_p = \frac{D + 1/n(P - NP)}{1/2(P + NP)}$$

Where,  $K_p$  = Cost of preference share (redeemable) capital  
D = Annual preference dividend payable  
P/RV = Par/Face value/redeemable value of preference shares  
NP = Net proceeds/Issue price of preference shares  
n = Number of years

Example 3: ABC & Co. issues 2,000, 10% preference shares of ₹100 each at ₹95 each redeemable at the end of the 10<sup>th</sup> year from the year of issue. Calculate cost of preference share capital.

Solution: 
$$K_p = \frac{D + 1/n(P - NP)}{1/2(P + NP)}$$

Where, Preference dividend (D) = 2,000 Shares × ₹100 × 10%  
= ₹20,000

Par value (P) = 2,000 Shares × ₹100 = ₹2,00,000

Net proceed (NP) = 2,000 Shares × ₹95 = ₹1,90,000

Number of years (n) = 10 years

Cost of preference share capital

$$K_p = \frac{20,000 + 1/10(2,00,000 - 1,90,000)}{1/2(2,00,000 + 1,90,000)}$$

$$= \frac{21,000}{1,95,000} = 0.1076 = 10.76\%$$

### 2.1.9. Cost of Equity Capital ( $K_e$ )

The cost of equity share capital may be explained as "the minimum rate of return, a company is required to earn on the part of equity financed to its investment in such a manner that the market value of its stock remains unaffected". This can be calculated by applying following methodology/formulae:

- 1) **Dividend Yield Method:** It is also known as dividend-price ratio and is calculated by dividing 'dividend per share' by 'price per share'. It can also be obtained by dividing 'total dividend payment by a company in a year' by its 'market capitalisation', provided there is no change in the number of shares. It is indicated as a percentage.

$$\text{Symbolically, Cost of equity capital } K_e = \frac{D}{NP} \times 100 \text{ or } \frac{D}{MP} \times 100$$

Where,  $K_e$  = Cost of equity capital  
 $D$  = Expected dividend per share  
 $NP$  = Net proceeds per share  
 $MP$  = Market price per share

There is a presumption, while using this method, that for the shareholders (investors), dividends are important and the risk perception about the company remains the same.

**Example 4:** ABC Ltd. has distributed dividend of ₹25 on each equity share of ₹10. The current market price of equity share is ₹60. Calculate the cost of equity as per dividend yield method.

**Solution:**  $K_e = \frac{D}{MP} \times 100$

Where,

Expected dividend per share ( $D$ ) = ₹25

Market price per share ( $M$ ) = ₹60

$$\text{Cost of equity capital } K_e = \frac{25}{60} \times 100 = 41.67\%$$

- 2) **Dividend Yield Plus Growth in Dividend Method:** The basis of this method is the presumption of a situation, in which there is a growth of a company and also the market value of its share shows an increasing trend. Under such situation, the shareholders expectations would be more than simple dividends; they may like to have a part of the additional profit earned by the company. It may be calculated by using following formula:

$$\text{Cost of Equity Capital, } K_e = \frac{D}{NP} \times 100 + G$$

Where,  $D$  = Expected dividend per share  
 $NP$  = Net proceeds per share  
 $G$  = Growth Rate of dividend

If the NP (net proceeds per share) in the above formula is replaced by MP (market price per share), the result would be the cost of equity share capital as under:

$$K_e = \frac{D}{MP} \times 100 + G$$

Where, MP = Market price per share

**Example 5:** XYZ Ltd. market prices of the shares are at ₹120 each. The expected dividend for the next year is to be ₹30 per share and further the dividends are expected to grow at an annual rate of 5% on the previous year's dividend. What is the cost of equity shares?

**Solution:**  $K_e = \frac{D}{MP} \times 100 + G$

Where, Expected dividend per share (D) = ₹30

Market price per share (M) = ₹120

Growth Rate of dividends (G) = 5%

$$\text{Cost of equity capital } K_e = \frac{30}{120} \times 100 + 5\% = 30\%$$

3) **Earning Yield Method:** Under the 'Earning Yield Method', "the minimum rate of return required to be earned on the market price of share" is the cost of equity capital, calculation of which is carried out by applying the following formula:

$$\text{Cost of equity capital } K_e = \frac{EPS}{NP} \times 100 \text{ or } K_e = \frac{EPS}{MP} \times 100$$

Where,  $K_e$  = Cost of equity capital

EPS = Earning per share (Profit after tax/Outstanding shares)

NP = Net proceeds per share

MP = Market price per share

**Example 6:** A company shares are currently trading at a price of ₹70 with 5,00,000 outstanding shares. Their expected profit after tax for the coming year is ₹84,00,000. Calculate the cost of equity capital as per earning yield method.

**Solution:**  $K_e = \frac{EPS}{MP} \times 100$

Where, Earning per share (EPS) = ₹16.8

Market price per share (MP) = ₹70

$$\text{Earning per share} = \frac{\text{Profit after tax}}{\text{Outstanding number of shares}} = \frac{84,00,000}{5,00,000} = 16.8$$

$$\text{Cost of equity capital } K_e = \frac{16.8}{70} \times 100 = 24\%$$

### 2.1.10. Cost of Debenture/Debt Capital ( $K_d$ )

Rate of interest payable by a company on the issued debt instruments is the cost of funds raised by it. However, taxation is an important issue in ascertaining the cost of debt funds, as interest paid by a company on its debt instruments is allowed as an expense under the relevant provisions of Income Tax Act. 'Cost of debt funds' may be measured as 'pre-tax cost' or 'post tax cost' of debt.

Other factors required to be taken into account in calculation of 'cost of debt funds' are whether debts are redeemable or irredeemable in nature which may be issued at par, premium or discount.

#### 2.1.10.1. Cost of Irredeemable Debentures

A company issuing irredeemable debentures has no responsibility with regard to the repayment of the debt at a predetermined date and time. It has the power to decide the time and dates to pay back the amount of debt as long as it is a going concern and does not fail to make interest payment.

Therefore, while computing the cost of irredeemable debentures only the net amount is taken into consideration.

**Cost of Irredeemable Debts before Tax:** The following different formulae are applied for the calculation of cost of irredeemable (perpetual) debts issued at (i) par, (ii) premium or discount:

i) **Cost of irredeemable debt, issued at par**

$$K_d = \frac{I}{NP} \times 100$$

Where,  $K_d$  = Cost of debts

$I$  = Fixed annual interest payable

$NP$  = Net Proceeds

**Example 10:** A company sells a fresh issue of 10% irredeemable debentures at par to raise ₹2,00,000 and realizes the full face value of ₹100. What is the cost of debt to the firm?

**Solution:**  $K_d = \frac{I}{NP} \times 100$

Where,

Fixed annual interest payable ( $I$ ) = ₹2,00,000 × 10% = ₹20,000

Net Proceeds ( $NP$ ) = ₹2,00,000

Cost of debts  $K_d = \frac{20,000}{2,00,000} \times 100 = 10\%$

ii) **Cost of irredeemable debt, issued at premium or discount**

$$K_d = \frac{I}{NP} \times 100$$

Net Proceed (NP)

= Face value of debt - discount on issue of debentures + premium on issue of debenture - issues expenses like brokerage, underwriting commission, printing and other expenses

**Example 11** Private Ltd. issued 10,000, 10% Debentures of ₹100 each on 1st April. The cost of issue was ₹25,000. Determine the cost of debentures if they were issued i) at a premium of 10%, and ii) at a discount of 10%.

**Solution:**

i) **Issued at 10% Premium**

$$K_d = \frac{I}{NP} \times 100$$

Where,

Fixed annual interest payable (I)

$$= 10,000 \text{ debentures} \times ₹100 \times 10\% = ₹1,00,000$$

Net Proceeds (NP) = Face value of debt + Premium on issue of debenture - Cost of issue

$$= 10,00,000 + 10\% - 25,000 = ₹10,75,000$$

$$\text{Cost of debts } K_d = \frac{1,00,000}{10,75,000} \times 100 = 9.30\%$$

ii) **Issued at 10% Discount**

$$K_d = \frac{I}{NP} \times 100$$

Where, Fixed annual interest payable

$$(I) = 10,000 \text{ debentures} \times ₹100 \times 10\% = ₹1,00,000$$

Net Proceeds (NP)

= Face value of debt - Discount on issue of debentures - Cost of issue

$$= ₹10,00,000 - 10\% - ₹25,000 = ₹8,75,000$$

$$\text{Cost of debts } K_d = \frac{1,00,000}{8,75,000} \times 100 = 11.43\%$$

**Cost of Irredeemable Debt after Tax:** The cost of irredeemable debentures is given by the amount of interest payable. However, as the interest payable is an admissible deduction for taxation purpose, the cost of debt capital is reduced to that extent.

Calculation is done by using following formula:

$$K_d = \frac{I}{NP} \times 100(1-t) \text{ or } K_d = r(1-t)$$

Where,

- $K_d$  = Cost of debts after tax
- $I$  = Fixed annual interest payable
- $r$  = Interest rate payable
- $NP$  = Net proceeds of the issue
- $t$  = Applicable tax rate

**Example 12** A company raises ₹2,00,000 by the issue of 10% debentures of ₹100 each payable at par after 10 years. If the tax rate is 50%, what is the cost of debt to the firm?

**Solution:**  $K_d = \frac{I}{NP} \times 100(1-t)$

Where,

- Fixed annual interest payable ( $I$ ) = ₹2,00,000 × 10% = ₹20,000
- Net proceeds ( $NP$ ) = ₹2,00,000
- Tax rate = 50% or .50

Cost of debts after tax  $K_d = \frac{20,000}{2,00,000} \times 100(1-.50) = 5\%$

### 1.10.2. Cost of Redeemable Debentures

Redeemable debentures, as the name itself suggest, can be redeemed by the company at a predetermined date and time or after a prescribed period of notice is given in this regard. The average of sale value and redeemable value is considered for the calculation of the 'cost of redeemable debentures'. Different formulae are applied for calculating the cost of redeemable debts before the tax and after the tax as under:

#### a) Cost of Redeemable Debt before Tax

$$K_d = \frac{I + (P - NP)/n}{(P + NP)/2}$$

Where,

- $K_d$  = Cost of debts (before tax)
- $I$  = Interest/Fixed charge per annum
- $P/RV$  = Par Value/Face value /Redeemable value of debenture
- $NP$  = Net proceed/Price at which the debenture or the bond is sold
- $n$  = Number of years

### 2.1.11. Cost of Retained Earnings ( $K_r$ )

A company is not required to pay dividend out of the 'Retained Earnings', because it is the amount which is set aside before taking a decision with regard to dividend distribution. However, to have a view that there is no cost involved in 'Retained earnings', may perhaps not be right. Some form of return is expected by the shareholders from the 'Retained Earnings' also. The cost of 'Retained Earnings' may be the rate of return, which the existing shareholders would have got, if the 'Retained Earnings' will be invested elsewhere appropriately. In other words, cost of 'Retained Earnings' is nothing but the opportunity cost of additional dividends, the shareholders would have got, if the 'Retained Earnings' had not been set aside and consider for the payment of dividends.

For the calculation of the cost of 'Retained Earnings', following formula is used:

$$K_r = \left( \frac{D}{NP} + G \right) \times (1-t) \times (1-b) \text{ or } K_r = K_e (1-t)(1-b)$$

- Where,  $K_r$  = Cost of retained earnings
- $D$  = Expected dividend
- $G$  = Growth rate
- $NP$  = Net proceeds of equity issue
- $t$  = Tax rate
- $b$  = Cost of purchasing securities, or brokerage cost
- $K_e$  = Rate of return available to shareholders/cost of equity capital

**Example 15:** A firm's  $K_e$  (return available to shareholders) is 15%, the average tax rate of shareholders is 60% and it is expected that 4% is brokerage cost that shareholders will have to pay while investing their dividends in alternative securities. What is the cost of retained earnings?

**Solution:** Cost of retained earnings  $K_r = K_e (1-t)(1-b)$

- Where, Cost of equity capital ( $K_e$ ) = 15%
- Tax rate ( $t$ ) = 60% or .60
- Cost of purchasing securities, or brokerage cost ( $b$ ) = 40% or .40
- Cost of retained earnings  $K_r$   
 $= 15\% (1-0.6)(1-0.04) = 15\% \times 0.384 = 5.76\%$

### 2.1.12. Weighted Average Cost of Capital (WACC)

Weighted Average Cost of Capital (WACC) is also known as the 'Composite Cost of Capital', 'Overall Cost of Capital', or 'Average Cost of Capital'. It is the minimum rate of interest generated from a project to meet the expectations of the investors. It is defined as the total of weighted

Example 16: A Ltd. presents the following capital structure data:

Source	₹
Ordinary share (1000 shares)	50,000
10% Preference share	20,000
12% Debentures	15,000
	<b>85,000</b>

The dividend payment of the company is @ of 5%. Further the company raises additional funds for replacement of assets of 14% debenture amounting ₹10,000.

You are ask to find out: weighted average cost of capital of existing as well as new capital structure.

**Solution:**

1) **Computation of Weighted Average Cost of Capital ( $K_o$ )**

Source (1)	Amount (₹)(2)	Weights (3)	After Tax Cost (4) (%)	Weighted Cost (5) (%) = (3) × (4)
Ordinary Share	50,000	0.59	5%	2.95%
Preference Share	20,000	0.24	10%	2.4%
Debentures	15,000	0.18	12%	2.16%
	85,000	1.0		7.51%
<b>Weighted Average Cost of Capital (<math>K_o</math>)</b>				<b>7.51%</b>

2) **Computation of Weighted Average Cost of Capital ( $K_o$ )**

Source (1)	Amount (₹) (2)	Weights (3)	After Tax Cost (4) (%)	Weighted Cost (5) (%) = (3) × (4)
Ordinary Share	50,000	0.5	5%	2.5%
Preference Share	20,000	0.21	10%	2.1%
12% Debentures	15,000	0.16	12%	1.92%
14% Debentures	10,000	0.11	14%	1.54%
	95,000	1.00		8.06%
<b>Weighted Average Cost of Capital (<math>K_o</math>)</b>				<b>8.06%</b>

Example 17: The sources of capital structure are enumerated below:

Source	₹
Equity share	8,00,000
14% Preference share	5,00,000
10% Term Loan	10,00,000

The expected dividend on equity capital is 10%. The company tax rate is 50%. You are required to calculate the weighted average cost of capital, before and after tax.



static. Due to this feature, these ratios are not appropriate for measuring financial risk taken by the firm. This financial risk is related to the possible failure in meeting its interest and debt repayment obligations.

The third ratio (Interest Coverage Ratio) shows the ability of the firm to meet its fixed financial charges. Reciprocal of this ratio is known as **Income Gearing Ratio**. These ratios can be compared with industry benchmarks to determine the financial risks taken by the firm.

### 2.2.3.3. Degree of Financial Leverage (DFL)

Degree of financial leverage is the percentage change in Earnings per Share caused by percentage change in Operating Profit.

This may be put in the form of following equation:

$$\text{Degree of Financial Leverage (DFL)} = \frac{\% \text{ Change in Earnings per Share}}{\% \text{ Change in the Operating Profits}} \text{ or } = \frac{\text{EBIT}}{\text{EBT}}$$

Where,

EBIT = Earning before Interest and Taxes  
EBT = Earning before Taxes

**Example 20:** A company has the following capital structure:

Equity share capital	₹1,00,000
10% Preference share capital	₹1,00,000
8% Debentures	₹1,25,000

The present Earning before Interest and Taxes (EBIT) is ₹50,000. Calculate the financial leverage assuming that company is in 50% tax bracket.

**Solution:**

Particulars		₹
EBIT/Operating Profit		50,000
Less: Interest on debentures	10,000	
Pref. dividend (pre-tax basis)	10,000	20,000
Earnings before tax (EBT)		30,000

Interest on debenture = ₹1,25,000 × 8% = ₹10,000

Pref. dividend (pre-tax basis) = ₹10,00,000 × 10% = ₹10,000

Financial Leverage =  $\frac{\text{EBIT}}{\text{EBT}}$

Where,

Earning before Interest and Taxes (EBIT) = ₹50,000

Earnings before Taxes (EBT) = ₹30,000

Financial Leverage =  $\frac{50,000}{30,000} = 1.67$

Where,

Q = Quantity Product,

S = Selling Price,

F = Fixed Expenses, and

V = Variable Expenses.

Or

Degree of Operating Leverage (DOL)

$$= \frac{\text{Contribution (Sales - Variable Cost)}}{\text{Earning Before Interest and Tax (EBIT)}}$$

Degree of Operating Leverage is determined by the proportion of fixed costs to total costs.

**Example 22:** Calculate operating leverage from the following information: Interest ₹5,000, sales ₹50,000, Variable cost ₹25,000, Fixed cost ₹15,000.

**Solution:**

Degree of Operating Leverage (DOL)

$$= \frac{\text{Contribution (Sales - Variable Cost)}}{\text{Earning before interest & tax (EBIT)}}$$

Where,

$$\text{Contribution} = \text{Sales} - \text{Variable Cost} = ₹50,000 - ₹25,000 = ₹25,000$$

$$\begin{aligned} \text{EBIT} &= \text{Sales} - \text{Variable Cost} - \text{Fixed Costs (other than interest of ₹5,000)} \\ &= ₹50,000 - ₹25,000 - ₹10,000 = ₹15,000 \end{aligned}$$

$$\text{Thus, DOL} = \frac{50,000 - 25,000}{15,000} = \frac{25,000}{15,000} = 1.67 \text{ times}$$