

Why I want to become a CA?

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# **FINANCIAL MANAGEMENT CA - INTERMEDIATE**

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**B. Com., F.C.A.**

(Notes for Private Circulation Only)

# PREFACE

*To all readers,*

*I am proud to present this book along with Team Expert & Vsmart. I have spent time writing this with a student perspective in mind. Each chapter has broken down core concepts and expanded on them with diagrams and tables, as and when possible. It is my goal to help each and every holder of this book to be able to fight against the odds and win. Victory presents itself with the backing of knowledge, practice and expertise.*

*This book provides a valuable window on the subject and covers the necessary components chapter by chapter. The challenges in this subject are both difficult and interesting.*

*People are working on them with enthusiasm, tenacity, and dedication to develop new methods of analysis and provide new solutions to keep up with the ever – changing threats. In this new age of global interconnectivity and interdependence, it is necessary to stay relevant, for both professionals and students.*

*This book is a good step in that direction and would not have been possible without my team, my colleagues, my students and everyone that has supported me in my journey as a CA professional. For any feedback or questions based on the material covered within the book, please feel free to contact me via email.*

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# FINANCIAL MANAGEMENT

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## SCOPE AND OBJECTIVES OF FINANCIAL MANAGEMENT

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## I. MEANING OF FINANCIAL MANAGEMENT

*Financial Management deals with procurement of funds and effective utilisation of funds in business.*

*Financial management is that managerial activity which is concerned with the planning and controlling of the firm's financial resources. It is an integrated decision making process concerned with acquiring, financing and managing assets to accomplish the overall goal of a business organisation. It can also be stated as the process of planning decisions in order to maximise the shareholder's wealth. Financial managers have a major role in cash management, acquisition of funds and in all aspects of raising and allocating capital. As far as business organisations are concerned, the objective of financial management is to maximise the value of business.*

*"Financial management comprises the forecasting, planning, organising, directing, co-ordinating and controlling of all activities relating to acquisition and application of the financial resources of an undertaking in keeping with its financial objective."*

## II. TWO MAIN ASPECTS OF THE FINANCE FUNCTION

*The basic aspects of Financial Management are -*

- a. Procurement of funds.*
- b. Effective utilisation of funds to achieve business objectives.*

### ❖ *Procurement of funds:*

- 1. Funds can be obtained from various sources like equity, preference capital, debentures, term loans etc.*
- 2. Funds procured from various sources have different characteristics in terms of risk, cost and control.*
- 3. The cost of funds should be. Hence, a proper of risk and control factors becomes essential.*
- 4. Thus, Procurement of funds involves the following:*
  - Identification of sources of finance.*
  - Determination of finance mix.*
  - Raising of funds*
  - Division of profits between dividends and retention of profits i.e. internal fund generation.*

### ❖ *Effective utilisation of funds:*

- 1. Funds are procured at a cost. Hence it is crucial to employ them properly and profitably.*
- 2. The Finance Manager is responsible not only for procurement of funds but also*

for its effective utilisation.

3. He identifies the areas where funds remain idle and why they are not used properly.
4. He analyses the financial implications of each decision - to invest in fixed assets, the need for adequate working capital, etc.

### III. CONSIDERATIONS / ASPECTS INVOLVED IN PROCUREMENT OF FUNDS

The considerations in procurement of funds are (a) Risk, (b) Cost and (c) Control. They differ with the type of fund. An analysis of the same is given below

Type of fund	Risk	Cost	Control
Own Funds (Equity)	Risk - no question of repayment of capital except when the company is under liquidation. Hence best from viewpoint of risk.	Expensive - dividend expectations of shareholders are higher than interest rates. Also, dividends are not tax-deductible.	Dilution of control - Since the capital base might be expanded and new shareholders / public are involved.
Loan Funds	Risk - capital should be repaid as per agreement; Interest should be paid irrespective of performance or profits.	Comparatively - prevailing interest rates are considered only to the extent of after tax impact.	No dilution of control

Q. Why cost of using equity is more than cost of using debt?

Q. Why risk of debt capital is more than equity capital?

#### IV. FINANCE FUNCTIONS/ FINANCE DECISIONS

The long term finance functions are divided into three major decisions, viz., investment, financing and dividend decisions. It is correct to say that these decisions are inter-related because the underlying objective of these three decisions is the same, i.e. maximisation of shareholders' wealth. Since investment, financing and dividend decisions are all interrelated, one has to consider the joint impact of these decisions on the market price of the company's shares and these decisions should also be solved jointly. The decision to invest in a new project needs the finance for the investment. The financing decision, in turn, is influenced by and influences dividend decision because retained earnings used in internal financing deprive shareholders of their dividends. An efficient financial management can ensure optimal joint decisions. This is possible by evaluating each decision in relation to its effect on the shareholders' wealth.

$$V = f(I, F, D)$$

The above three decisions are briefly examined below in the light of their interrelationship and to see how they can help in maximising the shareholders' wealth i.e. market price of the company's shares.

**Investment decision:** The investment of long term funds is made after a careful



assessment of the various projects through capital budgeting and uncertainty analysis. However, only that investment proposal is to be accepted which is expected to yield at least so much return as is adequate to meet its cost of financing. This has an influence on the profitability of the company and ultimately on its wealth.

**Financing decision:** Funds can be raised from various sources. Each source of funds involves different issues. The finance manager has to maintain a proper balance between long-term and short-term funds. With the total volume of long-term funds, he has to ensure a proper mix of loan funds and owner's funds. The optimum financing mix will increase return to equity shareholders and thus maximise their wealth.

**Dividend decision:** The finance manager is also concerned with the decision to pay or declare dividend. He assists the top management in deciding as to what portion of the profit should be paid to the shareholders by way of dividends and what portion should be retained in the business. An optimal dividend pay-out ratio maximises shareholders' wealth.

The above discussion makes it clear that investment, financing and dividend decisions are interrelated and are to be taken jointly keeping in view their joint effect on the shareholders' wealth.

Generally, short term finance decisions include management of working capital i.e. management of current assets and current liabilities.

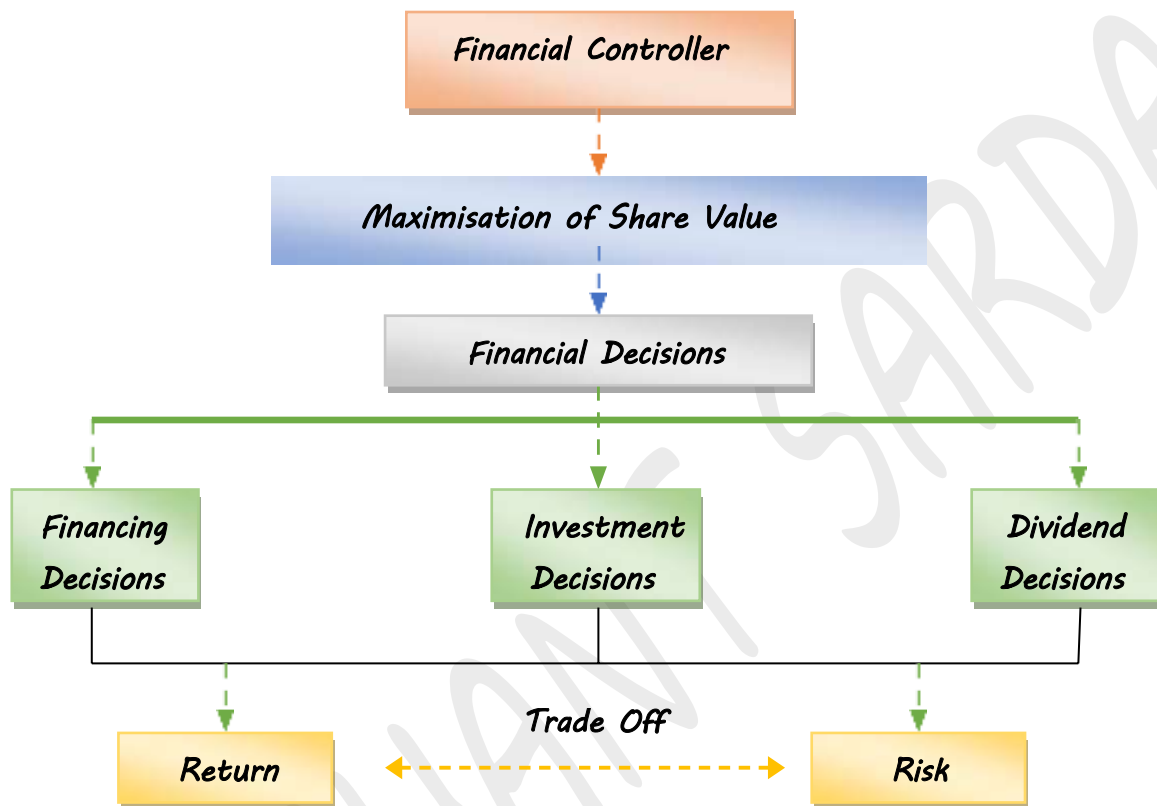
## V. SCOPE AND SIGNIFICANCE OF FINANCIAL MANAGEMENT

The scope of financial management has undergone changes over the years. Until the middle of this century, its scope was limited to procurement of funds under major events in the life of the enterprise such as promotion, expansion, merger etc. In the modern time, the financial management includes besides procurements of funds, the three different kind of decision as well namely investment, financing and dividend. All the three types of decisions would be dealt in detail during the course of this chapter.

The given figure depicts the overview of the scope and functions of financial management. It also gives the interrelation between market value, financial decisions and risk return trade off. The finance manager, in a bid to maximize shareholders wealth, should strive to maximize return in relation to the given risk; he should seek

courses of action that avoid unnecessary risks. To ensure maximum return, funds flowing in and out of the firm should be constantly monitored to assure that they are safeguarded and properly utilized.

### *An Overview of Financial Management*



## **VI. OBJECTIVES OF FINANCIAL MANAGEMENT**

The two objectives of Financial Management are:

a. Profit Maximisation (short term) (b) Wealth Maximisation (long term).

❖ **Profit Maximisation:** The finance manager has to make his decisions to maximise the profits of the concern.

Profit Maximisation is viewed as a limited objective, i.e. essential but not sufficient. It has traditionally been argued that the primary objective of a company is to earn profit; hence the objective of financial management is also profit maximisation. This implies that the finance manager has to make his decisions in a manner so that the profits of the concern are maximised. Each alternative, therefore, is to be seen as to whether or not it gives maximum profit.

However, profit maximisation cannot be the sole objective of a company. It is at best a limited objective. If profit is given undue importance, a number of problems can arise. Some of these have been discussed below:

- (i) *The term profit is vague. It does not clarify what exactly it means. It conveys a different meaning to different people. For example, profit may be in short term or long term period; it may be total profit or rate of profit etc.*
- (ii) *Profit maximisation has to be attempted with a realisation of risks involved. There is a direct relationship between risk and profit. Many risky propositions yield high profit. Higher the risk, higher is the possibility of profits. If profit maximisation is the only goal, then risk factor is altogether ignored. This implies that finance manager will accept highly risky proposals also, if they give high profits. In practice, however, risk is very important consideration and has to be balanced with the profit objective.*
- (iii) *Profit maximisation as an objective does not take into account the time pattern of returns. Proposal A may give a higher amount of profits as compared to proposal B, yet if the returns of proposal A begin to flow say 10 years later, proposal B may be preferred which may have lower overall profit but the returns flow is more early and quick.*
- (iv) *Profit maximisation as an objective is too narrow. It fails to take into account the social considerations as also the obligations to various interests of workers, consumers, society, as well as ethical trade practices. If these factors are ignored, a company cannot survive for long. Profit maximization at the cost of social and moral obligations is a short sighted policy.*

❖ **Wealth Maximisation:** Shareholders wealth are the result of cost benefit analysis adjusted with their timing and risk i.e. time value of money. The objective of a firm should be to maximise its value or wealth.

$$\text{Wealth} = \text{Present value of benefits} - \text{Present Value}$$

It is important that benefits measured by the finance manager are in terms of cash flow. Finance manager should emphasis on Cash flow for investment or financing decisions not on Accounting profit. The shareholder value maximization model holds that the primary goal of the firm is to maximize its market value and implies that business decisions should seek to increase the net present value of the economic profits of the firm. So, for measuring and maximising shareholders wealth finance manager should follow:

- ◆ Cash Flow approach not Accounting Profit
- ◆ Cost benefit analysis
- ◆ Application of time value of money

How do we measure the value/wealth of a firm?

According to Van Horne, "Value of a firm is represented by the market price of the company's common stock. The market price of a firm's stock represents the focal judgment of all market participants as to what the value of the particular firm is. It takes into account present and prospective future earnings per share, the timing and risk of these earnings, the dividend policy of the firm and many other factors that bear upon the market price of the stock. The market price serves as a performance index or report card of the firm's progress. It indicates how well management is doing on behalf of stockholders."

### VII. ADVANTAGES AND DISADVANTAGES OF BOTH OBJECTIVES

Goal	Objective	Advantages	Disadvantages
Profit Maximization	Large amount of profits	(i) Easy to calculate profits (ii) Easy to determine the link between financial decisions and profits.	(i) Emphasizes the short term gains (ii) Ignores risk or uncertainty (iii) Ignores the timing of returns (iv) Requires immediate resources.
Shareholders Wealth Maximisation	Highest market value of shares.	(i) Emphasizes the long term gains (ii) Recognises risk or uncertainty (iii) Recognises the timing of returns (iv) Considers shareholders' return.	(i) Offers no clear relationship between financial decisions and share price. (ii) Can lead to management anxiety and frustration.

### *Changing Role of the Finance Executive*

*“Today’s CFO team is expected to add value well beyond the traditional roles of cost management, controls and acting as the conscience of the organisation. These roles are challenging enough, but today’s CFO is expected to work in collaboration, by serving as the integration hub for key business processes, as a catalyst for change including business transformation, and as a consultant or trusted business advisor in helping to create sustainable growth.” Jeff Thomson, IMA President and CEO*

To sum it up, the finance executive of an organisation plays an important role in the company’s goals, policies, and financial success. His responsibilities include:

- (a) Financial analysis and planning: Determining the proper amount of funds to employ in the firm, i.e. designating the size of the firm and its rate of growth.*
- (b) Investment decisions: The efficient allocation of funds to specific assets.*
- (c) Financing and capital structure decisions: Raising funds on favourable terms as possible i.e. determining the composition of liabilities.*
- (d) Management of financial resources (such as working capital).*
- (e) Risk management: Protecting assets.*

### **VIII. FINANCIAL DISTRESS AND INSOLVENCY**

There are various factors like price of the product/ service, demand, price of inputs e.g. raw material, labour etc., which is to be managed by an organisation on a continuous basis likewise, the proportion of debt also need to be managed by an organisation very carefully.

Higher debt requires higher interest and if the cash inflow is not sufficient then it will put lot of pressure to the organisation. Both short term and long term creditors will put stress to the firm. If all the above factors are not well managed by the firm, it can create situation known as “distress”, so financial distress is a position where cash inflows of a firm are inadequate to meet all its current obligations.

If distress continues for a long period of time, firm may have to sell its asset, even many times at a price lower than market price.

Further when revenue is inadequate to revive the situation, firm will not be able to meet its obligations and may become insolvent. So, insolvency basically means inability of a firm to repay various debts and is a result of continuous financial distress.

## IX. DIFFERENTIATE BETWEEN FINANCIAL ACCOUNTING AND FINANCIAL MANAGEMENT

Sr. No.	Financial Accounting	Financial Management
1	Financial Accounting generate information related to operation of the Entity.	Financial Management seeks to use the information generated by the accounting function, for decision-making
2	Financial Accounting is past oriented in the since that transaction/ events which happen are recorded.	Financial Management is future -oriented i.e. to guide the Entity in future course of action.
3	Measurement, Recognition and Disclosure are the dominant aspects considered in accounting.	Procurement of funds and their Effective Utilization are the dominant aspects of Financial Management
4	Measurement of funds (i.e Revenue, Expenses, etc) is largely based on the accrual concept.	Decision making requires the analysis of funds in term of cash Inflows and Cash Outflows.
5	Accounting is guided by principles, standard, legal requirement etc.	Financial Management is guided by tools and techniques for decision-making.

## X. AGENCY PROBLEM AND AGENCY COST

Incorporates structure, owners are not active in management so, there is a separation between owner/ shareholders and managers. In theory managers should act in the best interest of shareholders, however in reality, managers may try to maximise their individual goal like salary, perks etc. So there is a principal agent relationship between managers and owners, which is known as Agency Problem.

In other words, Agency Problem is the chances that managers may place personal goals ahead of the goal of owners. Agency Problem leads to Agency Cost.

Agency cost is the additional cost borne by the shareholders to monitor the manager and control their behaviour so as to maximise shareholders wealth. Generally, Agency Costs are of four types

(i) Monitoring (ii) Bonding (iii) Opportunity (iv) Structuring

### Solution to the agency problem:

The agency problem arises if manager's interests are not aligned to the interests of the debt lender and equity investors. The agency problem of debt lender would be addressed by imposing negative covenants i.e. the managers cannot borrow beyond a

point. This is one of the most important concepts of modern day finance and the application of this would be applied in the Credit Risk Management of Bank, Fund Raising, Valuing distressed companies.

Agency problem between the managers and shareholders can be addressed if the interests of the managers are aligned to the interests of the shareholders. It is easier said than done.

However, following efforts have been made to address these issues:

- ✓ Managerial compensation is linked to profit of the company to some extent and also with the long term objectives of the company.
- ✓ Employee is also designed to address the issue with the underlying assumption that maximisation of the stock price is the objective of the investors.
- ✓ Effective monitoring can be done.

## XI. TIME VALUE OF MONEY

❖ **Meaning:** Time value of money means that, (also refer Capital Budgeting Chapter) “worth of a rupee received today is different from the worth of a rupee to be received in future”. The preference for money now, as compared to future money, is known as time preference of money.

❖ **Reasons for time preference of money : (Relevance of time value of money)**

- **Risk:** There is uncertainty about the receipt of money in future. Hence present money is preferred.
- **Preference for present consumption:** Most persons / companies prefer present consumption than future consumption e.g. due to urgency of need (say, consumer durable) or otherwise.
- **Investment opportunities:** Present Money is preferred due to availability of investment opportunities for earning additional cash flows e.g. ₹ 1000 in hand earns interest at the bank rate.
- **Inflation:** Due to inflation there is general rise in price therefore future money has less purchasing power. Hence present money is preferred.

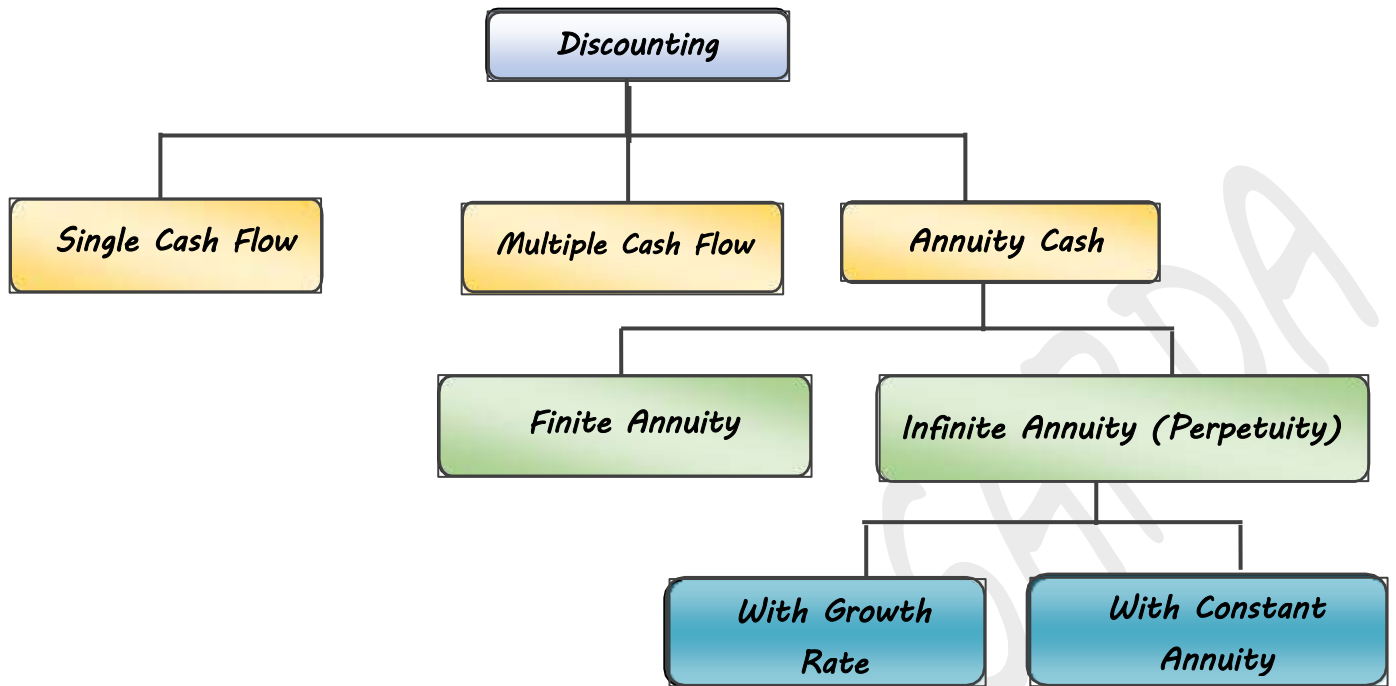
❖ **Methods of analysis:** The concept of time value of money helps in arriving at the comparable value of the different rupee amount arising at different points of time into equivalent values of a particular point of time (Present or future). This can be done by either:

- *Compounding the present money to a future date i.e. finding out future value of present money; or*
- *Discounting future money to the present data i.e. finding out present value of future money.*

*Time Value of Money*



## 1. GRAPHS AND FORMULAE



## PROBLEMS

1. You want to endow a prize that would pay ₹ 100,000 per annum. You want to make a one-time payment because you are not sure where you would be during subsequent years. If the time value is 10%, how much will you have to invest today? If you want the prize to increase by 4% each year, how much will you have to invest today?

2. Find out the present value of a 4 years annuity of ₹ 20,000 discounted at 10 percent.

3. What is the present value of an income stream which provides ₹ 1,000 at the end of year one, ₹ 2,500 at the end of year two and ₹ 5,000 during each of the year 3 through 10, if the discount rate is 12 percent.


4. What is the present value of an income stream which provides ₹ 2,000 a year for the first five years, and ₹ 3,000 a year forever thereafter, if the discount rate is 10 percent?

5. A finance company makes an offer to deposit a sum of ₹ 1,100 and then receive a return of ₹ 80 p.a. perpetually. Should this offer be accepted if the rate of interest is 8%? Will the decision change if the rate of interest is 5%?

6. Assume that a deposit is to be made at year zero into an account that will earn 8% compounded annually. It is desired to withdraw ₹ 5,000 three years from now and ₹ 7,000 six years from now. What is the size of the year zero deposit that will produce these future payments.


7. Assume that a ₹ 20,00,000 plant expansion is to be financed as follows: The firm makes a 15% down payment and borrows the remainder at 9% interest rate. The loan is to be repaid in 8 equal annual instalments beginning 4 years from now. What is the size of the required annual loan payments.
8. Raj has invested ₹ 1,00,000 in computer system and wishes to give on lease. Life of the computer system is 5 years without any scrap value. What should be the annual lease rent, if lessor's opportunity rate of interest is 20% p.a.
9. You need ₹ 10,000 for buying textbooks next year. You can earn 7% on your money. How much do you need to invest today?

EXTRA PAGE.

CA PRASHANT SARDA

## 2

## LEVERAGES

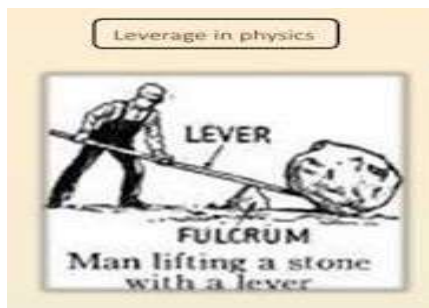
### 1. MEANING OF LEVERAGE

- The term leverage in general, refers to advantage gained for any purpose.
- In financial analysis, Leverage is used by business firms to quantify the risk-return relationship of different alternative capital structures.
- Study of leverage is essential to define the risk undertaken by the shareholders. Earnings available to shareholders fluctuate on account of two risks.
  - Variability of EBIT - Operating Risk: arises due to variability of sales and variability of expenses.
  - Variability of EPS or ROE - Financial Risk: arises due to the impact of interest charges.
- There are three commonly used measures of leverage in financial analysis. These are:
  1. Operating Leverage
  2. Financial Leverage
  3. Combined Leverage

## II. MEANING AND SIGNIFICANCE OF OPERATING LEVERAGE.

- (a) **Definition:** Operating leverage is defined as the "firm's ability to use fixed operating costs to magnify effects of changes in sales on its earnings before interest and taxes."
- (b) **Explanation:** A change in sales will lead to a change in Profit i.e. Earnings before Interest and Taxes (EBIT). The effect of change in sales on EBIT is measured by operating leverage. Since fixed costs remain the same irrespective of level of output, percentage increase in EBIT will be higher than increase in Sales.
- (c) **Measurement:** The degree of Operating Leverage (DOL) is measured by: (expressed in times)

$$\frac{\% \text{ Change in EBIT}}{\% \text{ Change in Sales}} \quad \text{or} \quad \frac{\text{Contribution}}{\text{EBIT}}$$



(d) **Significance:**

- **Effect on EBIT:** DOL measures the impact of change in sales on operating income. Suppose DOL of a firm is 1.67 times, it implies that 1 % change in sales will lead to 1.67% change in EBIT. Hence, if sales increases by 20%, EBIT increases by  $20\% \times 1.67 = 33\%$ . Also, if sales decreases by say 40%, EBIT falls by 67%.
- **Impact of Fixed Costs:** DOL depends on fixed costs. If fixed costs are higher, DOL is higher and vice-versa.
- **Effect of High DOL:** If DOL is high, it implies that fixed costs are high. Hence the Break even point (no profit- no loss situation) would be reached at a higher level of sales. Due to the high Break Even Point, the Margin of Safety and profits would bellow. This means that the operating risks are higher. Hence, a low DOL is preferred.
- A high DOL means that profits (EBIT) may be wiped off, even for a marginal reduction in sales. Hence, it is preferred to operate sufficiently above break-even point to avoid the danger of fluctuations in sales and profits.

$$\text{Operating Breakeven Point} = \frac{\text{Fixed Cost}}{\text{Contribution per unit}} \quad \text{OR} \quad \frac{\text{Fixed cost}}{\text{PV Ratio}}$$

Concept of MOS & DOL:

Analysis and interpretation of operating leverages:

Sr. No.	Situation	Result
1	No fixed cost	No operating leverages
2	Higher fixed cost	Higher break-even point
3	Higher than break-even level	Positive operating leverage
4	Lower than break -even level	Negative operating leverages

### III. MEANING AND SIGNIFICANCE OF FINANCIAL LEVERAGE

(a) **Meaning:** Financial Leverage is defined as the ability of a firm to use fixed financial charges (interest) to magnify the effects of changes in EBIT / Operating profits, on the firm's Earning per Share (EPS).

(b) **Explanation:** Financial Leverage occurs when a Company has debt content in its capital structure and fixed financial charges e.g. interest on debentures. These fixed financial charges do not vary with the EBIT. They are fixed and are to be paid irrespective of level of EBIT. Hence an increase in EBIT will lead to a higher percentage increase in Earnings per Share (EPS). This is measured by the Financial Leverage.

(c) **Measurement:** The degree of Financial Leverage (DFL) is measured by :  
(expressed in times)

$$\frac{\% \text{ Change in EPS}}{\% \text{ Change in EBIT}} \quad \text{OR} \quad \frac{\text{EBIT}}{\text{EBT}}$$

(d) **Significance:**

- **Effect on EPS:** DFL measures the impact of change in EBIT (Operating Income) on EPS (earnings per share). Suppose DFL of a firm is 4 times, it



implies that 1 % change in EBIT will lead to 4% change in EPS. Hence, if EBIT increases by 10%, EPS increases by  $10\% \times 4 = 40\%$ . Also, if EBIT decreases by say 5%, EPS fall by 20%

**(e) Impact of fixed financial charges:** DFL depends on the magnitude of interest fixed financial charges. If these costs are higher, DFL is higher and vice versa.

- **Effect of High DFL:** If DFL is high, it implies that fixed interest charges are high. This means that the financial risks are higher. The DFL is considered to be favourable or advantageous to the firm, when it earns more on its total investment than what it pays towards debt capital. In other words, DFL is advantageous only if Return on Capital Employed (ROCE) is greater than Rate of Interest on Debt.

$$\text{Financial Break Even Point} = I + \frac{PD}{1 - \text{tax rate}}$$

Where, I = Interest,

PD = Preference Dividend

#### Analysis and Interpretation of Financial Leverages

Sr. No.	Situation	Result
1	No fixed Financial Cost	No Financial Leverages
2	Higher Fixed Financial Cost	Higher Financial Leverages
3	When EBIT is higher than Financial Break- even Point	Positive Financial Leverages
4	When EBIT is lesser than Financial Break- even point	Negative Financial Leverages

#### IV. WHEN IS A FIRM SAID TO BE FINANCIALLY FAVOURABLY LEVERAGED

To determine whether the degree of Financial Leverage is favourable or not, the Return on Capital Employed (ROCE) should be compared with Rate of Interest on Debt.

##### 1. When ROCE greater than Interest rate:

DFL is considered to be favourable or advantageous to the firm, when it earns more on its total investment than what is pays towards debt capital. In other words, DFL is advantageous only if Return on Capital Employed (ROCE) is greater than Rate of Interest on Debt.

This is because shareholders gain in a situation where the company earns a high rate of return and pays a lower rate of return to the supplier of long term debt funds.

Financial Leverage in such cases is therefore also called 'Trading on Equity'.

The difference, between the return (EBIT) and the cost of debt funds would enhance the earnings of shareholders. Further, in case of debt funds the interest cost is also tax deductible. Hence, gain from DFL arises due to :

- Excess of return on investment over effective cost (cost after considering taxation effect) of debt funds.
- Reduction in the number of shares issued due to the use of debt funds.

### 2. When ROCE is less than Interest rate:

Where the rate of return on investment falls below the rate of interest, the shareholders suffer, because their earnings fall more sharply than the fall in the return on investment. This is because fixed interest costs have to be met, irrespective of the level of EBIT. In such cases, a high DFL is disadvantageous. In fact, the use of debt funds involving fixed commitment of interest payment and principal repayment, is not justified.

3. **Conclusion:** DFL should be high when Return on Capital Employed (ROCE) is greater than Interest Rate on Debt. If ROCE is less than Interest Rate on Debt, DFL should be maintained low.

## V. MEANING AND SIGNIFICANCE OF COMBINED LEVERAGE

(a) **Meaning:** Combined Leverage is used to measure the total risk of a firm i.e. Operating Risk and Financial Risk.

(b) **Explanation:** Effect of Fixed Operating Costs (i.e. Operating Risks) is measured by Operating Leverage (DOL). Effect of Fixed Interest Charges (i.e. Financial Risks) is measured by Financial Leverage (DFL). The combined effect of these is measured by Combined Leverage (DCL).

(c) **Measurement:** The degree of Combined Leverage (DCL) is measured as  $DOL \times DFL$ .

$$\text{Therefore, DCL} = \frac{\text{Contribution}}{\text{EBT}}$$

(d) **Significance:** DOL measures impact of change in Sales on EBIT. DFL measures the impact of change in EBIT on EPS. DCL measures the combined impact, i.e. effect of change in Sales on EPS. If DCL is 2 times, it implies that a 10% increase in Sales will lead to 20% increase in EPS.

*Analysis and interpretation of combined leverage*

<i>Sr. No.</i>	<i>Situation</i>	<i>Result</i>
1	No fixed cost and fixed financial cost	No combined leverages
2	Higher fixed cost & fixed financial cost	Higher combined leverage
3	Sales level higher than break-even level	Positive combined leverage
4	Sales level lower than break-even level	Negative combined leverage

**VI. DIFFERENTIATE BETWEEN BUSINESS RISK AND FINANCIAL OR WHAT DO YOU UNDERSTAND BY BUSINESS RISK AND FINANCIAL RISK**

<i>Sr. No.</i>	<i>Basis</i>	<i>Business Risk</i>	<i>Financial Risk</i>
1	<i>Meaning</i>	It refers to the risk associated with the firms operations. It is uncertainty about the future operating income. That is how well can operating income be predicted?	It refers to the additional risk placed on firms shareholders as a result of debt used in financing. Companies that issue more debt instrument would have higher financial risk than companies financed mostly by equity.
2	<i>Measured by</i>	It can be measured by standard deviation of basic earning power ratio.	Financial risk can be measured by ratio such as firm's financial leverage multiplier, total debt to assets ratio etc

**VII. IDEAL COMBINATION FOR COMBINED LEVERAGE**

Combined Leverage is analysed by reference to the combination of DOL and DFL, as under.

<i>DOL</i>	<i>DFL</i>	<i>Effect</i>	<i>Reason and Significance</i>
High	High	RISKY	High DOL => High Operating Risk => High Fixed Cost & BEP High DFL => Small fall in EBIT to greater fall EBT
High	Low	CAREFUL	High DOL's impact is sought to be set off with Low Financial Risk. Hence Equity Shareholders interest is safeguarded.
Low	Low	CAUTIOUS & CONSERVATIVE	Low DOL => Low Operating Risks => Low Fixed Costs & BEP But Equity Shareholders' gains are not maximised since DFL is low.
Low	High	PREFERABLE	Low DOL => Low Operating Risks => Low Fixed Costs & BEP Due to high DFL, small rise in EBIT leads to greater rise in EBT and EPS. Hence Equity Shareholders' gains are maximised.

EXTRA PAGE.

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5. A firm has sales of ₹ 10,00,000, variable cost of ₹ 7,00,000 and fixed costs of ₹ 2,00,000 and debt of ₹ 5,00,000 at 10% rate of interest. What are the operating, financial and combined leverage? If the firm wants to double its Earnings Before Interest and Tax (EBIT), how much of a rise in sales would be needed on a percentage basis?

<b>Particulars</b>	<b>Amount (₹)</b>

6. Aarya Ltd. has estimated that for a new product its break-even point is 2,000 units, if the item is sold for ₹ 14 per unit; the cost accounting department has currently identified variable cost of ₹ 9 per unit. Calculate the degree of operating leverage for sales volume of 2,500 units and 3,000 units. What do you infer from the degree of operating leverage at the sales volume of 2500 units and 3,000 units and their difference, if any?

<b>Particulars</b>	<b>2,500 Units</b>	<b>3,000 Units</b>



7.

(i) Find the operating leverage from the following data :

	₹
Sales	50,000
Variable Cost	60 %
Fixed Cost	12,000


(ii) Find the financial leverage from the following data:

	₹
Net worth	25,00,000
Debt / Equity	3 / 1
Interest Rate	12 %
Operating Profit	20,00,000

8. Calculate the operating leverage, financial leverage and combined leverage from the following data under situation I and II and Financial Plan A and B.

Installed Capacity	4,000 units
Actual Production and Sales	75 % of the capacity
Selling Price	₹ 30 Per Unit
Variable Cost Fixed Cost :	₹ 15 Per Unit
Under Situation I	₹ 15,000
Under Situation II	₹ 20,000

Capital structure :	Financial Plan	
	A	B
	₹	₹
Equity	10,000	15,000
Debt (Rate of Interest at 20%)	10,000	5,000

Particulars	Situation I		Situation II	
	Plan A	Plan B	Plan A	Plan B

9. A firm has sales of ₹ 75,00,000 variable cost of ₹ 42,00,000 and fixed cost of ₹ 6,00,000. It has a debt of ₹ 45,00,000 at 9% and equity of ₹ 55,00,000.

- i. What is the firm's ROI?
- ii. Does it have favourable financial leverage?
- iii. If the firm belongs to an industry whose asset turnover is 3, does it have a high or low asset leverage?
- iv. What are the operating, financial and combined leverage of the firm?
- v. If the sales drop to ₹ 50,00,000, what will be the new EBIT?
- vi. At what level of sales, the EBT of the firm will be equal to zero?

***Presence of Preference dividend:***

10. The operating and total leverages of K Ltd. are 2 and 5 respectively. Total variable costs at the existing level of operations amount to ₹ 6,50,000. Interest expense and dividend on preference shares are ₹ 75,000 and ₹ 36,000 respectively. Corporate income tax rate is 60%. What is the sales revenue of the company?

11. The DFL of Leena Ltd. is 2. The company pays an annual interest of ₹ 100,000 and a preference dividend of ₹ 15,000. The tax rate for the company is 50%. By what percentage will there be a fall in the EPS if EBIT drops to ₹ 130,000?

12. The DTL and DFL of a company are 3 and 2 respectively. The company pays an annual interest of ₹ 60,000 and preference share dividend of ₹ 16,000. The total variable costs of the company are ₹ 2,00,000 and the applicable income tax rate is 60%. What are the amounts of sales revenue and fixed operating costs?

13. Katrina Ltd. manufactures and sells a typical electronic toy. The selling price and variable cost per toy are ₹ 20 and ₹ 10 respectively. Operating fixed costs amount to ₹ 5 lakhs. The interest expense is ₹ 2.5 lakhs and DFL is 2. What are its DOL and Sales Volume respectively?

14. Salman Ltd.'s operating and total leverage are 2 and 3 respectively at the present sales level of 10,000 units. The selling price per unit of output is ₹ 12 while its variable cost is ₹ 6. The Company has no preference share capital. Applicable corporate income tax rate is 50%. The rate of interest on the company's debt is 16% p.a. What is the amount of debt in the capital structure of the company?

**Concept of Beta:**

15. The following summaries the percentage changes in operating income, percentage changes in revenues, and betas for four pharmaceutical firms.

<b>Firm</b>	<b>Change in revenue</b>	<b>Change in operating income</b>	<b>Beta</b>
Aishwarya Ltd.	27%	25%	1.00
Shilpa Ltd.	25%	32%	1.15
Madhuri Ltd.	23%	36%	1.30
Kareena Ltd.	21%	40%	1.40

**Required :**

- Calculate the degree of operating leverage for each of these firms. Comment also.
- Use the operating leverage to explain why these firms have different beta.

<b>Firm</b>	<b>% change in revenue</b>	<b>% change in EBIT</b>	<b>DOL</b>	<b>Beta</b>

16. Calculate degree of operating leverage, degree of financial leverage and combined leverage from the following data-

Sales 1,00,000 units @ ₹ 2 per unit = ₹ 2,00,000

Variable cost per unit @ ₹ 0.70, Fixed costs ₹ 1,00,000 & Interest charge : ₹ 3,668

<b>Particulars</b>	<b>Amount (₹)</b>

17. Calculate operating leverage and financial leverage under situation A,B and C Financial Plans I,II and III respectively from the following information relating to the operating structure of Lata Ltd. Also find out the combination of operating and financial leverage which give the highest value and least value. How are these calculation useful to financial manager in a company?

Installed Capacity	1,200 units
Actual Production and sales	800 units
Selling price per unit	₹ 15
Variable cost per unit	₹ 10
Fixed cost : Situation A	₹ 1,000
Situation B	₹ 2,000
Situation C	₹ 3,000

Capital structure :	Financial Plans		
	I	II	III
Equity	₹ 5,000	₹ 7,500	₹ 2,500
Debt	₹ 5,000	₹ 2,500	₹ 7,500
(Cost of debt 12%)			



**EXTRA PAGE:**

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## 3

## CAPITAL STRUCTURE

### I. MEANING

**Meaning:** Capital Structure refers to the mix of sources from where the long-term funds required in a business may be raised. In other words, it refers to the proportion of debt, preference capital and equity capital.

**Factors determining Capital Structure:** There is no exhaustive list of such factors. Some examples are:

- (a) Nature of industry,
- (b) Risk, Cost and Control considerations,
- (c) Gestation period,
- (d) Certainty with which profits will accrue after the Undertaking goes into commercial production,
- (e) Quantum of return on investment,
- (f) Lending policy of financial institutions,
- (g) Monetary and fiscal policies of the Government.

### II. OPTIMUM CAPITAL STRUCTURE AND FEATURES OF AN APPROPRIATE CAPITAL STRUCTURE / FUNDAMENTAL PRINCIPLES GOVERNING CAPITAL STRUCTURE

One of the basic objectives of financial management is to maximise the value or wealth of the firm. Capital Structure is optimum when the firm has a combination of equity and debt so that the wealth of the firm is maximum. At this level, cost of capital is minimum and market price per share is maximum.

In theory, one can speak of an optimum capital structure; but in practice, appropriate capital structure is a more realistic term than the former.

The following are the major features of an appropriate capital structure:

1. **Profitability:** It should minimize the cost of financing and maximise earning per equity share.
2. **Flexibility:** The capital structure should be such that company can raise funds whenever needed.
3. **Conservation:** The debt content should not exceed the maximum which the company can bear.
4. **Solvency:** The capital structure should be such that the firm does not run the risk of becoming insolvent.
5. **Control:** There should be minimum risk of loss or dilution of control of the company.

### III. MAJOR CONSIDERATIONS IN CAPITAL STRUCTURE PLANNING

The three major considerations in Capital Structure Planning are:

(a) Risk, (b) Cost and (c) Control.

These differ for various components of Capital i.e. Own Funds and Loan Funds. A comparative analysis is given as under

TYPE OF FUNDS	RISK	COST	CONTROL
<b>EQUITY CAPITAL</b>	Low Risk - no question of repayment of capital except when the company is under liquidation - Hence best from viewpoint of risk	Most expensive - dividend Expectations of shareholders are higher than interest rates. Also, dividends are not tax- Deductible.	Dilution of control - Since the Capital base might be expanded and new shareholders / public are involved.
<b>Preference Capital</b>	Slightly higher risk when compared to equity capital Principal is redeemable after a certain period even if dividend payment is based on profits.	Slightly cheaper cost than equity but higher than interest rate on loan funds. Further, preference dividend are not tax-deductible.	No dilution of control since Voting rights are restricted.
<b>Loan funds</b>	High risk-capital should be repaid as per agreement; interest should be paid irrespective of performance or profits.	Comparatively cheaper - prevailing interest rates are after tax impact.	No dilution of control-but some financial institutions may insist on nomination of their representatives in the board of directors.

#### WHAT DO YOU UNDERSTAND BY CAPITAL STRUCTURE? HOW DOES IT DIFFER FROM FINANCIAL STRUCTURE?

Capital structure refers to the combination of debt equity which a company uses to finance its long term operations. It is the permeant financing of the company representing long term source of capital i.e. owner's equity and long term debts but excludes current liabilities. Whereas financial structure is the entire left hand side of Balance sheet representing all the long term and short term sources of capital.

Thus we may say capital structure is only a part of financial structure.

#### IV. CAPITAL STRUCTURE THEORIES

- Capital Structure Theories seek to explain the relationship between the following variables:
  - Proportions of Components of capital (debt, equity etc.) ;
  - Costs of each component of Capital;
  - Impact of Leverage;
  - Overall Cost of Capital (WACC) ; and
  - Value of the Firm.
- These theories can be broadly classified into two categories:
  - Theories which suggest that capital structure (i.e. debt equity mix) affects WACC
  - Theories which suggest that capital structure (i.e. debt equity mix) does not affect WACC, which is a constant.
- These theories explaining Capital Structure and Cost of Capital are:

Capital structure affects WACC	Capital Structure does not affect WACC
1. Net Income Approach (NI Approach)	1. Net Operating Income Approach (NOI Approach)
2. Traditional Theory	2. Modigliani and Miller Approach (MM Approach)

#### V. GENERAL ASSUMPTIONS IN CAPITAL STRUCTURE THEORIES

The following are the general assumptions in Capital Structure Theories

- a. There are only two sources of funds viz., debt and equity. [No Preference Share Capital]
- b. The Total Assets of a firm and its Capital Employed are fixed. [No change in Capital Employed]. However, debt equity mix can be changed:
  - either by borrowing debt to repurchase (redeem) equity shares
  - or by raising equity capital to retire (repay) debt.
- c. All earnings are distributed to equity shareholders. [No retained earnings]
- d. The firm earns operating profits and it is not expected to grow. [No losses]
- e. The business risk is assumed to be constant and is not affected by the financing mix decision. [No change in fixed costs or operating risks]
- f. There are no corporate or personal taxes. [No taxation]
- g. The investors have the same subjective probability distribution of expected earnings. [No difference in investors expectations]

#### VI. INCOME APPROACH OF DURAND OR NET INCOME (NI) APPROACH

**Assumptions:** Apart from the general assumptions, the following additional assumptions are made:

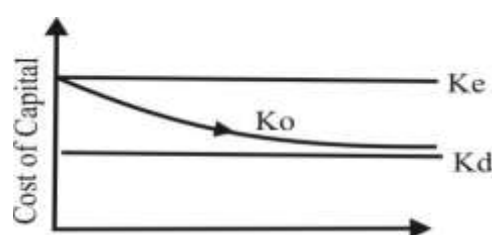
1. There are no Corporate Taxes.
2.  $K_d$  = Debt Capitalisation Rate and  $K_e$  = Equity Capitalisation Rate.
3. The Cost of Debt ( $K_d$ ) is always less than Cost of Equity ( $K_e$ ).
4.  $K_d$  and  $K_e$  remain constant at all levels of debt-equity mix. This is because, the use of debt content does not change the risk perception of investors.

### Theory or Explanation:

1. Debt is a cheaper source of finance than equity due to tax saving effect and investor's risk expectations.
2. Use of cheaper debt funds in total capital structure will reduce the Overall or Weighted Cost of Capital since Debt percentage increases in the total capital structure.
3. Hence, as the degree of financial leverage increases, the WACC will decline with every increase in the debt content in total funds employed.
4. Since Value of Firm =  $EBIT / WACC$ , the value of firm will increase for every decline in WACC.
5. Where debt content is reduced, the reverse will happen, i.e. WACC will increase thereby reducing the value of the firm.
6. Thus, a firm can increase its value and lower the overall cost of capital by increasing the proportion of debt in the capital structure.
7. The Value of the Firm will be maximum at a point where WACC is minimum.
8. Thus, the theory suggests total or maximum possible debt financing for minimising the cost of capital.

**Application:** The application of theory in determining WACC involves the following steps:

Step	Procedure
1	Determine EBIT.
2	Compute EBT (Net Income) = EBIT less Interest on Debt Funds
3	Compute Market Value of Equity ( $S$ ) = EBT (Net Income) / Cost of Equity ( $K_e$ )
4	Compute Market Value of Debt ( $D$ ) = Interest / Cost of Debt ( $K_d$ )
5	Compute Market Value of Firm ( $V$ ) = $S + D$ = Market Value of Equity + Market Value of Debt
6	Compute Overall Cost of Capital ( $K_o$ ) = $EBIT / \text{Value of Firm } (V)$



**Debt equity mix**

**LET'S REVISE NI APPROACH WITH CALCULATION OF KO:****VII. NET OPERATING INCOME APPROACH**

**Assumptions:** The following additional assumptions are made:

1. The Cost of Debt ( $K_d$ ) is always less than Cost of Equity ( $K_e$ ).
2.  $K_d$  (Debt Capitalisation Rate) remains constant at various levels of debt-equity mix.
3.  $K_e$  (Equity Capitalisation Rate) increases as debt content increases due to higher financial risk and higher expectations of equity investors.
4. The market (investors in debt as well as equity) capitalises the value of the firm as a whole, without giving importance to the debt-equity mix. Hence Overall Cost of Capital is constant.

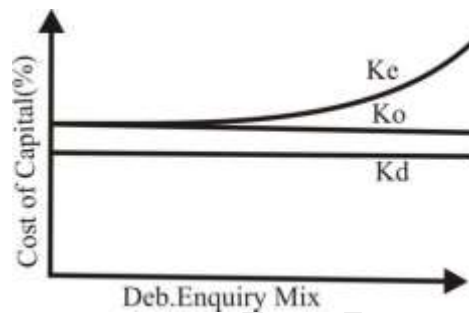
**Theory or Explanation:**

1. Debt may be cheaper than equity. But the risk perception of equity investors increases with the use of additional debt in the capital employed.
2. Increase in financial risk causes the equity capitalisation rate to increase.
3. Thus, the advantage of using low-cost debt is set off exactly by increase in equity capitalisation rate.
4. Therefore, the overall cost of capital remains constant for all degrees of debt-equity mix.
5. The market capitalizes the value of firm as a whole. Thus the split between debt and equity is not important.
6. The market value of the firm is ascertained by capitalising the net operating income at the overall cost of capital, which is constant. The market value is not affected by, debt -equity mix change.
7. Since WACC is constant at all levels, every debt-equity mix is as good as any other mix. There is no optimum capital structure. Every capital structure is optimal one.

**Application:**

The application of theory in determining Cost of Equity involves the following steps:

Step	Procedure
1	Determine EBIT (Net Operating Income)
2	Compute EBT = EBIT less Interest on Debt Funds
3	Compute Market Value of Firm ( $V$ ) = EBIT (Net Operating Income) / WACC ( $K_0$ )
4	Compute Market Value of Debt ( $D$ ) = Interest / Cost of Debt ( $K_d$ )
5	Compute Market Value of Equity ( $S$ ) = $V - D$ = Market Value of Firm - Market Value of Debt
6	Compute Cost of Equity Capital ( $K_e$ ) = EBT / Value of Equity ( $S$ )



**LET'S REVISE NOI APPROACH WITH LOGIC OF  $K_0$  REMAINING CONSTANT:**

### VIII. TRADITIONAL THEORY TO COST OF CAPITAL

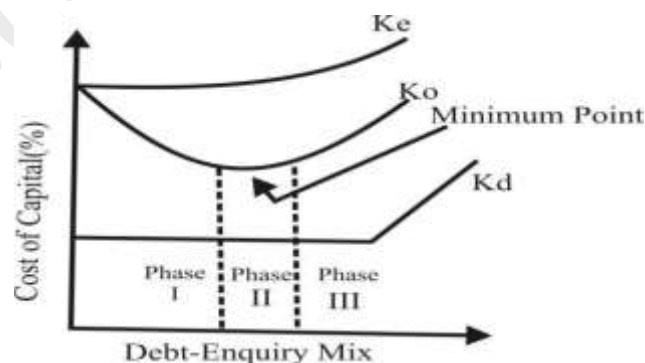
**Assumptions:** Apart from the general assumptions, the following additional assumptions are made:

1. The Cost of Debt ( $K_d$ ) is always less than Cost of Equity ( $K_e$ ).
2.  $K_d$  and  $K_e$  vary with change in debt-equity mix. As debt content increases, financial risk increases, causing increase in the expectations of equity investors and rise in the cost of equity. Also additional loans can be taken only at a higher rate of interest. So Cost of Debt also rises beyond a certain level of debt content.
3. Increase in Cost of Equity is steeper and higher than increase in cost of debt.

**Theory or Explanation:**

1. Debt is a cheaper source of finance than equity due to tax saving effect and investor's risk expectations.
2. Use of cheaper debt funds in total capital structure will reduce the Overall or Weighted Cost of Capital since Debt percentage increases in the total capital structure. This is because the benefits of cheaper debt may be so large that even in offsetting the effect of increase in cost of equity, the WACC may go down.
3. Hence, as the degree of financial leverage increases, the WACC will decline with every increase in the debt content in total funds employed.
4. However, if financial leverage increases beyond an acceptable limit (called the optimal point), the cost of debt and cost of equity start rising. This is because of the high financial risk associated with the firm.
5. The increasing cost of equity owing to increased financial risk and increasing cost of debt makes the overall cost of capital to increase.
6. The firm should strive to reach the optimal capital structure and maximise its total value through a judicious use of both debt and equity in the capital structure. At the optimal capital structure the overall cost of capital will be minimum and the value of the firm is maximum.
7. Thus, as per the Traditional Theory, the firm should try to achieve the optimal Capital Structure by minimising WACC and maximising its value.

**Application:** The application is the same as that of Net Income Approach, except that  $K_e$  and  $K_d$  differ for different degrees of debt-equity mix. The least WACC should be selected for the optimal Structure



**WHICH DEBT EQUITY COMBINATION SHOULD A COMPANY SELECT?**



## IX. MODIGLIANI AND MILLER APPROACH

This Approach is a refinement of the Net Operating Income Approach. The basic theory is essentially the same, but some additional propositions are made.

**Assumptions:** The following additional assumptions are made:

1. **Kd less than Ke :** The Cost of Debt ( $K_d$ ) is always less than Cost of Equity ( $K_e$ ).
2. **Constant  $K_d$  :** The Debt Capitalisation Rate remains constant at various levels of debt equity mix.
3. **Increasing  $K_e$  :**  $K_e$  (Equity Capitalisation Rate) increases as debt content increases due to higher financial risk and higher expectations of equity investors.
4. **Constant WACC :** The market (investors in debt as well as equity) capitalises the value of the firm as a whole, without giving importance to the debt-equity mix. Hence Overall Cost of Capital is constant.
5. **Perfect Market:** The capital markets are perfect. Investors are free to buy and sell securities. They are well informed about the risk and return on all type of securities. There are no transaction costs. The investors behave rationally. They can borrow without restrictions on the same terms as the firms do.
6. **Risk Classification:** Firms can be classified into 'homogenous risk class'. They belong to this class if their expected earnings have identical risk characteristics.

**Theory or Explanation:**

1. Debt may be cheaper than equity. But the risk perception of equity investors increases with the use of additional debt in the capital employed.
2. Increase in financial risk causes the equity capitalisation rate to increase.
3. Thus, the advantage of using low-cost debt is set off exactly by the increase in equity capitalisation rate.
4. Therefore, the overall cost of capital remains constant for all degrees of debt-equity mix.
5. The market capitalizes the value of firm as a whole. Thus the split between debt and equity is not important.
6. The market value of the firm is ascertained by capitalising the net operating income at the overall cost of capital, which is constant. The market value is not affected by changes in debt-equity mix.
7. Since WACC is constant at all levels, every debt-equity mix is as good as any other mix. There is no optimum capital structure. Every capital structure is an optimal one. The total cost of capital of a firm is independent of its methods and level of financing.

8. Since WACC is constant, WACC at 0% debt (i.e. 100% equity) should be the same as WACC at any other percentage of debt. Hence  $WACC = K_e$  when the firm is financed purely by equity. WACC of a firm equals the capitalisation rate of pure equity stream of its class of risk.

### Propositions:

Modigliani and Miller make the following propositions:

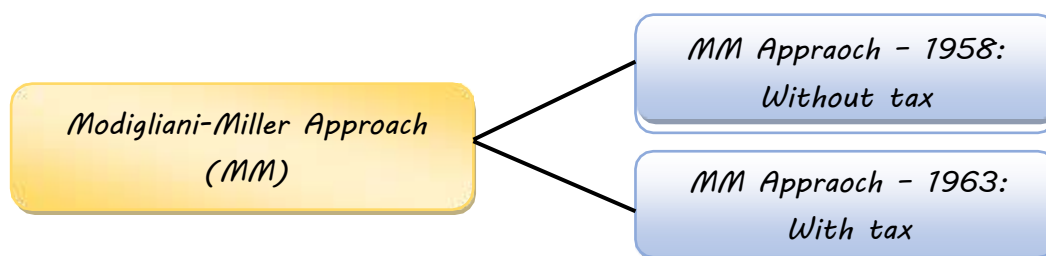
1. The total market value of a firm and its cost of capital are independent of its capital structure. total market value of the firm is given by capitalising the expected stream of operating earnings at a discount rate considered appropriate for its risk class.
2. The cost of equity ( $K_e$ ) is equal to capitalisation rate of pure equity stream plus a premium for financial risk. The financial risk increases with more debt content in the capital structure. As a result,  $K_e$  increases in a manner to offset exactly the use of less expensive source of debt funds.

$$\left[ K_e = K_o + (K_o - K_d) \times \frac{\text{Debt}}{\text{Equity}} \right]$$

3. The cut off rate for investment purposes is completely independent of the mode of financing.
4. Financial Leverage has no impact on market values, which remain constant for all firms in the same risk class. In case such firms had different market values, investors will buy and sell shares and set aside the leverage effect. Hence arbitrage will substitute personal leverage for corporate leverage.



Modigliani-Miller Approach (MM):



MM Approach - 1958 without tax

This approach describes, in a perfect capital market where there is no transaction cost and no taxes, the value and cost of capital of a company remain unchanged irrespective of change in the capital structure.

**Modigliani-Miller derived the following three propositions:**

1. Total market value of a firm is equal to its expected net operating income divided by the discount rate appropriate to its risk class decided by the market.

Value of levered firm ( $V_L$ ) = Value of unlevered firm ( $V_U$ )

$$\text{Value of a firm} = \frac{\text{Net Operating Income (NOI)}}{K_0}$$

2. A firm having debt in capital structure has higher cost of equity than a un-levered firm. The cost of equity will include risk premium for the financial risk. The cost of equity in a levered firm is determined as under:

$$K_e = K_0 + (K_0 - K_d) \times \frac{\text{Debt}}{\text{Equity}}$$

3. The structure of the capital (financial leverage) does not affect the overall cost of capital. The cost of capital is only affected by the business risk.

It is evident from the above diagram that the average cost of the capital ( $K_0$ ) is a constant and not affected by leverage.

The operational description of Modigliani-Miller hypothesis is explained through the working of the arbitrage process and substitution of corporate leverage by personal leverage. Arbitrage refers to buying asset or security at lower price in one market and selling it at a higher price in another market. As a result, equilibrium is attained in different markets. This is illustrated by taking two identical firms of which one has debt in the capital structure while the other does not. Investors of the firm whose value is higher will sell their shares and instead buy the shares of the firm whose value is lower. They will be able to earn the same return at lower outlay with the same perceived risk or lower risk. They would, therefore, be better off.

The value of the levered firm can neither be greater nor lower than that of an unlevered firm according to this approach. The two must be equal. There is neither advantage nor disadvantage in using debt in the firm's capital structure.

The approach considers capital structure of a firm as a whole pie divided into equity, debt and other securities. No matter how the capital structure of a firm is divided (among debt, equity etc.), there is a conservation of investment value. Since the total investment value of a corporation depends upon its underlying profitability and risk, it is invariant with respect to relative changes in the firm's financial capitalisation.

According to MM, since the sum of the parts must equal the whole, therefore, regardless of the financing mix, the total value of the firm stays the same.

The shortcoming of this approach is that the arbitrage process as suggested by Modigliani-Miller will fail to work because of imperfections in capital market, existence of transaction cost and presence of corporate income taxes.

### MM Approach - 1963: with tax

In 1963, MM model was amended by incorporating tax, they recognised that the value of the firm will increase or cost of capital will decrease where corporate taxes exist. As a result, there will be some difference in the earnings of equity and debt-holders in levered and unlevered firm and value of levered firm will be greater than the value of unlevered firm by an amount equal to amount of debt multiplied by corporate tax rate.

MM has developed the formulae for computation of cost of capital ( $K_0$ ), cost of equity ( $K_e$ ) for the levered firm.

i) Value of levered company = Value of an unlevered company + Tax benefit

$$\text{Or,} \quad V_g = V_u + TB$$

ii)  $K_e$  in a levered company ( $K_{eg}$ ) =  $K_{eu} + (K_{eu} - K_d) \times \frac{\text{Debt}}{\text{Debt} + \text{Equity}}$

Where,

$K_{eg}$  = Cost of equity in a levered company

$K_{eu}$  = Cost of equity in an unlevered company  $K_d$  = Cost of debt

$t$  = Tax rate

### X. CONCEPT OF ARBITRAGE UNDER M & M APPROACH

Modigliani and Miller argue that there is no difference in the market values of different firms in the same risk class. They consider that financial leverage or use of debt in capital structure has no impact on Market Values. Their reasoning is as under:

1. Companies in different industries may have different risks, which will result in their earnings being capitalised at different rates.
2. If the market values (as represented by Market Price per share i.e. MPS) of different companies were to be different, investors in the high MPS company will sell their holding and the shares of low MPS Company will be bought. This is because, in the capital market, the rational movement should be "buy at low prices and sell at high prices".

3. The buying and selling spree will lead to increase in demand of the low MPS company's shares causing its share price to increase. Similarly, due to sale of holdings, the price of high MPS company's share will fall.
4. This movement in share prices will continue till both companies' share prices settle at a constant.
5. Through the above procedure, investors will move from leveraged firm to unleveraged firm and vice-versa through the process of arbitrage. This will cease only when total market values of both firms are the same.
6. The arbitrage effect nullifies the effect of leverage that the companies may possess.
7. Hence, it is not possible for the companies in the same risk class, to affect their market values and therefore their overall capitalisation rate by use of leverage.
8. Thus, for a company in a particular risk class, the total market value must be same irrespective of debt in company's capital structure.

#### XI. CRITICISM OF MODIGILINI AND MILLER THEORY

Modigliani and Miller Theory is criticised on the following grounds:

1. The assumption of perfect market is not practical. In the real world, various imperfections exist, such as transaction costs for purchase and sale of securities, differential rates of interest etc.
2. The argument that arbitrage nullifies the effect of leverage is not valid. Investors do not behave in such a calculated and rational way in switching from leveraged to unleveraged firm or vice-versa.
3. The theory presumes the availability of free and upto date information on all aspects of the company's functioning. In practice, investors have little or no knowledge about the company's operations. Their dealing in shares are not based only upon the information on hand, but on other considerations also.

#### Example of MM Approach:

Following is the information of X Ltd & Y Ltd:

Particulars	X Ltd	Y Ltd
No of equity shares	90,000	1,50,000
6% Debentures	60,000	-
Market price per share	1.2	1
EBIT	18,000	18,000

If an investor holds 10% shares in company X Ltd, will it be better off for him to switch his holdings to company Y Ltd?

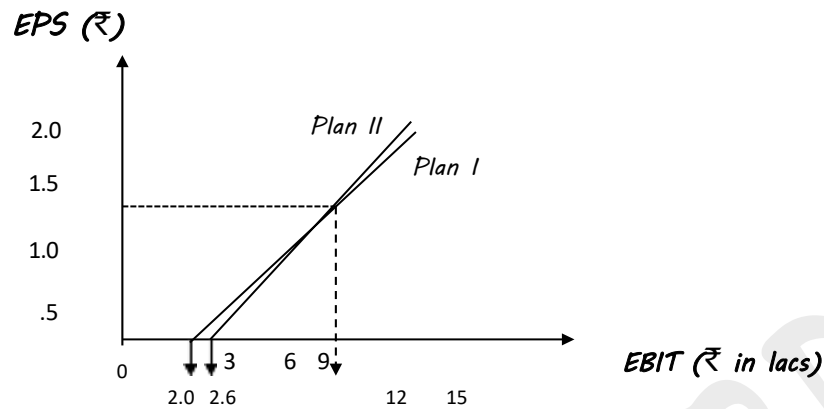
## XII. EPS INDIFFERENCE POINT

- Alternative modes of financing have different impact on EPS. A firm is said to be indifferent between two modes of financing if the EPS under both options is the same. This level of EBIT that results in equal EPS is called EPS Equivalency Point or Indifference Point.
- The level of EBIT at which EPS remains the same for two options of debt-equity mix, is called Indifference Point.
- Indifference Point is computed by solving the following equation for EBIT.

Alternative 1: With Debt	Alternative 2: Without Debt
$\frac{[\text{EBIT} - \text{Interest}] \times [100 - \text{Tax Rate}]}{\text{Number of Equity Shares}}$	$\frac{\text{EBIT} \times [100 - \text{Tax Rate}]}{\text{Number of Equity Shares}}$

When both the alternatives in the above chart is equal at a certain level of EBIT (to be computed by solving the equation), the company is said to be indifferent between the two alternatives.

### Graphical Depiction of Indifference Point and Financial BEP



- **Interpretation of Graph:**

- The horizontal intercepts identify the Financial Break Even levels of EBIT for each plan.
- The point at which EPS lines of both plans intersect is called Indifference Point. Its horizontal intercept gives the level of EBIT at that point. The vertical intercept gives the value of EPS at that point.
- Below the indifference point, one plan will have higher EPS over the other. Above that point, automatically the other plan will have higher EPS over the former. This is interpreted as under :

#### XIII. FINANCIAL BREAK EVEN POINT:

It is the minimum level of EBIT needed to satisfy all the financial charges i.e. interest and preference dividend. It denotes such a level of EBIT at which firm ₹s EPS is exactly zero. That means if EBIT is less than financial BEP, then the EPS will be negative whereas if EBIT is more than financial BEP, then the EPS will be positive.

#### XIV. THE TRADE-OFF THEORY:

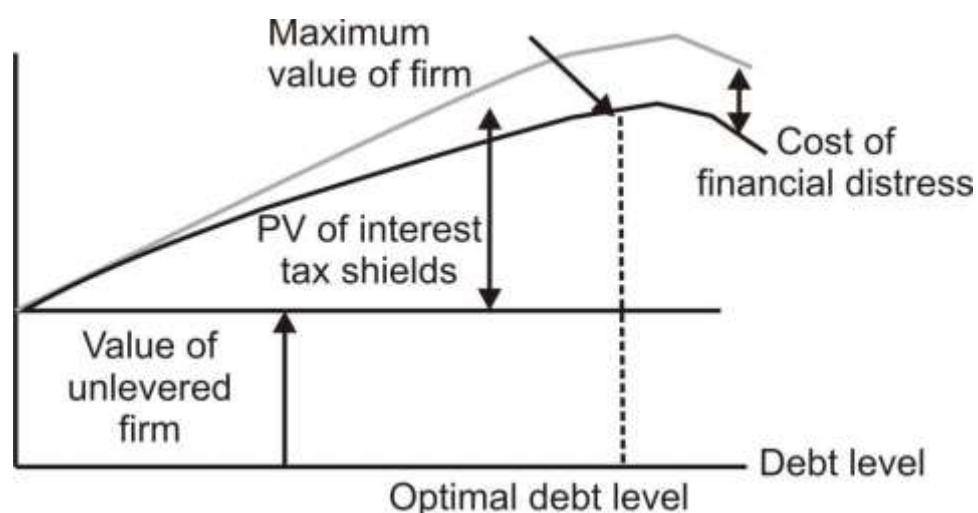
The trade-off theory of capital structure refers to the idea that a company chooses how much debt finance and how much equity finance to use by balancing the costs and benefits. Tradeoff theory of capital structure basically entails offsetting the costs of debt against the benefits of debt.

Trade-off theory of capital structure primarily deals with the two concepts - cost of financial distress and agency costs. An important purpose of the trade-off theory of capital structure is to explain the fact that corporations usually are financed partly with debt and partly with equity.

It states that there is an advantage to financing with debt, the tax benefits of debt and there is a cost of financing with debt, the costs of financial distress including bankruptcy costs of debt and non-bankruptcy costs (e.g. staff leaving, suppliers demanding disadvantageous payment terms, bondholder/stockholder power struggle, etc).

The marginal benefit of further increases in debt declines as debt increases, while the marginal cost increases, so that a firm that is optimizing its overall value will focus on this trade-off when choosing how much debt and equity to use for financing. Modigliani and Miller in 1963 introduced the tax benefit of debt. Later work led to an optimal capital structure which is given by the trade-off theory. According to Modigliani and Miller, the attractiveness of debt decreases with the personal tax on the interest income. A firm experiences financial distress when the firm is unable to cope with the debt holders' obligations. If the firm continues to fail in making payments to the debt holders, the firm can even be insolvent. The first element of Trade-off theory of capital structure, considered as the cost of debt is usually the financial distress costs or bankruptcy costs of debt. The direct cost of financial distress refers to the cost of insolvency of a company. Once the proceedings of insolvency start, the assets of the firm may be needed to be sold at distress price, which is generally much lower than the current values of the assets. A huge amount of administrative and legal costs is also associated with the insolvency. Even if the company is not insolvent, the financial distress of the company may include a number of indirect costs like - cost of employees, cost of customers, cost of suppliers, cost of investors, cost of managers and cost of shareholders.

The firms may often experience a dispute of interests among the management of the firm, debt holders and shareholders. These disputes generally give birth to agency problems that in turn give rise to the agency costs. The agency costs may affect the capital structure of a firm. There may be two types of conflicts - shareholders-manager conflict and shareholders-debt holders conflict. The introduction of a dynamic Trade-off theory of capital structure makes the predictions of this theory a lot more accurate and thoughtful of that in practice.





As the Debt-equity ratio (i.e. leverage) increases, there is a trade-off between the interest tax shield and bankruptcy, causing an optimum capital structure (D/E)

### XV. PECKING ORDER THEORY:

This theory is based on Asymmetric information, which refers to a situation in which different parties have different information. In a firm, managers will have better information than investors. This theory states that firms prefer to issue debt when they are positive about future earnings. Equity is issued when they are doubtful and internal finance is insufficient.

The pecking order theory argues that the capital structure decision is affected by manager's choice of a source of capital that gives higher priority to sources that reveal the least amount of information.

Myres has given the name 'PECKING ORDER' theory as here is no well-defined debt- equity target and there are two kind of equity internal and external. Now Debt is cheaper than both internal and external equity because of interest. Further internal equity is less than external equity particularly because of no transaction/issue cost, no tax etc.

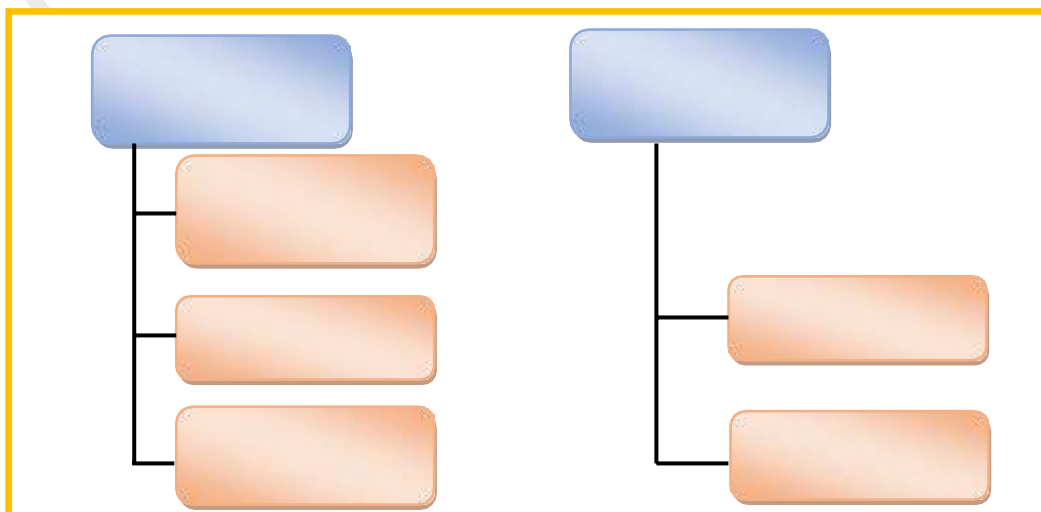
Pecking order theory suggests that managers may use various sources for raising of fund in the following order.

1. Managers first choice is to use internal finance
2. In absence of internal finance they can use secured debt, unsecured debt, hybrid debt etc.
3. Managers may issue new equity shares as a last option. So briefly under this theory rules are

**Rule 1:** Use internal financing first.

**Rule 2:** Issue debt next

**Rule 3:** Issue of new equity shares at last



**XVI. OVER-CAPITALISATION AND UNDER-CAPITALISATION:**

**A. Over-Capitalisation:** It is a situation where a firm has more capital than it needs or in other words assets are worth less than its issued share capital, and earnings are insufficient to pay dividend and interest. This situation mainly arises when the existing capital is not effectively utilized on account of fall in earning capacity of the company while company has raised funds more than its requirements. The chief sign of over-capitalisation is the fall in payment of dividend and interest leading to fall in value of the shares of the company.

**Causes of Over-Capitalisation:** Over-capitalisation arises due to following reasons:

- i. Raising more money through issue of shares or debentures than company can employ profitably.
- ii. Borrowing huge amount at higher rate than rate at which company can earn.
- iii. Excessive payment for the acquisition of fictitious assets such as goodwill etc.
- iv. Improper provision for depreciation, replacement of assets and distribution of dividends at a higher rate.
- v. Wrong estimation of earnings and capitalization.

**Consequences of Over-Capitalisation:** Over-capitalisation results in the following consequences:

- i. Considerable reduction in the rate of dividend and interest payments.
- ii. Reduction in the market price of shares.
- iii. Resorting to "window dressing".
- iv. Some companies may opt for reorganization. However, sometimes the matter gets worse and the company may go into liquidation.

**Remedies for Over-Capitalisation:** Following steps may be adopted to avoid the negative consequences of over-capitalisation:

- i. Company should go for thorough reorganization.
- ii. Buyback of shares.
- iii. Reduction in claims of debenture-holders and creditors.
- iv. Value of shares may also be reduced. This will result in sufficient funds for the company to carry out replacement of assets.

**B. Under Capitalisation:** It is just reverse of over-capitalisation. It is a state, when its actual capitalisation is lower than its proper capitalisation as warranted by its earning capacity. This situation normally happens with companies which have insufficient capital but large secret reserves in the form of considerable appreciation in the values of the fixed assets not brought into the books.

**Consequences of Under-Capitalisation:** Under-capitalisation results in the following consequences:

- i. The dividend rate will be higher in comparison to similarly situated companies.
- ii. Market value of shares will be higher than value of shares of other similar companies because their earning rate being considerably more than the prevailing rate on such securities.
- iii. Real value of shares will be higher than their book value.

**Effects of Under-Capitalisation:** Under-capitalisation has the following effects:

- i. It encourages acute competition. High profitability encourages new entrepreneurs to come into same type of business.
- ii. High rate of dividend encourages the workers' union to demand high wages.
- iii. Normally common people (consumers) start feeling that they are being exploited.
- iv. Management may resort to manipulation of share values.
- v. Invite more government control and regulation on the company and higher taxation also.

**Remedies:** Following steps may be adopted to avoid the negative consequences of under capitalization:

- i. The shares of the company should be split up. This will reduce dividend per share, though EPS shall remain unchanged.
- ii. Issue of Bonus Shares is the most appropriate measure as this will reduce both dividend per share and the average rate of earning.
- iii. By revising upward the par value of shares in exchange of the existing shares held by them.

**C. Over - Capitalisation V/S Under Capitalisation:** From the above discussion it can be said that both over capitalisation and under capitalisation are not good. However, over capitalisation is more dangerous to the company, shareholders and the society than under capitalisation. The situation of under capitalisation can be handled more easily than the situation of over- capitalisation. Moreover, under capitalisation is not an economic problem but a problem of adjusting capital structure. Thus, under capitalisation should be considered less dangerous but both situations are bad and every company should strive to have a proper capitalization.

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## PROBLEMS

1. Lara Ltd. needs ₹ 12 lakhs for the installation of a new factory which would yield an annual EBIT of ₹ 2,00,000. The company has the objective of maximising the earnings per share. It is considering possibility of issuing equity shares plus raising debt of ₹ 2,00,000, ₹ 6,00,000 or ₹ 10,00,000. The current market price per share is ₹ 40 which is expected to drop to ₹ 25 per share if the market borrowings were to exceed ₹ 7,50,000.

Costs of borrowings are indicated as under:-

Upto	₹ 2,50,000	-	10% p.a.
Between	₹ 2,50,001 and ₹ 6,25,000	-	14% p.a.
Between	₹ 6,25,001 and ₹ 10,00,000	-	16% p.a.

Assuming a tax rate of 35% work out the EPS and the scheme which would meet the objective of the management.

Particulars	Plan A	Plan B	Plan C

2. The existing capital structure of Ash Ltd., is as under

Equity shares of ₹ 100 each	₹ 40,00,000
Retained Earnings	₹ 10,00,000
9 % Preference shares	₹ 25,00,000
7 % Debentures	₹ 25,00,000

The existing rate of return on the company's capital is 12 % and the income tax rate is 35 %  
The company requires a sum of ₹ 25,00,000 to finance its expansion program for which it is considering the following alternatives -

- i. Issue of 20,000 equity shares at a premium of ₹ 25 per share
- ii. Issue of 10% preference shares
- iii. Issue of 8% debentures

It is estimated that the P / E ratios in the cases of Equity, Preference and Debentures financing would be 20,17 and 16 respectively.

Which of the above alternatives would you consider to be the best?

Sr. No.	Particulars	Equity Plan	Preference Plan	Debt Plan

3. Katrina Ltd. plans to expand assets by 50 %. To finance the expansion, it is choosing between a straight 12 percent debt issue and ordinary shares. Its balance sheet and profit and loss account are shown below

**BALANCE SHEET AS ON 31<sup>ST</sup> DECEMBER, 2023**

<b>Liabilities</b>	<b>₹</b>	<b>Assets</b>	<b>₹</b>
11 % Debentures	40,00,000	Total Assets	2,00,00,000
Ordinary share Capital (10,00,000 shares of ₹ 10 each)	1,00,00,000		
Retained Earnings	60,00,000		
<b>Total</b>	<b>2,00,00,000</b>	<b>Total</b>	<b>2,00,00,000</b>

**PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED 31<sup>ST</sup> DECEMBER, 2023**

	<b>₹</b>
Sales	600,00,000
Total costs (excluding interest)	552,23,007
Net income before taxes	47,16,923
Interest on debentures @ 11%	4,40,000
Income before taxes	42,96,923
Taxes @ 35%	14,96,923
Profits after tax	27,80,000
Earnings per share ₹ 27,80,000 / 10,00,000	₹ 2.78
Price / earnings ratio	7.50 times
Market price 7.5 x ₹ 2.78	₹ 20.85

If Katrina Ltd. finances ₹ 1 crore expansion with debt, the rate of the incremental debt will be 12 per cent and the price / earnings ratio of the ordinary shares will be 5 times. If the expansion is financed by equity, the new shares can be sold at ₹ 12 per share and the price / earnings ratio will remain at 7.5 times.

- a. Assuming that net income before interest and taxes (EBIT) is 10% of sales, calculate earnings per share at sales of ₹ 4 crores, ₹ 8 crores and ₹ 10 crores, when financing is with (i) ordinary shares and (ii) debt.
- b. At what level of earnings before interest and taxes (EBIT), after the new capital is acquired; would earnings per share (EPS) be the same whether new funds are raised by issuing ordinary shares or raising debt?
- c. Using the P/E ratio, calculate the market value per share for each sales level for both the debt and the equity financing.

4. Jaya Ltd. has currently an ordinary share capital of ₹ 25 lakhs, consisting of 25,000 shares of ₹ 100/- each. The management is planning to raise another ₹ 20 lakhs to finance a major program of expansion through one of four possible financing plans.

The options are

- i. Entirely through ordinary shares
- ii. ₹ 10 lakhs through ordinary shares and ₹ 10 lakhs through long term borrowings at 8 per cent interest per annum.
- iii. ₹ 5 lakhs through Ordinary shares and ₹ 15 lakhs through long term borrowings at 9 per cent interest per annum.
- iv. ₹ 10 lakhs through Ordinary Shares and ₹ 10 lakhs through preference shares with 5 per cent dividend.
- v. The Company's expected Earnings before interest and Taxes (EBIT) will be ₹ 8 lakhs. Assuming a corporate tax rate of 35 % determine the earnings per share (EPS) in each alternative and suggest the better alternative.

Particulars	Plan i	Plan ii	Plan iii	Plan iv

5. Tanaji Limited provides you with following figures –

	₹
Profit	2,13,846
Less: Interest on Debentures @ 12 %	<u>60,000</u>
	1,53,846
Income Tax @ 35 %	<u>53,846</u>
Profit after tax	1,00,000
Number of Equity shares (of ₹ 10 each)	40,000
EPS (Earnings per shares)	2.50
Ruling price in market	25.00
P.E. Ratio (i.e. Price / EPS)	10.00

The Company has undistributed reserves of ₹ 6,00,000. The company needs ₹ 2,00,000 for expansion. This amount will earn at the same rate as funds already employed. You are informed that a debt-equity ratio

$$= \frac{\text{Debt}}{\text{Debt} + \text{Equity}} \times 100$$

higher than 35 % will push the P/E Ratio down to 8 and raise the interest rate on additional amount borrowed to 14 %.



*You are required to ascertain the probable price of the share.*

- i. If the additional funds are raised as debt; and*
- ii. If the amount is raised by issuing equity shares*

6. K Ltd. is considering three financing plans. The key information is as follows:

- a. Total investment to be raised ₹ 2,00,000.
- b. Plans of Financing Proportion

Plans	Equity	Debt	Preference Shares
A	100%	--	--
B	50%	50%	--
C	50%	--	50%

- c. Cost of debt 8%
- d. Cost of Preference shares 8 %
- e. Tax rate 35 %
- f. Equity shares of the value ₹ 10 each will be issued at a premium of ₹ 10 per share.
- g. Expected PBIT is ₹ 80,000.

Determine for each plan:

1. Earnings per share ( EPS ) and.
2. The financial break even point.
3. Indicate if any of the plans dominate and Compute the PBIT range among the plans for indifference.

Particulars	Plan A	Plan B	Plan C

7. Calculate the P/E ratio from the following

	₹
Equity shares capital (₹ 20 each)	50,00,000
Reserves and surplus	5,00,000
Secured loans at 15 %	25,00,000
Unsecured loans at 12.5 %	10,00,000
Fixed Assets	30,00,000
Investment	5,00,000
Operating Profit	25,00,000
Income - Tax Rate	35%
Market Price / Share	50

<b>Particulars</b>	<b>Amount (₹)</b>

8. Prity Ltd., a widely held company is considering a major expansion of its production facilities and the following alternatives are available:

<b>Alternatives</b>	<b>(₹ in lakhs)</b>		
	<b>A</b>	<b>B</b>	<b>C</b>
Share Capital	50	20	10
14 % Debentures	---	20	15
Loan from a Financial Institution @ 18 % p.a. rate of Interest	---	10	25

Expected rate of return before tax is 25 %. The rate of dividend of the company is not less than 20 %. The company at present has no debt. Corporate taxation 35 %.

Which of the alternatives you would choose?

<b>Sr.No</b>	<b>Particulars</b>	<b>Plan A</b>	<b>Plan B</b>	<b>Plan C</b>

9. The following figures are made available to you :

	₹
Net profits for the year	18,00,000
Less : Interest on secured debentures at 15 % p.a. (debentures were issued 3 months after the commencement of the year)	<u>1,12,500</u>
	16,87,500
Less : Income tax at 35 %	<u>5,90,625</u>
Profits after tax	10,96,875
Number of equity shares (₹ 10 each)	1,00,000
Market quotation of equity share	109.70

The company has accumulated revenue reserves of ₹ 12 lakhs. The company is examining a project calling for an investment obligation of ₹ 10 lakhs: this investment is expected to earn the same rate of return as funds already employed.

You are informed that a debt-equity ratio (Debt divided by debt plus equity) higher than 60 % will cause the price earning ratio to come down by 25 % and the interest rate on additional borrowing will cost company 300 basis points more than on their current borrowing on secured debentures.

You are required to advise the company on the probable price of the equity share, if

- a. the additional investment were to be raised by way of loans; or
- b. the additional investment were to be raised by way of equity.

10. A Company's expected annual net operating income (EBIT) is ₹ 50,000. The company has ₹ 2,00,000 10% debentures. The equity capitalisation rate is 12.5%. Find out the value of the firm and overall capitalisation rate of the firm.

Sr.No	Particulars	Amount (₹)

11. Given, Operating Income (EBIT) = ₹ 50,000.

Cost of Debt = 10%

Outstanding Debt = ₹ 2,00,000.

Overall capitalisation rate = 12.5 %

- What will the total value of firm and the equity capitalisation rate?
- If the firm increases the amount of debt from ₹ 2,00,000 to ₹ 3,00,000 and uses the proceeds of debt to repurchase equity shares, what will be equity capitalisation rate?
- If the firm retires debt of ₹ 1,00,000 by issuing fresh equity shares of same amount, what will be equity capitalisation rate?

Particulars			

12. There are 2 firms P and S, identical in all respects except that firm P has 10% ₹ 500,000 debentures. The EBIT of both firms is ₹ 100,000. The equity capitalisation rate of firm P is slightly higher (16%) than that of S (12.5%). Explain how under M&M approach, an investor holding 10% of shares in company P will be better off in switching his holding to company 'S'.

13. A firm has 20% debt and 80% equity is its capital structure. The cost of debt and cost of equity are assumed to be 10% and 15% respectively. What is the overall cost of capital?

14. Assuming no taxes and given the EBIT, Interest (I) kd 10% and equity capitalisation Rate (Ke), calculate the total market value of each firm and overall capitalisation rate.

<b>Firms</b>	<b>EBIT (₹)</b>	<b>Interest (₹)</b>	<b>Ke</b>
A	200,000	20,000	12%
B	300,000	60,000	16%
C	500,000	200,000	15%
D	600,000	240,000	18%

<b>Particulars</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>

15. Companies A and B are identical in all respects including risk factors except for debt / equity, A having issued 10% debentures of ₹ 18 lakhs while B has issued only equity. Both the companies earn 20% before interest and taxes on their total assets of ₹ 30 lakhs. Assuming a tax rate of 50% and capitalisation rate of 15% for an all equity company, compute the value of companies A and B using (i) net income approach and (ii) net operating income approach.

Particulars	Company A	Company B

16. In considering the most desirable capital structure for a company, the following estimate of the cost of debt and equity capital (after tax) have been made at various levels of debt-equity mix –

Debt as percentage of total Capital Employed	Cost of Debt (%)	Cost of Equity (%)
0	5.0	12.0
10	5.0	12.0
20	5.0	12.5
30	5.5	13.0
40	6.0	14.0
50	6.5	16.0
60	7.0	20.0

You are required to determine the optimum debt-equity mix for the company by calculating composite cost of capital.



17. A firm earns a NOI of ₹ 1,00,000/- . Its  $K_e$  is 10%, and  $k_d$  is 6% and the market value of debt is ₹ 5,00,000/-
- Find the overall cost of capital and value of firm under Net Income Approach.
  - What would be the position if the value of debt is ₹ 7,00,000?
  - Find  $k_o$ ,  $S$ ,  $D$  and  $V$  for the following level of interest costs (i) 10,000 (ii) 20,000 (iii) 30,000 (iv) 50,000 (v) 90,000 (vi) 1,00,000 , where  $K_e=10%$  and  $K_d=5%$ .

Sr.No.	Particulars	Debt – 500,000	Debt – 700,000

18. A firm earns a NOI of ₹ 1,00,000/- . Its  $K_o$  is 10%, debt is ₹ 5,00,000/- and  $k_d$  is 6%.
- Find cost of equity, value of firm under Net Operating Income Approach.
  - Find  $V$  and  $K_e$  if debt is ₹ 7,00,000/-, will your answer differ? Work under NOI theory.
  - Find  $k_e$ ,  $D$ ,  $S$  and  $V$  for the following level of interest costs under NOI approach (i) 10,000 (ii) 20,000 (iii) 25,000 (iv) 35,000 (v) 45,000, where  $K_o = 10\%$  and  $K_d = 5\%$ .

Sr.No.	Particulars	Debt – 500,000	Debt – 700,000

19. R Ltd. presently has ₹ 36,00,000 in debt outstanding bearing an interest rate of 10%. It wishes to finance a ₹ 40,00,000 expansion program and is considering three alternatives: Additional debt at 12% interest, preferred stock with 11% dividend, and the sale of common stock at ₹ 16 per share. The company has 8,00,000 shares of common stock outstanding and is in a 40 % tax bracket.

- (a) If EBIT are presently ₹ 15,00,000, what would be EPS for the three alternatives, assuming no immediate increase in profitability?
- (b) Develop an appropriate indifference chart for these alternatives. What are the approximate indifference points?
- (c) Which alternative do you prefer? How much would EBIT need to increase before the next alternative would be the best?

20. Mayur Ltd. is setting up a project with a capital outlay of ₹ 60,00,000. It has two alternatives in financing the project cost.

Alternative (i): 100% equity finance. Alternative (ii): Debt-equity ratio 2:1

The rate of interest payable on the debts is 18% p.a. The corporate tax rate is 40%. Calculate the indifference point between the two alternative methods of financing.

*EXTRA PAGE.*

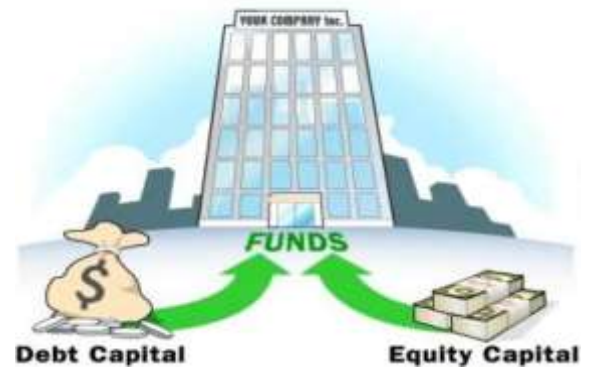
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## 4

## COST OF CAPITAL

**I. DEFINITION OF COST OF CAPITAL**

Cost of capital may be defined as the cut off rate for determining estimated future cash proceeds of a project and eventually deciding whether the project is worth undertaking or not. It is also the minimum rate of return that a firm must earn on its investment which will maintain the market value of share at its current level.



It can be stated as the opportunity cost of an investment, i.e. the rate of return that a company would otherwise be able to earn at the same risk level as the investment that has been selected. It can also be said as the required return necessary to make a capital budgeting project – such as building a new factory – worthwhile. Cost of capital includes the cost of debt and the cost of equity.

The cost of capital determines how a company can raise money may be through a stock issue, borrowing, or a mix of the two. This is the rate of return that a firm would receive if it invested its money someplace else with similar risk.

**II. COST OF DEBT CAPITAL**

Debt has two types of costs: (a) Explicit or Direct Costs and (b) Implicit or Indirect Costs

1. Explicit or Direct Costs refer to the interest rate adjusted for tax savings and the cost of raising funds.
2. Implicit or Indirect Costs refer to the risk associated with debt, reflected in the increase in expectations of equity shareholders and the rise in cost of equity capital.

**COST OF DEBT CAPITAL - denoted as  $K_d$**

Cost of Irredeemable Debt	Cost of Redeemable Debt
$\frac{\text{Interest} \times [100\% - \text{Tax Rate}]}{\text{Net Proceeds of Issue}}$	$\frac{\text{Interest} \times [100\% - \text{Tax Rate}] + [\text{RV} - \text{Net Proceeds}] / N}{[\text{RV} + \text{Net Proceeds}] / 2}$

Where RV = Redeemable value of debt and N = Life of the redeemable Debt.

### III. COST OF PREFERENCE SHARE CAPITAL

Cost of Preference Share Capital (PSC) can be computed as under: (denoted as  $K_p$ )

Cost of Irredeemable PSC	Cost of Redeemable PSC
$\frac{\text{Preference Dividend}}{\text{Net Proceeds of Issue}}$	$\frac{\text{Preference Dividend} + [RV - \text{Net Proceeds}]/N}{[RV + \text{Net Proceeds}] / 2}$

Where  $RV$  = Redeemable value of preference shares and  $N$  = Life of the redeemable preference shares.

### IV. COST OF EQUITY SHARE CAPITAL

Cost of equity capital (denoted by  $K_e$ ) represents the expectations of equity shareholders from a company. 'Based on investors' behaviour and expectations, the cost of equity capital can be determined by any of the following approaches.

**Dividend Price Approach:** Here, cost of equity capital is computed by dividing the current dividend by average market price per share. This dividend price ratio expresses the cost of equity capital in relation to what yield the company should pay to attract investors. However, this method cannot be used to calculate cost of equity of units suffering losses.

$$K_e = \frac{D_1}{P_0}$$

Where,  $K_e$  = Cost of equity

$D_1$  = Next period dividend

$P_0$  = Market value of equity (ex dividend)

This model assumes that dividends are paid at a constant rate to perpetuity. It ignores taxation.

**a. Earning / Price Approach:** The advocates of this approach co-relate the earnings of the company with the market price of its share. Accordingly, the cost of ordinary share capital would be based upon the expected rate of earnings of a company. The argument is that each investor expects a certain amount of earnings, whether distributed or not from the company in whose shares he invests. Thus, if an investor expects that the company in which he is going to subscribe for shares should have at least a 20% rate of earnings, the cost of ordinary share capital can be construed on this basis. Suppose the company is expected to earn 30% the investor will be prepared to pay ₹150 for each share of ₹ 100. This approach is similar to dividend price approach; only it seeks to nullify the effect of changes in the dividend policy. This approach also does not seem to be a complete answer to the problem of determining the cost of ordinary share since it ignores the factor of capital appreciation or depreciation in the market value of shares.

**b. Dividend Price + Growth Approach:** Earnings and dividends do not remain constant and the price of equity shares is also directly influenced by the growth rate in dividends. Where earnings, dividends and equity share price all grow at the same rate, the cost of equity capital may be computed as follows :

$$K_e = (D_1/P) + G$$

Where,

$D_1$  = Next period dividend

$P$  = Market price per share

$G$  = Annual growth rate of earnings of dividend.

### Estimation of Growth Rate

The calculation of 'g' (the growth rate) is an important factor in calculating cost of equity share capital. Generally, two methods are used to determine the growth rate, as discussed below:

$$\text{Current Dividend (DO)} = D_n(1+g)^n$$

$$\text{OR}$$

$$\text{Growth rate} = \sqrt[n]{\frac{DO}{D_n}} - 1$$

Where,

$DO$  = Current dividend,

$D_n$  = Dividend in  $n$  years ago

**Illustration:** A company has paid dividend of ₹ 1 per share (of face value of ₹ 10 each) last year and it is expected to grow @ 10% next year. Calculate the cost of equity if the market price of share is ₹ 55.

**Solution:**

$$K_e = \frac{D_1}{P} + G$$

$$= \frac{1(1+0.10)}{55} + 0.10$$

$$= 0.1202 \text{ (approx.)} = 12.02\% \text{ (Approx.)}$$

**c. Earnings Price + Growth Approach:** This approach is an improvement over the earlier methods. But even this method assumes that dividend will increase at the same rate as earnings, and the equity share price is the regular of this growth as deemed by the investor. However, in actual practice, rate of dividend is recommended by the Board of Directors and shareholders cannot change it.

Thus, rate of growth of dividend subsequently depends on director's attitude. The dividend method should, therefore, be modified by substituting earnings for dividends. So, cost of equity will be given by :



$$K_e = (E/P) + G$$

Where,

$E$  = Current earnings per share

$P$  = Market price per share

$G$  = Annual growth rate of earnings of dividend.

The calculation of 'G' (the growth rate) is an important factor in calculating cost of equity capital. The past trend in earnings and dividends may be used as an approximation to predict the future growth rate if the growth rate of dividend is fairly stable in the past.

- d. Realized Yield Approach:** According to this approach, the average rate of return realized in the past few years is historically regarded as 'expected return' in the future. The yield of equity for the year is :

$$Y_t = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$$

Where,

$Y_t$  = Yield for the year  $t$

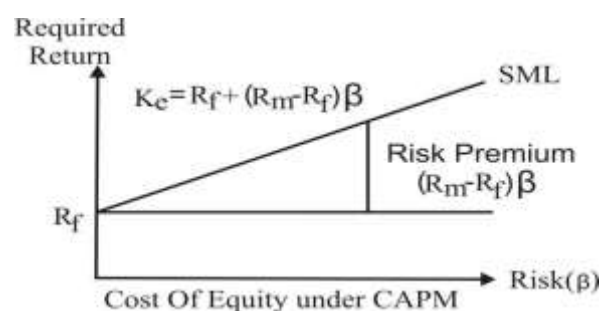
$D_t$  = Dividend for share for end of the year  $t$

$P_t$  = Price per share at the end of the year  $t$

$P_{t-1}$  = Price per share at the beginning of year  $t$ .

Though, this approach provides a single mechanism of calculating cost of equity, it has unrealistic assumptions. If the earnings do not remain stable, this method is not practical.

- e. Capital Asset Pricing Model Approach (CAPM):** This model describes the linear relationship between risk and return for securities. The risk a security is exposed to be **diversifiable** and **non-diversifiable**. The diversifiable risk can be eliminated through a portfolio consisting of large number of well diversified securities. The non-diversifiable risk is assessed in terms of beta coefficient ( $b$  or  $\beta$ ) through fitting regression equation between return of a security and the return on a market portfolio



Thus, the cost of equity capital can be calculated under this approach as :

$$K_e = R_f + b (R_m - R_f)$$

Where,

$K_e$  = Cost of equity capital

$R_f$  = Rate of return on security

$b$  = Beta coefficient

$R_m$  = Rate of return on market portfolio

Therefore, required rate of return = risk free rate + risk premium

The idea behind CAPM is that investors need to be compensated in two ways - time value of money and risk.

The CAPM says that the expected return of a security or a portfolio equals the rate on a risk-free security plus a risk premium. If this expected return does not meet or beat the required return, then the investment should not be undertaken. The capital asset pricing approach is useful in calculating cost of equity, even when the firm is suffering losses.

#### Illustration:

Calculate the cost of equity capital of H Ltd., whose risk free rate of return equals 10%. The firm's beta equals 1.75 and the return on the market portfolio equals to 15%.

#### Solution:

$$K_e = R_f + b (R_m - R_f)$$

$$K_e = 0.10 + 1.75 (0.15 - 0.10)$$

$$= 0.10 + 1.75 (0.05)$$

$$= 0.1875$$

### V. COST OF RETAINED EARNINGS

Cost of Retained Earnings or Reserves are generally taken as the same as Cost of Equity. This is because, if earnings are paid out as dividends without being retained, and simultaneously a rights issue is made, the investors would be subscribing to the issue based on some expected return. This is taken as the indicator of the Cost of Reserves or Retained Earnings

☞ In absence of any information on personal tax ( $t_p$ ):  
Cost of Retained Earnings ( $K_r$ ) = Cost of Equity Shares ( $K_e$ )

☞ If there is any information on personal tax ( $t_p$ ):  $K_s = K_e - t_p$

For the calculation of  $K_e$  :  $P = \text{net proceeds realized} = \text{issue price less floatation cost}$ .  
 But for calculation of  $K_r$  :  $P = \text{current market price}$ . However, sometimes issue price may also be used. The concept of Floatation cost is not used for the calculation of cost of retained earnings.

### VI. COST OF EXTERNAL EQUITY

It means cost of raising fresh equity from the market.

**With growth rate:**

$$K_e = \frac{D_1 + g}{P_0 (1-f)}$$

**Without growth rate:**

$$K_e = \frac{D}{P_0 (1-f)}$$

Where,  $f = \text{floatation cost}$ ,  $g = \text{growth rate}$ ,  $P_0 = \text{current market price}$ .

### VII. EFFECTIVE INTEREST RATE (EIR) METHOD

After the introduction to Effective Interest Rate Method under Ind AS 109, one should be familiar with this concept as well. This concept and the related standard are covered in detail in the subject of Accounting/Financial reporting, a brief and relevant part of it, is stated here for reference only.

**Definition of 'Effective Interest Method':** It is 'the rate that exactly discounts estimated future cash payments or receipts through the expected life of the financial asset or financial liability to the gross carrying amount of a financial asset or to the amortised cost of a financial liability. When calculating the effective interest rate, an entity shall estimate the expected cash flows by considering all the contractual terms of the financial instrument (for example, prepayment, extension, call and similar options) but shall not consider the expected credit losses (ECL). The calculation includes all fees and points paid or received between parties to the contract that are an integral part of the effective interest rate, transaction costs, and all other premiums or discounts. There is a presumption that the cash flows and the expected life of a group of similar financial instruments can be estimated reliably. However, in those rare cases when it is not possible to reliably estimate the cash flows or the expected life of a financial instrument (or group of financial instruments), the entity shall use the contractual cash flows over the full contractual term of the financial instrument (or group of financial instruments).'

**Application of EIR Method:** For floating (variable)-rate financial assets or financial liabilities, periodic re-estimation of cash flows to reflect the movements in the market rates of interest alters the effective interest rate. If the floating (variable) rate financial asset or financial liability is recognized initially at an amount equal to the principal receivable or payable on maturity, re-estimating the future interest payments normally has no significant effect on the carrying amount of the asset or the liability.

*So, depending on Materiality an appropriate approach for amortisation can be determined. If the amount of transaction costs, premiums or discount is not significant the straight line amortisation can be done. If the amounts are significant EIR rate for amortising these amounts may be applied.*

### ***COST OF CAPITAL***

### VIII. WEIGHTED AVERAGE COST OF CAPITAL (WACC)

WACC denotes the Weighted Average Cost of Capital. It is defined as the Overall Cost of Capital computed by reference to the proportion of each component of capital as weights. It is denoted by  $K_o$ .

Hence  $WACC = \text{Sum of [Cost of Individual Components} \times \text{Proportion i:e Capital]}$

The following format may be adopted for computation of WACC:

Component	Amount	Proportion or %	Individual Cost	Multiplication
Debt		$W_1$	$K_d$	$K_d \times W_1$
Preference Capital		$W_2$	$K_p$	$K_p \times W_2$
Retained Earnings		$W_3$	$K_e$	$K_e \times W_3$
Equity Capital		$W_4$	$K_e$	$K_e \times W_4$
Total				$K_o = WACC = \text{Total of above}$

The proportion or percentage of each component of capital may be determined by reference to either book values or market values of capital.

#### IMPORTANT NOTE REGARDING RETAINED EARNINGS IN CASE OF MARKET VALUE WEIGHTS:

#### ADVANTAGES OF MARKET VALUES AS WEIGHTS

- Market values are not affected by accounting policies.
- Market values represents the opportunity cost.
- It represents the present economic value of various sources of finance.
- It is consistent with the definition of cost of capital i.e. the cost of capital is the minimum rate of return needed to maintain the market value of the firm.
- Market value is the true reflection of the firms capital structure.

#### DISADVANTAGES OF MARKET VALUES AS WEIGHT

- Market values are not available in case of unlisted companies.
- It is not reliable when shares are not actively traded (no purchase or sale of share)
- Market price fluctuates frequently and are affected by speculations. (Manipulation of share prices)

**ADVANTAGES OF USING BOOK VALUES AS WEIGHT**

- a. The data is easily available from the Balance sheet data.
- b. Firms set their capital structure in terms of Book weights.
- c. Calculations are simple
- d. Less fluctuations in Book Value.
- e. Useful when market price is not available. (in case of an unlisted company) or when the shares are not actively traded.
- f. Many times the investor use book value weights to do the necessary analysis.

**DISADVANTAGES OF BOOK VALUES AS WEIGHTS**

- a. Affected by accounting policies.
- b. Does not truly represent the opportunity cost of capital.
- c. Does not represent the present economic values of various sources of finance.
- d. Not consistent with the definition of cost of capital.

**CHOICE OF WEIGHTS:**

There is a choice weights between the book value (BV) and market value (MV).

**Book Value (BV):** Book value weights is operationally easy and convenient. While using BV, reserves such as share premium and retained profits are included in the BV of equity, in addition to the nominal value of share capital. Here the value of equity will generally not reflect historic asset values, as well as the future prospects of an organisation.

**Market Value (MV):** Market value weight is more correct and represents a firm's capital structure. It is preferable to use MV weights for the equity. While using MV, reserves such as share premium and retained profits are ignored as they are in effect incorporated into the value of equity. It represents existing conditions and also take into consideration the impacts of changing market conditions and the current prices of various security. Similarly, in case of debt MV is better to be used rather than the BV of the debt, though the difference may not be very significant.

**IX. MARGINAL COST OF CAPITAL**

1. Marginal Cost of Capital is the cost of raising an additional rupee of capital.
2. It is derived when the average cost of capital is computed with marginal weights. The weights represent the proportion of funds the firm intends to employ.
3. When funds are raised in the same proportion as at present and if the component costs remain unchanged, there will be no difference between average cost of capital and marginal cost of capital
4. As the level of Capital Employed increases, the component costs may start increasing. In such a case both the WACC and marginal cost of capital will increase. But marginal cost of capital will rise at a faster rate.

## PROBLEMS

1. Vanilla Enterprises issues ₹ 100 face value preference stock which carries 12 percent dividend and is redeemable after 12 years at par. The net amount realized per preference share is ₹ 95. What is the cost of preference capital?

2. A company is considering raising of funds of about ₹ 100 lakhs by one of two alternative methods, viz. 14% institutional term loan and 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 ₹ 1 lakh.

Advise the company as to the better option based on the effective cost of the capital in each case. Assume a tax rate of 35%.

3. Asaram Ltd. is presently financed entirely by equity shares. The current market value is ₹ 6,00,000. A dividend of ₹ 1,20,000 has just been paid. This level of dividend is expected to be paid indefinitely. The Co. is thinking of investing in a new project involving an outlay of ₹ 5,00,000 now and is expected to generate net cash receipts of ₹ 1,05,000 per annum indefinitely. The project would be financed by issuing ₹ 5,00,000 debentures at the market interest rate of 18%.

Ignoring tax consideration:

- a. Calculate the value of equity shares and the gain made by the shareholders if the cost of equity rises to 21.6%.
- b. Prove that the weighted average cost of capital is not affected by gearing.

<b>Particulars</b>	<b>Amount (₹)</b>

4. Three companies A, B, and C are in the same type of business and hence have similar operating risk. However, the capital structure of each of them is different and the following are the details:

	<b>A ₹</b>	<b>B ₹</b>	<b>C ₹</b>
Equity Share Capital [Face value ₹ 10 per share]	4,00,000	2,50,000	5,00,000
Market value per share	15	20	12
Dividend per share	2.70	4.00	2.88
Debentures [Face value per debenture ₹ 100]	nil	1,00,000	2,50,000
Market value per debenture	--	125	80
Interest Rate	--	10%	8%

Assume that the current levels of dividend are generally expected to continue indefinitely and the income tax rate @ 50%. You are required to compute average cost of capital of each company.



5. A company's share is quoted in market at ₹ 40 currently. A company pays a dividend of ₹ 2 per share and investors expect a growth rate of 10 % per year, compute:
- The company's cost of equity capital.
  - If anticipated growth rate is 11 % p.a. calculate the indicated market price per share.
  - If the company's cost of capital is 16% and anticipated growth rate is 10% p.a., calculate the market price if dividend of ₹ 2 per share is to be maintained.

6. Hrithik Limited has the following book value capital structure :

Equity Share Capital (150 million shares, ₹ 10 par)	1,500 million
Reserves and Surplus	2,250 million
10.5% Preference Share Capital (1 million shares, ₹ 100 par)	100 million
9.5% Debentures (1.5 million debentures, ₹ 1000 par)	1,500 million
8.5% Term Loans from Financial Institutions	500 million

The debentures of Hrithik Limited are redeemable after three years and are quoting at ₹ 981.05 per debenture. The applicable tax rate for the company is 35%.

The current market price per equity share is ₹ 60. The prevailing default risk free interest rate on 10 year. GOI Treasury Bonds is 5.5%. The average market risk premium is 8%. The beta of the company is 1.1875. The preferred stock of the company is redeemable after 5 years is currently selling at ₹ 98.15 per preference share.

**Required:**

- i. Calculate weighted average cost of capital of the company using market value weights.
- ii. Define the marginal cost of capital schedule for the firm if it raises ₹ 750 million for a new project. The firm plans to have a target debt to value ratio of 20%. The beta of new project is 1.4375. The debt capital will be raised through term loans. It will carry interest rate of 9.5% for the first ₹ 100 million and 10% for the next ₹ 50 million.

7. Bachan Ltd., has the following book value capital structure :

Equity Capital (in shares of ₹ 10 each, fully paid up – at par)	15 crores
11% Preference Capital (in shares of ₹ 100 each, fully paid up – at par)	1 crores
Retained Earnings	20 crores
13.5% Debentures (of ₹ 100 each)	10 crores
15% Term Loans	12.5 crores

The next expected dividend on equity shares per share is ₹ 3.60; the dividend per share is expected to grow at the rate of 7%. The market price per share is ₹ 40.

Preference stock, redeemable after ten years, is currently selling at ₹ 75 per share. Debentures, redeemable after six years, are selling at ₹ 80 per debenture.

The income-tax rate for the company is 40%.

**Required:**

Calculate the weighted average cost of capital using:

- Book value proportions; and
- Market value proportions.

8. Xeviers Ltd. presently pays a dividend of ₹ 1.00 per share and has a share price of ₹ 20.00. If this dividend were expected to grow at a rate of 12% per annum forever, what is the firm's expected or required return on equity using a dividend-discount-model approach?

9. JKG Ltd. has the following book-value capital structure as on March 31, 2021.

Equity share capital (2,00,000 shares)	40,00,000
11.5% preference shares	10,00,000
10% debentures	<u>30,00,000</u>
	<b><u>80,00,000</u></b>

The equity share of the company sells for ₹ 20. It is expected that the company will pay next year a dividend of ₹ 2 per equity share, which is expected to grow at 5% p.a. forever. Assume a 35% corporate tax rate.

**Required:**

1. Compute weighted average cost of capital (WACC) of the company based on the existing capital structure.
2. Compute the new WACC, if the company raises an additional ₹ 20 lakhs debt by issuing 12% debentures. This would result in increasing the expected equity dividend to ₹ 2.40 and leave the growth rate unchanged, but the price of equity share will fall to ₹ 16 per share.
3. Comment on the use of weights in the computation of weighted average cost of capital.

10. Avinash Ltd. has made an issue of debentures of ₹ 400 lakhs. Each debenture has a face value of ₹ 100 and carries a rate of interest of 14%. The interest is payable annually and the debenture is redeemable at a premium of 5% after 10 years. Avinash Ltd. realises ₹ 97 per debenture and the corporate tax rate is 50%, what is the cost of debenture?

11. X Ltd. has the following capital structure :

	<b>₹ in lakhs</b>
Equity Capital (10 lakhs shares at par value)	100
12% preference capital (10,000 shares at par value)	10
Retained earnings	120
14% non-convertible debentures (70,000 debentures at par)	70
14% Term loan	<u>100</u>
	<b><u>400</u></b>

The market price per equity share is ₹ 25. The next expected dividend per share (DPS) is ₹ 2.00, and the DPS is expected to grow at a constant rate of 8%. The preference shares are

redeemable after 7 years at par and are currently quoted at ₹ 75 per share in the stock exchange. The debentures are redeemable after 6 years at par and their current market quotation is ₹ 90 per debenture. The tax rate applicable to the firm is 50%. Calculate the weighted average cost of capital using market value.

12. Xeta Ltd. issued 15% debentures, F.V. ₹ 500. The cost of issue works out to 3%. The debentures are repayable after 7 years. The tax rate is 60%. If the difference between the par value and the net amount realised can be amortised evenly over the life of the debentures, what is the cost of debentures to the firm?

13. Senetor Ltd.'s next expected dividend per share is ₹ 2.50, its growth rate is 6%, and the stock currently sells for ₹ 25 per share. Additional equity can be sold to public to net ₹ 21.00 per share.

Calculate

- i. Senetor Ltd.'s floatation cost
- ii. Senetor Ltd.'s cost of external equity

14. X Ltd. has the following capital structure –

	<b>₹ in lakhs</b>
Equity capital (10 lakh shares, ₹ 10 par)	100
Preference capital, 11% (10,000 shares, ₹ 100 par)	10
Retained earnings	120
13.5% Debentures (50,000 debentures, ₹ 100 par)	50
Term loans, 12%	80
	<u>360</u>



The next expected dividend per share is ₹ 1.50. The DPS is expected to grow at the rate of 7%. The market price per share is ₹ 20.00. Preference stock, redeemable after 10 years, is currently selling for ₹ 80.00. The tax rate for the company is 50%. Debentures redeemable after 6 years are selling at ₹ 80 per debenture.

Calculate the average cost of capital, using

- a. Book value proportions, and
- b. Market value proportions

15. The market price per share of Gamma Ltd. is ₹ 20.00. The dividend expected a year hence is ₹ 3.00. the expected rate of dividend growth is 6%. What is the cost of equity capital?

16. The following is the information available on Ashu Ltd.

Net operating income (EBIT)	₹ 50 lakhs
Interest on Debts	₹ 12 lakhs
Cost of Equity	18%
Cost of Debt	12%

What is the average cost of capital of Ashu Ltd.

What happens to the cost of capital of Ashu Ltd., if it employs ₹ 120 lakhs debt to finance a project which earns an operating income of ₹ 40 lakhs.

Assume the "Net Income" method applied and there are no taxes.

Particulars	Case I	Case II

17. Paras Ltd. has the following capital structure which is considered to be optimum as on 31st March, 2023.

	₹
14% Debentures	30,000
11% Preference shares	10,000
Equity shares (10,000 shares)	1,60,000
	<b>2,00,000</b>

The company share has a market price of ₹ 23.60. Next year dividend per share is 50% of year 2023 EPS. The following is the trend of EPS for the preceding 10 years which is expected to continue in future.

Year	EPS (₹)	Year	EPS (₹)
2014	1.00	2019	1.61
2015	1.10	2020	1.77
2016	1.21	2021	1.95
2017	1.33	2022	2.15
2018	1.46	2023	2.36

The company issued new debentures carrying 16% rate of interest and the current market price of debenture is ₹ 96.

Preference share ₹ 9.20 (with annual dividend of ₹ 1.1 per share) were also issued. The company is in 50% tax bracket.

(A) Calculate after tax:

- (i) Cost of new debt
- (ii) Cost of new preference shares
- (iii) New equity share (consuming new equity from retained earnings)

(B) Calculate marginal cost of capital when no new shares are issued.

(C) How much can be spent for capital investment before new ordinary shares must be sold. Assuming that retained earnings for next year's investment are 50 percent of 2023.

(D) What will the marginal cost of capital when the funds exceeds the amount calculated in (C), assuming new equity is issued at ₹ 20 per share?

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18. Using Dividend Growth Model, calculate cost of equity ( $k_e$ ) in the following case:

Equity share capital (shares of ₹10 each)	₹ 2,00,000
Earnings for 2023	₹ 60,000
Current market price per share	₹ 180
Dividends per share:	(₹)
2020	7
2021	8
2022	10
2023	11

19. Calculate the cost of equity capital of Mamon Ltd., whose risk free rate of return equals 10%. The firm's beta equals 1.75 and the return on the market portfolio equals to 15%.

20. From the following information in respect of a company, you are required to calculate the cost of equity using CAPM approach:

- Risk-free rate of return 12%
- Expected market price of equity shares at the year end is ₹ 1,400
- Initial price of investment in equity shares of the company is ₹ 1,200
- Beta risk factor of the company is 0.70
- Expected dividend at the year end is ₹ 140

21. A firm's  $k_e$  (return available to shareholders) is 10%, the average tax rate of shareholders is 50% and it is expected that 2% is brokerage cost that shareholder will have to pay while investing their dividends in alternative securities. What is the cost of retained earnings?

22. AKS Ltd. retains ₹ 10,00,000 out of its current earnings. The expected rate of return to the shareholders, if they had invested the funds elsewhere is 10%. The brokerage is 2% and the shareholders come in 30% tax bracket. Calculate the cost of retained earnings.

23. The following is the capital structure of ABC Ltd. as on 31.12.2023

Sources of Finance	(₹)
Equity Shares: 5,000 shares (of ₹ 100 each)	5,00,000
10% Preference Shares (of ₹ 100 each)	2,00,000
12% Debentures	3,00,000
	10,00,000

The market price of the company's share is ₹ 110 and it is expected that a dividend of ₹ 10 per share would be declared for the year 2023. The dividend growth rate is 6%:

- If the company is in the 40% tax bracket, compute the weighted average cost of capital.
- Assuming that in order to finance an expansion plan, the company intends to borrow a fund of ₹ 5 lakhs bearing 14% rate of interest, what will be the company's revised weighted average cost of capital? This financing decision is expected to increase dividend from ₹ 10 to ₹ 12 per share. However, the market price of equity share is expected to decline from ₹ 110 to ₹ 105 per share.

24. Avon Electricals Ltd wishes to determine the weighted average cost of capital for evaluating capital budgeting projects. You have been supplied with the following information to calculate the value of  $k_0$  for the company:

<b>Balance sheet as on March 31, 2023</b>			
<b>Liabilities</b>	<b>(₹)</b>	<b>Assets</b>	<b>(₹)</b>
Current liabilities	9,00,000	Sundry assets	39,00,000
Debtures	9,00,000		
Preference shares	4,50,000		
Equity shares	12,00,000		
Retained earnings	4,50,000		
	39,00,000		39,00,000

Anticipated external financing information:

- (i) 20 years, 8% Debtures of ₹ 2,500 face value, redeemable at 5 % premium, sold at par, 2% flotation costs.
- (ii) 10 % Preference shares: Sale price ₹ 100 per share, 2% flotation costs.
- (iii) Equity shares: Sale price ₹ 115 per share; flotation costs would be ₹ 5 per share.
- (iv) The corporate tax rate is 35% and expected equity dividend growth is 5% per year. The expected dividend at the end of the current financial year is ₹ 11 per share. Assume that the company is satisfied with its present capital structure and intends to maintain it.



25. RBML is proposing to sell a 5-year bond of ₹ 5,000 at 8 per cent rate of interest per annum. The bond amount will be amortised equally over its life. CALCULATE the bond's present value for an investor if he expects a minimum rate of return of 6 per cent?

26. A company issued 10,000, 15% Convertible debentures of ₹100 each with a maturity period of 5 years. At maturity, the debenture holders will have an option to convert the debentures into equity shares of the company in the ratio of 1:10 (10 shares for each debenture). The current market price of the equity shares is ₹12 each and historically the growth rate of the shares is 5% per annum. Compute the cost of debentures assuming 35% tax rate.

EXTRA PAGE

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## FINANCIAL ANALYSIS AND PLANNING - RATIO ANALYSIS

### 1. FINANCIAL RATIO ANALYSIS

Financial ratios measures relationship expressed in mathematical terms between figures which are connected with each other in significant manner. A ratio is a statistical yardstick that provides a measure of relationship between two financial figures. It is a process of determining, interpreting and presenting numerical relationships of items and group of items in the financial statements.

Ratios are customarily presented in the following forms:

The first is merely a quotient (Current Ratio, Proprietors Funds: Total assets Ratio etc.) Sometimes ratios are also expressed as rates which refer to ratios over a period of time (fixed assets turnover ratio, Inventory turnover ratio etc.) Some ratios are presented by per cent. (Gross Profit Ratio, ROI, etc.)

**“Ratio analysis is a process of analysis of the ratios in such a manner, so that the management can take actions on off standard performances.”**

The process can be segregated into:

- i. Working of Ratios
- ii. Interpretation of Ratios
- iii. Remedial actions on variance with the objective of improvement in efficiency.

#### Financial Ratios for Evaluating Performance:

**a. Liquidity Position:** With the help of ratio analysis one can draw conclusions regarding liquidity position of a firm. The liquidity position of a firm would be satisfactory if it is able to meet its current obligations when they become due. A firm can be said to have the ability to meet its short-term liabilities if it has sufficient liquid funds to pay the interest on its short maturing debt usually within a year as well the principal. This ability is reflected in the liquidity ratios of a firm. The liquidity ratios are particularly useful in credit analysis by banks and other suppliers of short-term loans.

**b. Long-term Solvency:** Ratio analysis is equally useful for assessing the long-term financial viability of a firm. This aspect of the financial position of a borrower is of concern to the long term creditors, security analysts and the present and potential owners of a business. The long term solvency is measured by the leverage

/capital structure and profitability ratios which focus on earning power and operating efficiency. Ratio analysis reveals the strengths and weaknesses of a firm in this respect. The leverage ratios, for instance, will indicate whether a firm has a reasonable proportion of various sources of finance or whether heavily loaded with debt in which case its solvency is exposed to serious strain. Similarly, the various profitability ratios would reveal whether or not the firm is able to offer adequate return to its owners consistent with the risk involved.

- c. **Operating Efficiency:** Ratio analysis throws light on the degree of efficiency in the management and utilisation of its assets. The various activity ratios measure this kind of operational efficiency. In fact, the solvency of a firm is, in the ultimate analysis, dependent upon the sales revenues generated by the use of its assets – total as well as its components.
- d. **Overall Profitability:** Unlike the outside parties which are interested in one aspect of the financial position of a firm, the management is constantly concerned about the overall profitability of the enterprise. That is, they are concerned about the ability of the firm to meet its short-term as well as long-term obligations to its creditors, to ensure a reasonable return to its owners and secure optimum utilisation of the assets of the firm. This is possible if an integrated view is taken and all the ratios are considered together.
- e. **Inter-firm Comparison:** Ratio analysis not only throws light on the financial position of a firm but also serves as a stepping stone to remedial measures. This is made possible due to inter-firm comparison / comparison with industry averages. A single figure of particular ratio is meaningless unless it is related to some standard or norm. One of the popular techniques is to compare the ratios of a firm with the industry average. It should be reasonably expected that the performance of a firm should be in broad conformity with that of the industry to which it belongs. An inter-firm comparison would demonstrate the relative position vis-à-vis its competitors. If the results are at variance either with the industry average or with those of the competitors, the firm can seek to identify the probable reasons and, in the light, take remedial measures.

Ratios not only perform post mortem of operations, but also serve as barometer for future. Ratios have predictory value and they are very helpful in forecasting and planning the business activities for a future. It helps in budgeting. Conclusions

are drawn on the basis of the analysis obtained by using ratio analysis. The decisions affected may be whether to supply goods on credit to a concern, whether bank loans will be made available, etc.

*f. Financial Ratios for Budgeting:* In this field ratios are able to provide a great deal of assistance, budget is only an estimate of future activity based on past experience, in the making of which the relationship between different spheres of activities are invaluable. It is usually possible to estimate budgeted figures using financial ratios. Ratios also can be made use of for measuring actual performance with budgeted estimates. They indicate directions in which adjustments should be made either in the budget or in performance to bring them closer to each other.

## II. USERS AND OBJECTIVE OF FINANCIAL ANALYSIS:

Sr. No.	Users	Objectives	Ratios used in general
1.	Shareholders	Being owners of the organisation they are interested to know about profitability and growth of the organization	✓ Mainly Profitability Ratio [In particular Earning per share (EPS), Dividend per share (DPS), Price Earnings (P/E), Dividend Payout ratio (DP)]
2.	Investors	They are interested to know overall financial health of the organisation particularly future perspective of the organisations.	✓ Profitability Ratios ✓ Capital structure Ratios ✓ Solvency Ratios ✓ Turnover Ratios
3.	Lenders	They will keep an eye on the safety perspective of their money lend to the organisation	✓ Coverage Ratios ✓ Solvency Ratios ✓ Turnover Ratios ✓ Profitability Ratios
4.	Creditors	They are interested to know liability position of the organisation particularly in short term. Creditors would like to know whether the organisation will be able to pay the amount on due date.	✓ Liquidity Ratios ✓ Short term solvency Ratios/ Liquidity Ratios
5.	Employees	They will be interested to know the overall financial wealth of the organisation and compare it with competitor company.	✓ Liquidity Ratios ✓ Long terms solvency Ratios ✓ Profitability Ratios ✓ Return of investment

6.	Regulator / Government	They will analyse the financial statements to determine taxations and other details payable to the government.	✓ Profitability Ratios
7.	Managers:- a) Production Managers  b) Sales Managers  c) Financial Manager  d) Chief Executives/ General Manager	They are interested to know various data relating to input output, production quantities etc.  Data related to quantities of sales for various years, other associated figures and produced future sales figure will be an area of interest for them  They are interested to know various ratios for their future predictions of financial requirement.  They will try to find the entire perspective of the company, starting from Sales, Finance, Inventory, Human resources, Production etc.	✓ Input output Ratio ✓ Raw material consumption.  ✓ Turnover ratios (basically receivable turnover ratio) ✓ Expenses Ratios  ✓ Profitability Ratios (particularly related to Return on investment) ✓ Turnover ratios ✓ Capital Structure Ratios  ✓ All Ratios
8.	Different Industry		
	a) Telecom	Finance Manager /Analyst will calculate ratios of their company and compare it with Industry norms.	✓ Ratio related to 'call' ✓ Revenue and expenses per customer
	b) Bank		✓ Loan to deposit Ratios ✓ Operating expenses and income ratios
	c) Hotel		✓ Room occupancy ratio ✓ Bed occupancy Ratios
	d) Transport		✓ Passenger -kilometer ✓ Operating cost - per passenger kilometer.

### III. FINANCIAL ANALYSIS

It may be of two types: - Horizontal and vertical:

- a) **Horizontal Analysis (Intra Company):** When financial statement of one year of are analysed and interpreted after comparing with another year or years, it is known as horizontal analysis. It can be based on the ratios derived from the financial information over the same time span.
- b) **Vertical Analysis (Inter Company):** When financial statement of single year is analyzed then it is called vertical analysis. This analysis is useful in inter firm comparison. Every item of Profit and loss account is expressed as a percentage of gross sales, while every item on a balance sheet is expressed as a percentage of total assets held by the firm.

#### CLASSIFICATION:

Ratios may be classified on the following basis leading to somewhat overlapping categories:

#### 1. Classification according to the statement from which ratios are derived -

- a. Balance - Sheet Ratios
- b. Revenue Statement Ratios
- c. Inter-Statement or combined Ratios

#### 2. Classification according to Importance -

- a. Primary Ratios
- b. Secondary Ratios

#### 3. Functional Classification -

- 3.1 Liquidity ratios
- 3.2 Capital structure ratios
- 3.3 Coverage ratios
- 3.4 Activity/ Efficiency/ Performance/ Turnover ratios
- 3.5 Profitability ratios
- 3.6 Expense ratios
- 3.7 Profitability ratios related to overall Return on Assets/ Investments
- 3.8 Profitability ratios required for Analysis from Owner's point of view
- 3.9 Profitability ratios related to market/ valuation/ Investors
- 3.10 Other ratios

**ANALYSIS:****3-1 Liquidity Ratios :**

- a. Current Ratio
- b. Quick Ratio
- c. Cash Ratio
- d. Basic Defence/ Interval Ratio
- e. Net Working Capital Ratio

**3-3 Coverage Ratio :**

- a. Debt Service Coverage Ratio (DSCR)
- b. Interest Coverage Ratio
- c. Preference Dividend Coverage ratio
- d. Fixed Charges Coverage Ratio

**3-5 Profitability Ratios based on sales :**

- a. Gross Profit ratio
- b. Net Profit ratio
- c. Operating Profit ratio

**3-7 Profitability Ratio related to Overall Return on Assets / Investments:**

- a. Return On Investment (ROI)
- b. Return on Assets (ROA)
- c. Return on Capital Employed ROCE (Pre-Tax)
- d. Return on Capital Employed ROCE (Post-Tax)
- e. Return on Equity (ROE)

**3-9 Profitability Ratio Required for Analysis from Owner's point of view**

- a. Earnings per Share (EPS)
- b. Dividend per Share (DPS)
- c. Dividend Payout Ratio (DP)

**3-2 Capital Structure Ratios**

- a. Equity Ratio
- b. Debt Ratio
- c. Debt to Equity Ratio
- d. Debt to Total Assets Ratio
- e. Capital Gearing Ratio
- f. Proprietary Ratio

**3-4 Activity Ratio /Efficiency Ratio/ Performance Ratio/ Turnover ratio :**

- a. Total Assets Turnover Ratio
- b. Fixed Assets Turnover Ratio
- c. Capital Turnover Ratio
- d. Working Capital Turnover Ratio
- e. Inventory Turnover Ratio
- f. Debtors Turnover Ratio
- g. Receivables (Debtor's) Velocity
- h. Payable Turnover Ratio

**3-6 Expenses Ratio**

- a. Cost of Goods Sold (COGS Ratio)
- b. Operating Expenses Ratio
- c. Operating Ratio
- d. Financial Expenses Ratio

**3-8 Profitability Ratio Required related to market / valuation/ Investors:**

- a. Price Earning Per Share (P/ERatio)
- b. Dividend Yield
- c. Earnings Yield
- d. Market Value /Book Value per Share
- e. Q Ratio

**3-10 Other ratio:**

- a. Appropriation ratios



### 3.1 LIQUIDITY RATIO:

Liquidity or Short term solvency means ability of the business to pay its short term liabilities. Inability to pay-off short term liabilities affects its creditability as well as its credit rating. Continuous default on the part of the business leads to bankruptcy. Eventually bankruptcy leads to sickness and liquidation. Cash position ratios may be supplemented for liquidity appraisal.

Sr. No.	Ratio	Formula	Significance
1	Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	<ul style="list-style-type: none"> <li>☞ Indication of availability of Current Assets to pay off Current liabilities.</li> <li>☞ Higher the ratio, better the coverage</li> <li>☞ 2 : 1 ratio is treated as standard ratio</li> <li>☞ The ratio is also called as 'Working Capital' or 'Solvency Ratio'.</li> </ul>
2	Liquid Ratio or Quick Ratio	$\frac{\text{Quick Assets}}{\text{Current Liabilities}}$	<ul style="list-style-type: none"> <li>☞ Indication of availability of quick assets to honour its immediate claims</li> <li>☞ Higher the ratio, better the coverage</li> <li>☞ 1 : 1 ratio is treated as standard ratio</li> <li>☞ The ratio is also known as 'Acid Test Ratio'</li> <li>☞ The ratio is also calculated as: <math display="block">\frac{\text{Quick Assets}}{\text{Quick Liabilities}}</math></li> </ul>
3	Absolute Liquidity/ Cash Ratio	$\frac{\text{Cash and Bank Balance} + \text{Marketable Securities}}{\text{Current Liabilities}}$	<ul style="list-style-type: none"> <li>☞ Indication of ready cash available to meet current liabilities</li> <li>Higher ratio indicates better liquidity position</li> </ul>
4	Basic Defence/ Interval Ratio	$\frac{\text{Cash and Bank Balance} + \text{Marketable Securities}}{\text{Operating expenses/no. of days}}$	<ul style="list-style-type: none"> <li>☞ It measures the ability of firm to meet regular cash expenditures with the available cash.</li> </ul>
5	Net Working Capital Ratio	$\text{Current Assets} - \text{Current Liabilities}$	<ul style="list-style-type: none"> <li>☞ Indication of short term liquidity position of business.</li> </ul>

- 1 *Current Assets = Inventories + Trade receivables + Cash and Bank Balances + Marketable Securities + Advances to Material Suppliers + Prepaid Expenses + Advance Income tax (in excess of provision)*
- 2 *Current Liabilities = Trade Creditors + Creditors for Services + Short term loans + Bank overdraft / Cash credit + outstanding Expenses + Provision for taxation (net of advance tax) + Proposed dividend + Unclaimed dividend*
- 3 *Quick Assets = Current Assets - Inventories - Prepaid expenses*
- 4 *Quick Liabilities = Current Liabilities - Bank overdraft - cash credit from Bank.*

### 3.2 CAPITAL STRUCTURE RATIO:

Capital structure ratios provide an insight into financial techniques used by business and focus on the long term solvency position.

Sr No.	Ratio	Formula	Significance
1	Equity Ratio	$\frac{\text{Shareholder's Equity}}{\text{Capital Employed}}$	☞ It indicates the composition of shareholder's funds in capital employed.
2	Debt Ratio	$\frac{\text{Debt}}{\text{Capital Employed}}$	☞ It indicates the composition of outside liabilities in total capital employed.
3	Debt to equity Ratio	$\frac{\text{Debt}}{\text{Shareholder's Equity}}$	<ul style="list-style-type: none"> <li>☞ The ratio is useful for deciding upon the capital structure</li> <li>☞ Lenders judge the standard borrowing capacity by normally considering the ratio as 2 : 1.</li> <li>☞ Lending institutions nowadays set their own norms considering the capital intensity and other factors.</li> <li>☞ Indicator of financial leverage.</li> </ul>
4	Debt to Total Assets Ratio	$\frac{\text{Debt}}{\text{Total Assets}}$	☞ It measures how much of the total assets is financed by debt
5	Capital Gearing Ratio	$\frac{\text{Preference Share Capital + Debentures + Other Borrowed Funds}}{\text{Equity Share Capital + Reserves \& Surplus - Losses}}$	<ul style="list-style-type: none"> <li>☞ The ratio is useful to show the proportion of fixed interest (dividend) bearing capital to funds belonging to equity shareholders</li> <li>☞ The ratio is complementary to financial leverage</li> </ul>

<b>6</b>	Proprietary Ratio	Proprietary Fund Total Assets	<ul style="list-style-type: none"> <li>☞ The ratio indicates proprietor's stake in total assets. Higher the ratio, lower the risk</li> <li>☞ The ratio is similar to Equity Ratio)</li> <li>☞ Debt Equity Ratio and Current ratio affects the proprietary ratio.</li> </ul>
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**Note:**

Proprietary Funds = Eq. Share Capital + Pref. Share Capital + R & S - losses and fictitious assets

**3.3 COVERAGE RATIO:**

Financial institutions are interested in Debt Service Coverage to judge firm's ability to pay off current interest and instalments

	Ratio	Formula	Significance
<b>1</b>	Debt Service Coverage Ratio or (DSCR)	$\frac{\text{Earnings available for debt service}}{\text{Interest + Principle Instalments}}$	<ul style="list-style-type: none"> <li>☞ Ratio of 1.6 is treated by financial institutions as satisfactory ratio</li> <li>☞ Financial Institutions lend money even with lower Debt Service ratio in case of core / Infrastructural Projects.</li> </ul>
<b>2</b>	Interest Coverage Ratio	$\frac{\text{EBIT}}{\text{Interest}}$	<ul style="list-style-type: none"> <li>☞ The ratio indicates adequacy of profit to cover interest</li> <li>☞ Higher the ratio, more security to the lender</li> </ul>
<b>3</b>	Preference Dividend coverage Ratio	$\frac{\text{Net Profit / Earning after taxes (EAT)}}{\text{Preference Dividend liability}}$	<ul style="list-style-type: none"> <li>☞ The ratio indicates adequacy of profit to cover preference dividend.</li> <li>☞ Higher the ratio, more security to the Preference shareholders.</li> </ul>
<b>4</b>	Fixed Charges Coverage Ratio	$\frac{\text{EBIT + Depreciation}}{\text{Interest} + \frac{\text{Repayment of loan}}{1 - \text{tax rate}}}$	<ul style="list-style-type: none"> <li>☞ The ratio indicates adequacy of profit to cover fixed commitments of a company.</li> </ul>

Earnings available for debt service = Net Profit after taxation + Non Cash operating expenses like depreciation and other amortisations + Non-operating adjustments + Interest on long term loans.

## 3.4 ACTIVITY RATIO/ EFFICIENCY RATIO /PERFORMANCE RATIO/ TURNOVER RATIO:

Sr. No.	Ratio	Formula	Significance
1	Total Asset Turnover Ratio	$\frac{\text{Sales / COGS}}{\text{Total Assets(Average)}}$	<ul style="list-style-type: none"> <li>Indicator of utilisation of Total assets</li> <li>In case of significant change, take 'Average Total Assets' available for use.</li> </ul>
2	Fixed Assets Turnover Ratio	$\frac{\text{Sales / COGS}}{\text{Fixed Assets (Average)}}$	<ul style="list-style-type: none"> <li>Indicator of utilisation of fixed assets</li> <li>In case of significant change, take 'Average Fixed Assets' available for use.</li> </ul>
3	Capital Turnover Ratio	$\frac{\text{Sales / COGS}}{\text{Capital Employed}}$	Indicator of utilisation of capital employed
4	Current Asset Turnover Ratio	$\frac{\text{Sales / COGS}}{\text{Current Assets}}$	Higher Ratio means better utilization of current Assets
5	Working Turnover Ratio	$\frac{\text{Sales}}{\text{Net Working Capital}}$	In case of significant change, take 'Average Working Capital' employed
6	Inventory (FG) Turnover Ratio	$\frac{\text{Sales / Cost of Goods Sold}}{\text{Average Inventory (FG)}}$	<ul style="list-style-type: none"> <li>Stock holding ratio can be calculated as :  <math display="block">\frac{\text{Average Inventory}}{\text{Average daily or monthly cost of sales}}</math> </li> </ul>
	Inventory (RM) Turnover Ratio	$\frac{\text{RM Consumed}}{\text{Average Inventory (RM)}}$	<ul style="list-style-type: none"> <li>Average Inventory =  <math display="block">\frac{\text{Opening Inventory + Closing Inventory}}{2}</math> </li> </ul>
7	Debtors Turnover Ratio	$\frac{\text{Credit Sales}}{\text{Average Account Receivable}}$	<ul style="list-style-type: none"> <li>Accounts Receivable = Sundry Debtors + Bills Receivable</li> <li>Bills discounted / endorsed not appearing in the Balance Sheet requires adjustment</li> </ul>
8	Receivable (Debtors) Velocity	$\frac{\text{Average Accounts Receivable}}{\text{Average Daily Credit Sales}}$	More the velocity, better the management.
9	Payables Turnover Ratio	$\frac{\text{Credit Purchases}}{\text{Average Accounts Payables}}$	Lesser the velocity, better the management.

10	Payable Velocity/Average Payment Period	$\frac{\text{Average Accounts Payables}}{\text{Average Daily Credit Purchase}}$	☞ Lesser the velocity, better the management.
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### 3.5 PROFITABILITY RATIOS BASED ON SALES:

	Ratio	Formula	Significance
1	Gross Profit Ratio	$\frac{\text{Gross Profit}}{\text{Sales}} \times 100$	☞ Indication of gross margin available on ₹ 100 Sales ☞ Changes in price level or efficiency affects the ratio
2	Net Profit Ratio	$\frac{\text{Net Profit}}{\text{Sales}} \times 100$	☞ Indication of net margin of profit available on ₹ 100 Sales. ☞ Sales (Gross or net) should be interpreted consistently
3	Operating Profit Ratio	$\frac{\text{Operating Profit}}{\text{Sales}} \times 100$	☞ Indication of operating profit margin available on ₹ 100 Sales.

### 3.6 EXPENSES RATIO:

	Ratio	Formula	Significance
1	Cost of Goods Sold(COGS) Ratio	$\frac{\text{COGS}}{\text{Sales}} \times 100$	☞ Indication of COGS as proportion of sales
2	Operating Expenses Ratio	$\frac{\text{Administrative Expenses} + \text{Selling \& Distribution Overheads}}{\text{Sales}} \times 100$	☞ Indication of Indirect Expenses as proportion of sales
3	Operating Ratio	$\frac{\text{COGS} + \text{Operating Expenses}}{\text{Sales}} \times 100$	☞ Indication of Direct & Indirect Cost of Operation as proportion of sales
4	Financial Expenses Ratio	$\frac{\text{Financial Expenses}}{\text{Sales}} \times 100$	☞ Indication of Financial Expenses as proportion of sales

### 3.7 PROFITABILITY RATIO RELATED TO OVERALL RETURN ON ASSETS / INVESTMENTS:

	Ratio	Formula	Significance
1	Return on Investment (ROI)	$\frac{\text{Return / Profit / Earnings}}{\text{Investments}} \times 100$	☞ Covered in detail Below
2	Return On Assets (ROA)	$\frac{\text{Net Profit after taxes}}{\text{Average total assets}} \times 100$	

3	Return on Capital Employed ROCE (Pre-tax)	$\frac{\text{EBIT}}{\text{Capital Employed}} \times 100$	
4	Return on Capital Employed ROCE (Post-tax)	$\frac{\text{EBIT (1-t)}}{\text{Capital Employed}} \times 100$	
5	Return on Equity (ROE)	$\frac{\text{Net Profit after taxes - Preference dividend}}{\text{Equity Shareholder's Fund}} \times 100$	

Return on Investment (ROI) is the basic profitability ratio. It is an indicator of overall efficiency.

$$= \frac{\text{Net Operating Profit}}{\text{Capital employed}} \times 100$$

Net operating Profit =

	₹
Net Profit as per Profit and Loss Account	...
Add back -1. Interest on Long term loans and Debentures	...
2. Non operating and Abnormal Expenses and losses	...
3. Provision for taxation *	...
	...
Deduct-Non operating and Abnormal Incomes and gains	...
<b>Net Operating Profit</b>	... ===

\* It is also a practice to calculate ROI, after considering Provision for tax. In that case Provision for tax will not be added back.

Capital Employed :	₹
Equity Share Capital	...
Preference Share Capital	...
Reserves and Surplus	...
Debentures and other long term loans	...
Less : 1. Miscellaneous expenditure and losses	...
2. Non Trade Investments	...
<b>Capital Employed</b>	.... ===

**Note :**

1. Intangible assets having no physical existence like goodwill, patents and trademarks should be included in the capital employed. But no fictitious assets should be indicated within Capital Employed.

2. It is more appropriate to work out the ratio on the basis of 'Average Capital Employed' during the year.
3. ROI may be calculated on the basis of shareholders capital employed -

$$= \frac{\text{Earnings available to Shareholders}}{\text{Shareholders Capital Employed}} \times 100$$

One may also calculate ROI on the basis of equity shareholders capital employed

$$= \frac{\text{Earnings available to Equity Shareholders}}{\text{Equity Shareholders Capital Employed}} \times 100$$

ROI = Net Profit to Sales Ratio  $\times$  capital Turnover Ratio

$$= \frac{\text{Net Operating Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital Employed}} \times 100$$

### Return on Equity (ROE):

Return on Equity measures the profitability of equity funds invested in the firm. This ratio reveals how profitability of the owners' funds have been utilised by the firm. This ratio is computed as :

$$\text{ROE} = \frac{\text{Profit after tax}}{\text{Net worth}}$$

Return on equity is one of the most important indicators of a firm's profitability and potential growth. Companies that boast a high return on equity with little or no debt are able to grow without large capital expenditures, allowing the owners of the business to withdraw cash and reinvest it elsewhere. Many investors fail to realize, however, that two companies can have the same return on equity, yet one can be a much better business.

For that reason, a finance executive at E.I. Du Pont de Nemours and Co., of Wilmington, Delaware, created the DuPont system of financial analysis in 1919. That system is used around the world today and serves as the basis of components that make up return on equity.

### Composition of Return on Equity using the DuPont Model

There are three components in the calculation of return on equity using the traditional DuPont model- the net profit margin, asset turnover, and the equity multiplier. By examining each input individually, the sources of a company's return on equity can be discovered and compared to its competitors.

**i. Net Profit Margin:** The net profit margin is simply the after-tax profit a company generates for each rupee of revenue. Net profit margins vary across industries, making it important to compare a potential investment against its competitors. Although the general rule-of-thumb is that a higher net profit margin is preferable, it is not uncommon for management to purposely lower the net profit margin in a bid to attract higher sales.

$$\text{Net profit margin} = \text{Net Income} \div \text{Revenue}$$

Net profit margin is a safety cushion; the lower the margin, the less room for error. A business with 1% margins has no room for flawed execution. Small miscalculations on management's part could lead to tremendous losses with little or no warning.

**ii. Asset Turnover:** The asset turnover ratio is a measure of how effectively a company converts its assets into sales. It is calculated as follows :

$$\text{Asset Turnover} = \text{Revenue} \div \text{Assets}$$

The asset turnover ratio tends to be inversely related to the net profit margin; i.e. the higher the net profit margin, the lower the asset turnover. The result is that the investor can compare companies using different models (low-profit, high-volume vs. high-profit, low-volume) and determine which one is the more attractive business.

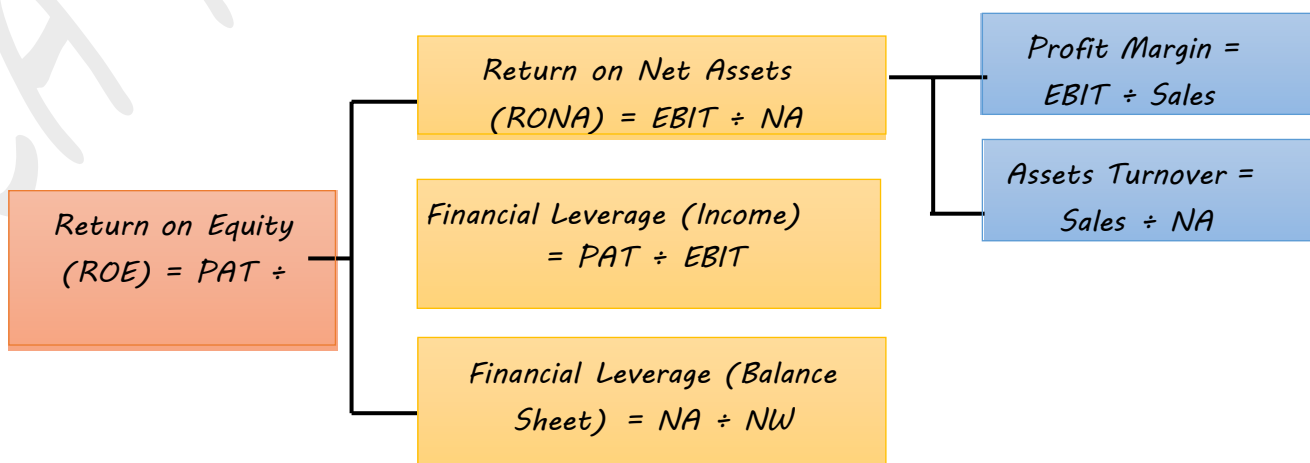
**iii. Equity Multiplier:** It is possible for a company with terrible sales and margins to take on excessive debt and artificially increased its return on equity. The equity multiplier, a measure of financial leverage, allows the investor to see what portion of the return on equity is the result of debt. The equity multiplier is calculated as follows :

$$\text{Equity Multiplier} = \frac{\text{Investments or Assets or Capital}}{\text{Shareholder's Equity}}$$

### Calculation of Return on Equity

To calculate the return on equity using the DuPont model, simply multiply the three components (net profit margin, asset turnover, and equity multiplier).

$$\text{Return on Equity} = (\text{Net Profit Margin}) (\text{Asset Turnover}) (\text{Equity Multiplier})$$



Du Pont Chart



**Illustration 1**

XYZ Company's details are as under:

Revenue: ₹ 29,261; Net Income: ₹ 4,212; Assets: ₹ 27,987; Shareholders' Equity: ₹ 13,572. Calculate return on equity.

**Solution:**

Net Profit Margin = Net Income (₹ 4,212) ÷ Revenue (₹ 29,261) = 0.1439, or 14.39%

Asset Turnover = Revenue (₹ 29,261) ÷ Assets (₹ 27,987) = 1.0455

Equity Multiplier = Assets (₹ 27,987) ÷ Shareholders' Equity (₹ 13,572) = 2.0621

Finally, we multiply the three components together to calculate the return on equity:

Return on Equity = (0.1439) × (1.0455) × (2.0621) = 0.3102, or 31.02%

Analysis: A 31.02% return on equity is good in any industry. Yet, if you were to leave out the equity multiplier to see how much company would earn if it were completely debt-free, you will see that the ROE drops to 15.04%. In other words, for fiscal year 2004, 15.04% of the return on equity was due to profit margins and sales, while 15.96% was due to returns earned on the debt at work in the business. If you found a company at a comparable valuation with the same return on equity yet a higher percentage arose from internally-generated sales, it would be more attractive.

**3.8 PROFITABILITY RATIO REQUIRED FOR ANALYSIS FROM OWNERS POINT OF VIEW:**

	Ratio	Formula	Significance
1	Earning Per Share (EPS)	$\frac{\text{Net Profit available to Equity shareholders}}{\text{Number of Equity share Outstanding}}$	<ul style="list-style-type: none"> <li>☞ If shares are not of same paid up value - EPS = Earnings available to Equity Shareholder No. of Equivalent Shares</li> <li>☞ EPS is the measure to relate the return to equity shareholders. Dividend per share (DPS) is also measured side by side. But dividend decision is outcome of many other considerations.</li> <li>☞ Stock exchange prices fluctuates on the basis of EPS.</li> </ul>
2	Dividend per Share	$\frac{\text{Dividend paid to equity Shareholders}}{\text{Number of Equity share Outstanding}}$	☞ It is the proportion of Profit distributed per equity share.

3	Dividend Pay-out Ratio (DP)	$\frac{\text{Dividend per equity share}}{\text{Earnings per Share (EPS)}}$	☞ Indication of distribution of profit as per cent of Earning
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### 3.9 PROFITABILITY RATIO RELATED TO MARKET / VALUATION / INVESTORS:

	Ratio	Formula	Significance
1	Price-Earnings per Share (P/E Ratio)	$\frac{\text{Market Price per Share (MPS)}}{\text{Earnings per Share (EPS)}}$	<ul style="list-style-type: none"> <li>☞ Indication of payback period to the investor</li> <li>☞ Price Earnings Ratio may be calculated on the basis of DPS side by side. But since dividend decision is outcome of many other considerations, it is not a proper measure.</li> <li>☞ One may calculate Earning price ratio</li> <li>☞ = EPS / Average Equity Share Price.</li> </ul>
2	Dividend Yield	$\frac{\text{Dividend + Change in share price}}{\text{Initial Share Price Or Dividend per Share (DPS)}}$ Market Price per Share (MPS)	☞ It relates Dividend paid to the market price of the shares
3	Earning Yield	$\frac{\text{Earnings per Share (EPS)}}{\text{Market Price per Share (MPS)}} \times 100$	<ul style="list-style-type: none"> <li>☞ It relates Earning per share to the market price of the shares.</li> <li>☞ It is inverse of P/E ratio.</li> </ul>
4	Market Value / Book Value per Share	$\frac{\text{Market value per Share}}{\text{Book value per share}}$	☞ It indicates Market response of the shareholders investment.
5	Q Ratio	$\frac{\text{Market Value of equity and Liabilities}}{\text{Estimated replacement cost of assets}}$	☞ It measures market value of Equity share as well as debt in comparison to all assets at their replacement cost.

**3.10 OTHER RATIOS:** Apart from the financial ratios, some other ratios may also be computed to supplement the ratios covered earlier.

Sr. No.	Ratio	Formula	Significance
1	Appropriation Ratios	$\frac{\text{Interest}}{\text{EBIT}} \times 100$ $\frac{\text{Tax}}{\text{EBIT}} \times 100$ $\frac{\text{Pref. Dividend}}{\text{EBIT}} \times 100$ $\frac{\text{Transfer to dividend Equalisation Fund}}{\text{EBIT}}$ $\frac{\text{Retained Earnings (out of current profits)}}{\text{EBIT}}$ $\frac{\text{Equity Dividend}}{\text{EBIT}}$	☞ Indication of Disposal or appropriation of Income. These ratios are usually calculated with reference to EBIT.

#### LIMITATIONS OF FINANCIAL RATIOS:

1. The primary data on which ratios are based must be absolutely reliable and non manipulated.
2. Differences in accounting policies, interpretation of financial terms and accounting periods make accounting data of two firms non-comparable as also the accounting ratios. Adjustments are necessary to sort out such differences.
3. There is no standard set of ratios.
4. Seasonal factors may influence financial data (i.e. resorting to favourable year-end adjustments)
5. Window dressing can change the character of financial ratios.
6. In case of diversified product lines aggregate data cannot be used for inter-firm comparisons.
7. Financial data are badly distorted by inflation.
8. Financial ratios are inter-related, not independent. Viewed in isolation may lead to erroneous conclusions. Such inter dependence among the ratios can be taken care of through multi-variate analysis.
9. Timely ratio analysis provides clues but not conclusions. These are tools in the hands of experts for their own interpretations.

## PROBLEMS

1. On the basis of the following figures derived from the accounts of a company, prepare a report on the level of efficiency of financial and operational management of the company –

Year	Capital Turnover Ratio	Net Profit % on sale	ROI %	Current Ratio
1	1.0	8.0%	8.0%	6.0
2	2.0	10.0%	20.0%	4.0
3	3.0	11.5%	34.5%	2.0
4	5.0	13.0%	65.0%	0.5

2. The following are the summarised profit and loss account of the Salman Ltd., for the year ending 31.12.2023 and the Balance Sheet as on that date –

**Trading, Profit and Loss Account**

	₹		₹
To Opening stock	99,500	By Sales	8,50,000
To Purchases	5,45,250	By Closing Stock	1,49,000
To Incidental expenses	14,250		
To Gross Profit	3,40,000		
<b>Total</b>	<b>9,99,000</b>	<b>Total</b>	<b>9,99,000</b>
To Operating Expenses –		By Gross Profit	3,40,000
Selling & Distribution     30,000		By Non-operating Income	
Administration           1,50,000		Interest                     3,000	
Finance                     15,000	1,95,000	Profit on sale of shares   6,000	9,000
To Non-operating expenses			
Loss on sale of assets	4,000		
To Net Profit	1,50,000		
<b>Total</b>	<b>3,49,000</b>	<b>Total</b>	<b>3,49,000</b>

**Balance Sheet**

<b>Liabilities</b>	₹	<b>Assets</b>	₹
Issued Capital :		Land & Building	1,50,000
2,000 Equity shares of ₹ 100 each	2,00,000	Plant & Machinery	80,000
Reserves	90,000	Stock-in-trade	1,49,000
Current Liabilities	1,30,000	Sundry Debtors	71,000
Profit and Loss A/c.	60,000	Cash & Bank Balance	30,000
<b>Total</b>	<b>4,80,000</b>	<b>Total</b>	<b>4,80,000</b>

From the above statement you are requested to calculate the following ratios and state the purpose they serve :

1. Current Ratio
2. Operating Ratio
3. Stock Turnover
4. Return on Total Resources
5. Turnover of Fixed Assets

3. From the following information, make out a statement of Proprietor's Fund with as many details as possible –

- |   |          |
|---|----------|
| i. Current Ratio  | 2.5      |
| ii. Liquid Ratio  | 1.5      |
| iii. Proprietary Ratio<br>(fixed assets / proprietary fund) | 0.75     |
| iv. Working capital   | ₹ 60,000 |
| v. Reserve and surplus                                      | ₹ 40,000 |
| vi. Bank Overdraft  | ₹ 10,000 |
| vii. There is no long term loan or fictitious assets.       |          |

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4. Debtors Velocity	3 months
Creditors Velocity	2 months
Stock Velocity	8 times
Capital Turnover Ratio	2.5 times
Fixed Assets Turnover Ratio	8 times
Gross Profit Turnover Ratio	25%

Gross profit in a year amounts to ₹ 80,000. There is no long - term loan or overdraft. Reserves and surplus amount to ₹ 28,000. Liquid assets are ₹ 97,333. Closing stock of the year is ₹ 2,000 more than the opening stock. Bills receivables amount to ₹ 5,000 and Bills Payable to ₹ 2,000.

Find out:

- |                  |                   |                       |
|------------------|-------------------|-----------------------|
| a. Sales         | b. Sundry Debtors | c. Sundry Creditors   |
| d. Closing Stock | e. Fixed assets   | f. Proprietors' Funds |



5. Following is the abridged Balance – Sheet of the Amitabh Ltd. as at 31-3-2023

**Balance Sheet**

<b>Liabilities</b>	<b>₹</b>	<b>Assets</b>	<b>₹</b>
Paid up share capital	5,00,000	Freehold Property	4,00,000
Profit and Loss A/c.	85,000	Plant & Machinery	2,50,000
Current Liabilities	2,00,000	Depreciation	<u>75,000</u>
		Stock	1,05,000
		Debtors	1,00,000
		Bank	5,000
<b>Total</b>	<b>7,85,000</b>	<b>Total</b>	<b>7,85,000</b>

From the following information you are required to prepare Profit and Loss Account and Balance Sheet as at 31<sup>st</sup> March, 2024

a. The composition of the total of liabilities side of the Company's Balance Sheet as at 31<sup>st</sup> March, 2024 (the paid up share capital remaining the same as at 31<sup>st</sup> March, 2023)

Share Capital	50 %
Profit and Loss A/c	15 %
7% Debentures	10%
Creditors	25%

The debentures were issued on 1<sup>st</sup> April, 2023 interest being paid on 30<sup>th</sup> September, 2023 and 31<sup>st</sup> March, 2024.

b. During the year ended on 31<sup>st</sup> March, 2024 additional Plant and Machinery had been bought and a further ₹ 25,000 depreciation written off. Freehold property remained unchanged. The total fixed assets then constituted 60 % of total fixed and current assets.

- c. *The current ratio was 1.6 : 1. The quick assets ratio was 1 : 1.*
- d. *The debtors (four – fifths of the quick assets) to sales ratio revealed a credit period of two months.*
- e. *Gross Profit was at the rate of 15% of selling price and Return on Net Worth as at 31<sup>st</sup> March, 2024 was 10%. Ignore taxation.*

**Profit & Loss Account for the year ended 31.3.24**

DR		CR	
Particulars	Amount (₹)	Particulars	Amount (₹)

**Balance Sheet as on 31.3.24**

Liabilities	Amount (₹)	Assets	Amount (₹)

6. The following data has been abstracted from the annual accounts of a company

	₹ in lakhs
Share Capital	
20,00,000 equity shares of ₹ 10 each	200
General Reserves	150
Investments Allowance Reserve	50
15% Long Term Loan	300
Profit before Tax	140
Provision for Tax	84
Proposed dividends	10

Calculate from the above, the following ratios:

- Return on Capital employed and
- Return on Net Worth

7. From the following annual statement of Amar Ltd., calculate the following ratios :
- a. Gross Profit Ratio      b. Current Ratio      c. Liquid Ratio  
d. Debt-equity Ratio      e. Return on Investment Ratio

**Trading and Profit and Loss A/c. for the year ended 31-12-2023**

	₹		₹
To Material consumed		By Sales	85,000
Opening Stock      9,050		By Profit on sale of investments	600
Purchases            54,525		By Interest on Investments	300
63,575			
Closing stock <u>14,000</u>	49,575		
To Carriage Inwards	1,425		
To Office Expenses	15,000		
To Sales Expenses	3,000		
To Financial Expenses	1,500		
To Loss on Sale of Assets	400		
To Net Profit	15,000		
<b>Total</b>	<b>85,900</b>	<b>Total</b>	<b>85,900</b>

**Balance – Sheet as on 31-12-2023**

Liabilities	₹	Assets	₹
SHARE CAPITAL		FIXED ASSETS	
2,000 equity shares of ₹ 10 each fully paid	20,000	Buildings            15,000	
Reserves	9,000	Plant <u>8,000</u>	23,000
Long term debt	6,000	CURRENT ASSETS	
Bank Overdraft	3,000	Stock in Trade      14,000	
Sundry Creditors –		Debtors                7,000	
- for expenses            2,000		Bills Receivables    1,000	
- for others <u>8,000</u>	10,000	Bank Balances <u>3,000</u>	25,000
<b>Total</b>	<b>48,000</b>	<b>Total</b>	<b>48,000</b>

8. Based on the following information of the financial ratios prepare Balance – Sheet of Ameesha Limited as on March, 31st 2023. Explain your working and assumptions –

Current Ratio	2.5
Liquidity Ratio	1.5
Net Working Capital	₹ 6,00,000
Stock turnover ratio	5
Ratio of Gross profit to sales	20%
Turnover ratio to net fixed assets	2
Average debt collection period	2.4 months
Fixed assets to net worth	0.80
Long term debt to Capital and Reserves	7 / 25

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9. Following are the ratios relating to the trading activities of Aishwarya Ltd. –

Debtors Velocity	3 months
Stock Velocity	6 months
Creditors Velocity	2 months
Gross Profit Ratio	20%

Gross profit for the year ended 31-3-2022 was ₹ 5,00,000. Stock at the end of 2021-22 was ₹ 20,000 more than what it was at the beginning of the year. Bills payable and Receivable were ₹ 36,667 and ₹ 60,000 respectively.

You are to ascertain the figures of -

- a. Sales                      b. Sundry Debtors                      c. Sundry Creditors and                      d. Stock

10. From the following information relating to a Patanjali Ltd., prepare a Statement of Proprietors' Funds –

- |                                    |          |
|------------------------------------|----------|
| a. Current Ratio                   | 2        |
| b. Liquid Ratio                    | 1.5      |
| c. Fixed Assets / Proprietary fund | 3/4      |
| d. Working Capital                 | ₹ 75,000 |
| e. Reserves and Surplus            | ₹ 50,000 |
| f. Bank Overdraft                  | ₹ 10,000 |
- There were no long-term loans or fictitious assets.



11. Complete the following annual financial statements on the basis of Ratios given below :

**Profit and Loss A/c. for the year ended 30<sup>th</sup> June, 2023**

Particulars	₹	Particulars	₹
To cost of goods sold	6,00,000	By Sales	20,00,000
To operating expenses	...		
To Earnings before Interest and Tax	...		
<b>Total</b>		<b>Total</b>	
To Debenture Interest	10,000	By Earnings before Interest and Tax	....
To Income Tax	...		
To Net Profit	...		
<b>Total</b>		<b>Total</b>	

**Balance – Sheet as on 30<sup>th</sup> June, 2023**

Liabilities	₹	Assets	₹
NET WORTH :		Fixed Assets	.....
Share Capital .....			
Reserve & Surplus .....		Current Assets :	
10% Debentures .....		Cash	.....
Sundry Creditors	60,000	Stock	.....
		Debtors	35,000
<b>Total</b>		<b>Total</b>	

- a. Net Profit to Sales 10%
- b. Current Ratio 1.5
- c. Return on Net worth 20%
- d. Inventory turnover 15 times  
(Based on cost of goods sold)
- e. Share Capital to Reserves 4 : 1
- f. Rate of Income Tax 40%

12. The following information and data available to you:

Debtors Velocity	3 months
Creditors Velocity	2 months
Stock Velocity	8 times
Capital Turnover Ratio	2.5 times
Fixed Assets Turnover Ratio	8 times
Gross Profit Turnover Ratio	20%.

Gross profit in a year amount to ₹ 1,00,000. There is no long – term loan or overdraft. Reserves and surplus amount to ₹ 30,000. Closing stock of the year is ₹ 5,000 more than the opening stock.

Ascertain the following:

- |                  |                   |                       |
|------------------|-------------------|-----------------------|
| a. Sales         | b. Sundry Debtors | c. Sundry Creditors   |
| d. Closing Stock | e. Fixed assets   | f. Proprietors' Funds |
| g. Capital       |                   |                       |

13. From the following information of Tabu Ltd. complete the proforma Balance Sheet if its sales are ₹ 16,00,000.

Sales to Net Worth	2.3 times
Current Liabilities to Net worth	42%
Total Liabilities to Net Worth	75%
Current Ratio	2.9 times
Sales to Closing inventory	4.5 times
Average collection period	64 days

**Proforma Balance Sheet**

<b>Liabilities</b>	<b>₹</b>	<b>Assets</b>	<b>₹</b>
Net worth	?	Fixed Assets	?
Long Term Liabilities	?	Cash	?
Current Liabilities	?	Stock	?
		Sundry Debtors	?

Calculations are to be made to the nearest rupee.

14. Prepare working capital requirement from following information :

Average collection period	60 days
Average payment period	75 days
Inventory holding period	90 days
<i>(Calculate with reference to cost of goods sold)</i>	
Cash and Bank balance	2.5% of sales
Sales	₹ 20,00,000
Gross Profit	25%
Credit purchase	1/3 of cost of goods sold

The company expects 50% sales increment during the next year. (Assume 1 year = 360 days).

<b>Particulars</b>	<b>Amount (₹)</b>

<b>Sr.No.</b>	<b>Particulars</b>	<b>Basis</b>	<b>Computation</b>	<b>Amount (₹)</b>

15.

- a. Indicate the important accounting ratios that would be used by each of the following:
- i. A long term creditor interested in determining whether his claim is adequately secured;
  - ii. A bank who has been approached by a company for short term loan / overdraft.
  - iii. A shareholder who is examining his portfolio and who is to decide whether he should hold or sell his shares in a company.

- b. Calculate the average collection period from the following details by adopting 360 days to an year:

Average inventory	₹ 3,60,000
Debtors	₹ 2,30,000
Inventory Turnover Ratio	6
Gross Profit Ratio	10%
Credit sales to total sales	20%

16. The Balance sheet of Yana Ltd. stood as follows as on :

(₹ in lakhs)

Liabilities	31.3.2023	31.3.2022	Assets	31.3.2023	31.3.2022
	₹	₹		₹	₹
Capital	250	250	Fixed Assets	400	300
Reserves	116	100	Less: Depreciation	140	100
				260	200
Loans	100	120			
Creditors & Other			Investments	40	30
Current			Stock	120	100
Liabilities	129	25	Debtors	70	50
			Cash / Bank	20	20
			Other Current		
			Assets	25	25
			Misc.		
			Expenditure	60	70
<b>Total</b>	<b>595</b>	<b>495</b>	<b>Total</b>	<b>595</b>	<b>495</b>

You are given the following information for the year ended 31.3.2023:

	₹ In lakhs
Sales	600
PBIT	150
Interest	24
Provision for Tax	60
Proposed Dividend	50

All figures given above are rupees in lakhs.

From the above particulars calculate for the year 2022-23:

- Return on Capital Employed Ratio
- Stock Turnover Ratio (taking sales as the basis)
- Return on Net Worth Ratio
- Current Ratio
- Proprietary Ratio

17. The following extracts of financial information relate to Sushmita Ltd.

<b>Balance Sheet as on 31<sup>st</sup> December</b>	<b>₹ in lakhs</b>	
	<b>2023</b>	<b>2022</b>
Share Capital	10	10
Reserves and Surplus	30	10
Loan Funds	<u>60</u>	<u>70</u>
	100	90
Fixed Assets (Net)	<u>30</u>	<u>30</u>
Current Assets :		
Stocks	30	20
Debtors	30	30
Cash and Bank Balances	10	20
Other Current Assets	<u>30</u>	<u>10</u>
	100	80
Less : Currents Liabilities	<u>30</u>	<u>20</u>
Net current assets	<u>70</u>	<u>60</u>
Total Assets	100	90
Sales (₹ lakhs)	<u>270</u>	<u>300</u>



- a. Calculate for the two years Debt-Equity Ratio, and Working Capital Turnover Ratio and
- b. Find the sales volume that should have been generated in 2023 if the Company were to have maintained its Working Capital Turnover Ratio of 2022.

**Statement showing computation of ratios (₹ in lakhs)**

<b>Particulars</b>	<b>2023</b>	<b>2022</b>

18. The capital of A Ltd. is as follows:

10% Preference shares, ₹ 10 each	₹ 3,00,000
Equity shares of ₹ 10 each	₹ 8,00,000
<b>Total</b>	<b>₹ 11,00,000</b>

**Additional information:** Profit (after tax at 35%), ₹ 2,70,000; Depreciation, ₹ 60,000; Equity dividend paid 20%; Market price of equity shares, ₹ 50.

You are required to compute the following, showing the necessary workings: (a) Dividend yield on the equity shares (b) Cover for the preference and equity dividends (c) Earnings per shares and (d) Price-earnings ratio.

19. Presently, the current assets and current liabilities of a company are ₹ 16 lakh and ₹ 8 lakh respectively. Calculate the effect of each of the following transactions individually and totally on the current ratio of the company.

1. Cash purchase of new machinery for ₹ 5 lakh.
2. Purchase of new machinery for ₹ 10 lakh on a medium-term loan from the bank, with 20% margin.
3. Payment of dividend of ₹ 2 lakh.
4. Receipt of a shipment of new materials at landed cost of ₹ 5 lakh, against which the bank finance obtained, is ₹ 3 lakh.

EXTRA PAGE.

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## 6

## TYPES OF FINANCING

### I. INTRODUCTION :

Every business enterprise requires funds for the purpose of -

1. Implementation of a new project
2. Expansion of existing project
3. Diversification to a New Project
4. Modernisation Scheme
5. Working Capital

There are several sources of funds available in the market and effective appraisal mechanism is required to be instituted to achieve its object of maximisation of profit, with minimum possible risk.

Selection of sources of finance will depend upon:

1. Risk involved
2. Tenure
3. Cost of funds

### II. REQUIREMENT OF FUNDS :

Business enterprises need funds to meet their different types of requirement

#### 1. Long Term needs:

**Purpose:**

- i. Investment in fixed Assets.
- ii. Permanent or core working capital

**Time Span:** 5 to 10 years

#### 2. Medium Term

**Financial needs:**

**Purpose:**

- i. Extensive publicity and advertisement campaign.
- ii. To meet the cost, the benefit of which is expected over 1 to 5 years.

**Time Span:** 1 to 5 years

#### 3. Short Term

**Financial needs:**

**Purpose:**

- i. To financial fluctuating working capital requirement.

- ii. To execute export orders.
- iii. Bridge finance, pending formalities of term loan sanctions

**Time Span:** Not exceeding a period of one year

### III. SOURCE OF FINANCE:

Primarily source of finance can be divided into two parts:

1. Owners Capital or shareholders funds
2. Borrowed Capital

The following chart will give Birds Eye view of various sources of finance.

Sr. No.	Type of Funds	Owners Funds	Borrowed Funds
1.	Long Term	1. Equity Share Capital 2. Preference Share Capital 3. Retained earnings (Plough back of profits) 4. Capital Subsidy / incentives	1. Debentures/Bonds 2. Term Loans from institution - Rupee Loan - Foreign Currency Loan 3. Term loans from Banks 4. Venture Capital Financing 5. Interest free sales tax loan 6. Asset/Debt securitisation 7. Euro Equity issues 8. New debt Instruments
2.	Medium Term	Preference Share Capital	1. Debentures / Bonds 2. Public Deposits 3. Loans from financial institutions 4. Loan from commercial banks 5. Lease Financing 6. Hire Purchase/ Instalment Financing Scheme 7. Euro Debt issue 8. New debt Instruments
3.	Short Term		1. Credit from trade and expense creditors i. Trade credits ii. Advances from customers iii. Short term provisions 2. Bank Advances 3. Factoring 4. Commercial Papers 5. Public deposits 6. Inter Corporate deposits 7. Short term Unsecured Debentures 8. Bridge Finance 9. Certificate of Deposit

Purpose	Type of Borrowing	Borrower nature
Non-Current Asset	Equity; Long Term Loan	Start up; Small and Medium Enterprises (SMEs), Mid corporates; Large corporates.
Current Asset	Long loan term loan; Short Term	Medium term loan for SMEs
Non-Current Asset	Short term loan	Large Corporates

Apart from the above, the stage of development of the business and nature of business would also decide the type of borrowing. Generally, it can be as follows:

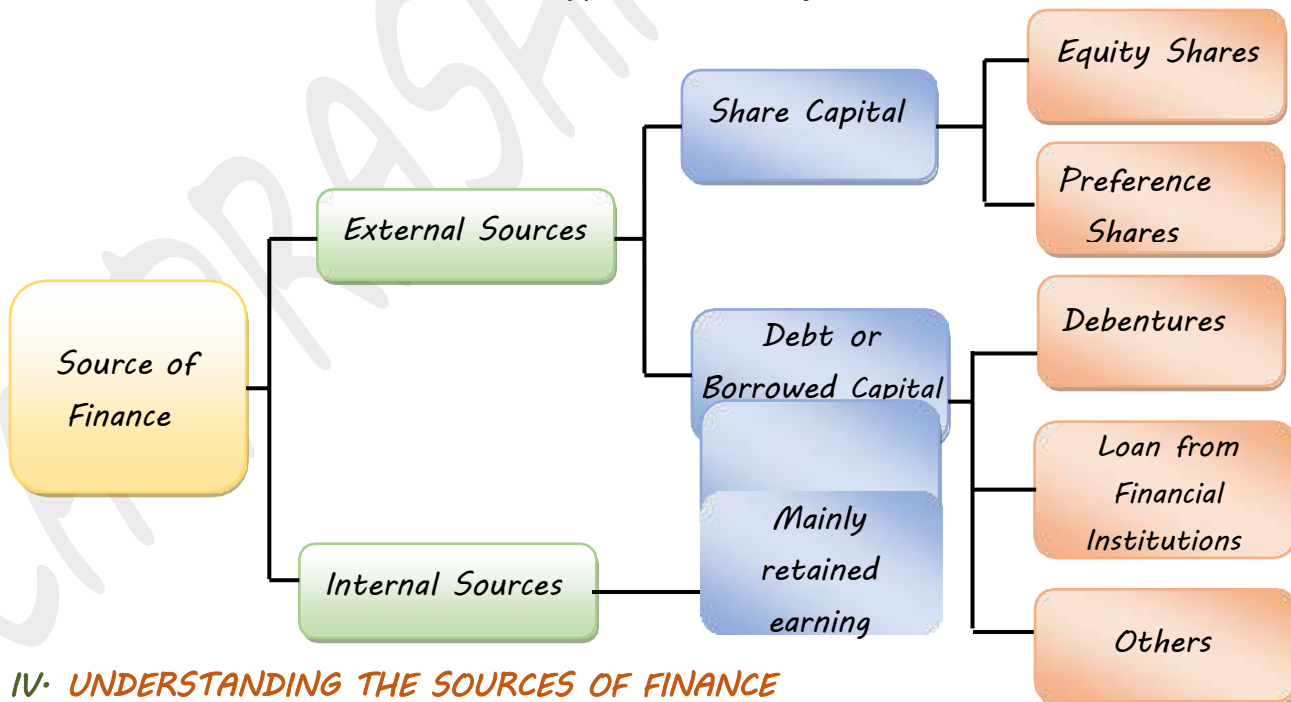
Stage	Nature of Business	Sources of Fund
Early stage	High Uncertainty	Equity; mainly Angel fund
	High to moderate Uncertainty	Equity; Venture capital ; Debt
Growth Stage	Moderate to Low Uncertainty	Debt; Venture Capital; Private Equity
Stable stage	Low Uncertainty	Debt

### CLASSIFICATION OF FINANCIAL SOURCES

There are mainly two ways of classifying various financial sources (i) Based on basic Sources (ii) Based on Maturity of repayment period

#### Sources of Finance based on Basic Sources

Based on basic sources of finance, types of financing can be classified as below:



### IV. UNDERSTANDING THE SOURCES OF FINANCE

#### 1. Equity Share Capital

##### Salient Features

1. Private Limited Company raises funds promoters, their relatives and friends.
2. Public Limited Company raises funds from promoters as well as from public.

3. Permanent source of funds.
4. Equity share holders being owners of company undertake the risks of business.
5. Right to elect Board of Directors and have the control over the management of company.
6. As per recent Amendment to the Companies Act, Non Voting Equity Shares can be issued as per SEBI Guidelines.
7. Redeemed only in case of liquidation, hence least risk involved.

#### Exceptions:

- i. Buy-back of shares
  - ii. Redemption of excess capital
8. Share holders are entitled for dividend which depends upon :
- i. Profitability position
  - ii. Liquidity position
  - iii. Financial needs of company

There is no mandatory Payment of dividend to equity shareholders.

9. Dividend being an appropriation of profit is not deductible, while computing taxable profits of business.
10. Returns from the sale of shares in the form of capital gains are subject to capital gain tax
11. Costliest but less risky capital, in the capital employed of the company.
12. Equity capital provides security to lenders of fund.
13. The company can make further issue of share capital by making a right issue
14. The company can issue bonus shares by way of capitalisation of reserves.

## 2. Preference Share Capital:

### Salient Features

- a. Preference share is a hybrid security because it has features of both ordinary shares and bonds.
- b. The holders of such shares enjoy priority both as regards to fixed dividend and redemption in case of winding up.
- c. There are two types of preference shares viz. Cumulative and Non-cumulative preference shares. In cumulative preference shares unpaid dividend gets accumulated. All arrears of dividend must be paid before any dividend can be paid to equity shareholders. The non cumulative preference shares carry a right to fixed dividend out of profits for that year only. In case of non availability of profits, the holders of non cumulative preference shares are not entitled to arrears of dividend.

- d. Further there are two types of preference shares viz. Participating and Non - participating preference shares. Participating preference shares carry a right to participate in surplus profits along with equity Shareholders after dividend at a certain rate has been paid to equity shareholders after dividend at a certain rate has been paid to equity shareholders in addition to entitlement of fixed dividend. Again in case of wind up, if there remains surplus after paying both the preference and equity shareholders, then the holders get additional share in the surplus assets. The right to participate is given in the Memorandum or Articles or by virtue of terms of issue.
- e. A public company may issue Redeemable Preference Shares to be redeemed after a fixed period. The Companies Act prohibits to issue irredeemable preference shares or shares redeemable after expiry of twenty years of issue. For redemption of preference shares. A company has to comply legal requirements of Sec. 80 of the Companies Act.
- f. A Medium or Long Term Source of funds.
- g. Preference shares enable the company to avoid dilution of equity capital.
- h. There are no voting rights offered to preference shareholders.
- i. Preference dividend, being an appropriation of profits is not tax deductible.
- j. Though company creates financial leverage, as there is a fixed dividend, cost of preference share capital is far greater than cost of debentures / borrowed funds.
- k. If Debt-equity ratio is high or cost of equity financing is relatively high, the case for using preference shares will be strengthened.
- l. Cumulative Convertible Preference shares (CCPs) may also be offered under which the shares would carry a cumulative dividend and specifies a limit for a period of say three years after which the shares are converted into equity shares.
- m. For normal preference shares, the maximum permissible rate of dividend is 14%

Various types of Preference shares can be as follow:

Sr. No.	Types of Preference Shares	Salient Features
1	Cumulative	Arrear Dividend will accumulative
2	Non- cumulative	No right to arrear dividend
3	Redeemable	Redemption should be done
4	Participating	Participate also in the surplus of firm
5	Non-Participating	Over fixed rate of Dividend
6	Convertible	Option of Convert into equity shares



*Difference between Equity share and Preference are as follows:*

<i>Basis of Distinction</i>	<i>Equity Shares</i>	<i>Preference Shares</i>
<i>Preference Dividend</i>	<i>Equity dividend is paid after preference Dividend.</i>	<i>Payment of Preference dividend is preferred over equity dividend.</i>
<i>Rate of dividend</i>	<i>Fluctuating</i>	<i>Fixed</i>
<i>Convertibility</i>	<i>Not convertible</i>	<i>Convertible</i>
<i>Voting rights</i>	<i>Equity shareholders enjoy voting rights</i>	<i>They do not have voting rights</i>

### *3. Retained Earnings/ 'Ploughing back of profits'*

*A company may plough back profits earned. Accumulated retained profits are reserves and is a part of equity or net worth. They belong to equity shareholders. Increase in net worth strengthen the shareholders equity base and service as 'promoter's contribution', if represented by liquid funds. It increases debt borrowing capacity of a company. By virtue of legal provisions, company has to plough back reasonable amount of profits every year to meet long term requirement. Such funds entail no risk. Further there is no dilution of control of the present management group. A company by complying legal requirements can pay dividend out of accumulated profits or retained earnings.*

### *4. Debentures or Bonds:*

*'It is acknowledgment of debt, given under the seal of the company and containing a contract for the repayment of principal sum at a specified date and for the payment of interest at fixed rate until the repayment of principal sum and it may or may not give the charge on the assets of the company as security'.*

#### *Salient Features*

- 1. Debenture holders are the creditors of the company and hence no voting rights are enjoyed by them.*
- 2. Debentures are redeemable according to the terms of their issue.*
- 3. Interest on debentures must be paid irrespective of profitability of the company. It is a charge against profits.*
- 4. In case of liquidation, debenture holders being creditors have prior claim over the shareholders.*
- 5. Raising funds by way of debentures has advantage of financial leverage or trading on equity.*
- 6. Interest on debentures is tax deductible. Thus there is a tax shield and a source of finance becomes cheaper.*

7. Debentures are usually secured on the assets of the company and therefore carry lesser risk and assured return to the investors.
8. As it is obligatory to pay interest at regular intervals and repayment of principal sum on scheduled dates. Any failure in obligations may paralyse the company's operations.
9. Financing through debentures is associated with financial risk to the company. This increases the cost of equity capital.
10. Higher risks bring, higher capitalisation rates on equity earnings. Thus even though gearing is favourable and raises EPS, the higher capitalisation rate attributable to gearing may drive down the market price of equity shares.
11. There is a flexibility in Debentures funds. Surplus funds with the company may be utilised for buying own debentures from the market and making cancellation thereof even before maturity date.
12. A company may issue convertible debentures (CDs) in which option may or may not be given to debenture holders to convert them into equity or preference shares at stated issue price, after a certain period. CDs may be fully or partly convertible.
13. In a period of rising prices, debentures issue is advantageous. The fixed monetary outgo decreases in real terms as the price level increases.
14. Debentures are classified into -
  - From Security point of view - Secured Debentures, Unsecured Debentures.
  - From Registration point of view - Registered Debentures, Bearer Debentures
  - From Priority point of view - First Debentures, Second Debentures etc.
  - From Enlisting point of view - Listed Debentures, Unlisted Debentures
  - From Conversion point of view - Convertible Debentures, Non-convertible Debentures
  - From Redemption point of view - Redeemable Debentures, Irredeemable Debentures
 Public issue of debentures and private placement to mutual funds now require that the issue be rated by credit rating agency like CRISIL (Credit Rating and Information services of India Ltd.). Credit rating is given after evaluating factors like track record of the company, profitability, debt-service coverage, creditworthiness and perceived risk of lending.

**Other types of Debentures with their feature are as follows:**

Sr.no.	Types of Debentures	Salient Features
1	Bearer	Transferable like negotiable instruments
2	Registered	Interest payable to registered person
3	Mortgage	Secured by a charge on Asset(s)
4	Naked or Simple	Unsecured
5	Redeemable	Rapid after a certain period
6	Non-Redeemable	Not Repayable

**Difference between Preference Shares and Debentures:**

<i>Basis of Difference</i>	<i>Preference Shares</i>	<i>Debentures</i>
<i>Ownership</i>	<i>Preference share capital is a special kind of share</i>	<i>Debenture is a type of loan which can be raised from the public.</i>
<i>Payment of Dividend/ Interest</i>	<i>Its holders enjoy priority both as regards to the payment of a fixed amount of dividend and also towards repayments of capital in case of winding up of a company</i>	<i>It carries fixed percentage of interest.</i>
<i>Nature</i>	<i>Preference shares are a hybrid form of financing with some characteristics of equity shares and attribute of debt capital</i>	<i>Debentures are instrument for raising long term capital with a period of maturity.</i>

**5. Term Loan from financial Institutions :**

The following financial institutions cater major part of financial needs of the Industrial Sector in India.

- i) Industrial Development Bank of India (IDBI)
- ii) Industrial Finance Corporation of India (IFCI)
- iii) State Finance Corporation of India (SFCI)
- iv) State Industrial Development Corporations (SIDCs)
- v) Industrial Reconstruction Bank of India (IRBI)
- vi) Small Industries Development Bank of India (SIDBI)
- vii) Life Insurance Corporation of India (LIC)
- viii) Unit Trust of India (UTI)
- ix) General Insurance Corporation (GIC) and its subsidiaries.
- x) Shipping Credit and Investment Company of India Ltd. (SCICI)

Before term loan is sanctioned, a company has to satisfy the financial institution regarding technical, commercial, economical, financial and managerial liability of the project. Such loans are available at different rates under different schemes.

**6. Term Loan from Banks:**

The primary role of the commercial bank is to cater to short term requirement of late, however banks have started term financing of industries, though the formal term loan lending is so far, small and confined to major banks only. It is argued that term loan do not satisfy the cannon of liquidity, which is a major consideration in all bank operations.

In fact, the degree of liquidity in the amortisations for term loan is more than demand loans, which are renewable from year to year. The adoption of formal term loan lending by banks thus will not in any way hamper the criteria of liquidity. As a matter of fact, it will introduce flexibility in the operations of the banking system. All banks are not well equipped to make appraisals of such loan proposals and evaluate an element of risk.

#### **Salient Features:**

1. Term loans are secured borrowing is medium/ long term source of finance for additions to fixed assets.
2. Rate of interest depends upon credit rating of the borrower, perceived risk of lending and cost of funds to the lender.
3. Term loan is generally repayable over a period of 4-7 years in quarterly / half yearly instalments.
4. Interest on term loan is tax deductible.
5. Administrative cost of serving the loan is minimal as compared to cost related to Debenture / Bond option

#### **7. Venture capital Financing:**

When technically competent entrepreneurs, who lack experience and funds required as promoters contribution is financed under venture capital financing. Venture capital financing refers to financing new highly risky venture promoted by qualified entrepreneurs with a potential of success.



Venture Capital is a national priority especially in the areas of tele-communication, Non-conventional energy, Quality upgrading, Biotechnology, information Technology, Induction of new technologies etc. The Government of India issued guidelines for venture capital companies in 1988 and offered number of tax concessions.

#### **Characteristics of Venture Capital Financing:**

- It is basically an equity finance in new companies.
- It can be viewed as long term investment in growth orientes small/medium firms.
- The investor may also provide support in the form of sales strategy, business networking and management expertise to enable growth.

*Some methods of Venture capital financing are as follows:*

**1. Equity Financing:**

*As venture capital undertaking generally requires funds for a longer period but may not be able to provide returns to the investors during initial stages, the venture finance is normally the form of equity capital. The equity contribution of venture capital funds does not exceed 49% of the total equity capital, so that control remains with the entrepreneur.*

**2. Conditional Loan:**

*A conditional loan is repayable in the form of royalty after the venture enterprise is able to generate sales. No interest is payable on such loans. A royalty charge may range between 2 to 15 per cent, actual rate depends on factors like gestation period, cash flow pattern, risk and other related factors.*

*Some capital financiers give a choice to enterprise of paying high rate of interest (say above 20%) instead of royalty on sales once it becomes commercially sound.*

**3. Income Note:**

*It is a hybrid security which combines the features of both conventional loan and conditional loan. The entrepreneur has to pay both interest on loan and royalty on sales but at substantially low rates*

**4. Participating Debentures:**

*Such security carries charges in three phases:*

*Start phase : No interest*

*Next phase : Low rate of interest upto a particular level of operation. Subsequent phase : High rate of Interest*

*Factors that a venture capitalist should consider before financing any risky project are as follows:*

- 1) Level of expertise of company's management*
- 2) Level of expertise in production*
- 3) Nature of new product or service (Technically feasible)*
- 4) Future prospects (detailed business plan)*
- 5) Competition*
- 6) Risk born by entrepreneur (should bear risk)*
- 7) Exit route*
- 8) Board membership for venture capitalist.*

### 8. Capital subsidy / Incentives:

In order to encourage the dispersal of industries in the less developed areas, Government has been giving a package of incentives to New/ Expansion units set up in the developing region.

The Package scheme of incentives introduced in 1964 were amended from time to time e.g. Government of Maharashtra has introduced a new scheme viz. Package Scheme of Incentives 2001 for accelerating the process of dispersal of industries to the less developed regions and promoting high-tech industries in developed areas of the state coupled with the object of generating mass employment opportunities. The incentives are sanctioned and released to the units only after they have complied initial effective steps and final effective steps respectively. The release of incentives by the concerned State Government generally take one to three years. The promoters therefore finds it convenient to avail bridge finance against the sanctioned capital incentives. However bridge finance is normally made available to the extent of 85% of the sanctioned incentives.

### 9. Asset / Debt Securitisation:

The term Securitisation refers to both switching away from bank intermediation to direct financing via capital market and/or money market, and the transformation of illiquid assets like automobile loans, mortgage loans, trade receivables into marketable securities.

**“Securitisation is a process of transformation of illiquid assets into security, which may be traded later in the open market”.**

It is a method of recycling of funds. It is especially beneficial to financial intermediaries to support lending volumes. Assets generating steady cash flow are packaged together and against this asset pool, market securities can be issued.

#### Securitisation Process:

##### 1. The Originating Function:

A borrower seeks a loan from finance company, housing company or lease from leasing company. The creditworthiness of the borrower is evaluated and contract is entered into in a normal manner with repayment schedule.

##### 2. The pooling Function:

The originated assets viz. trade receivable, lease rentals, housing loans, automobiles etc. according to maturity pattern and interest rate risk are clubbed together to create a pool. This pool is transferred, in favour of Special Purpose Vehicle (SPV), which acts as a trustee for the investor. Once the assets are transferred they are held in the SPV's portfolio.

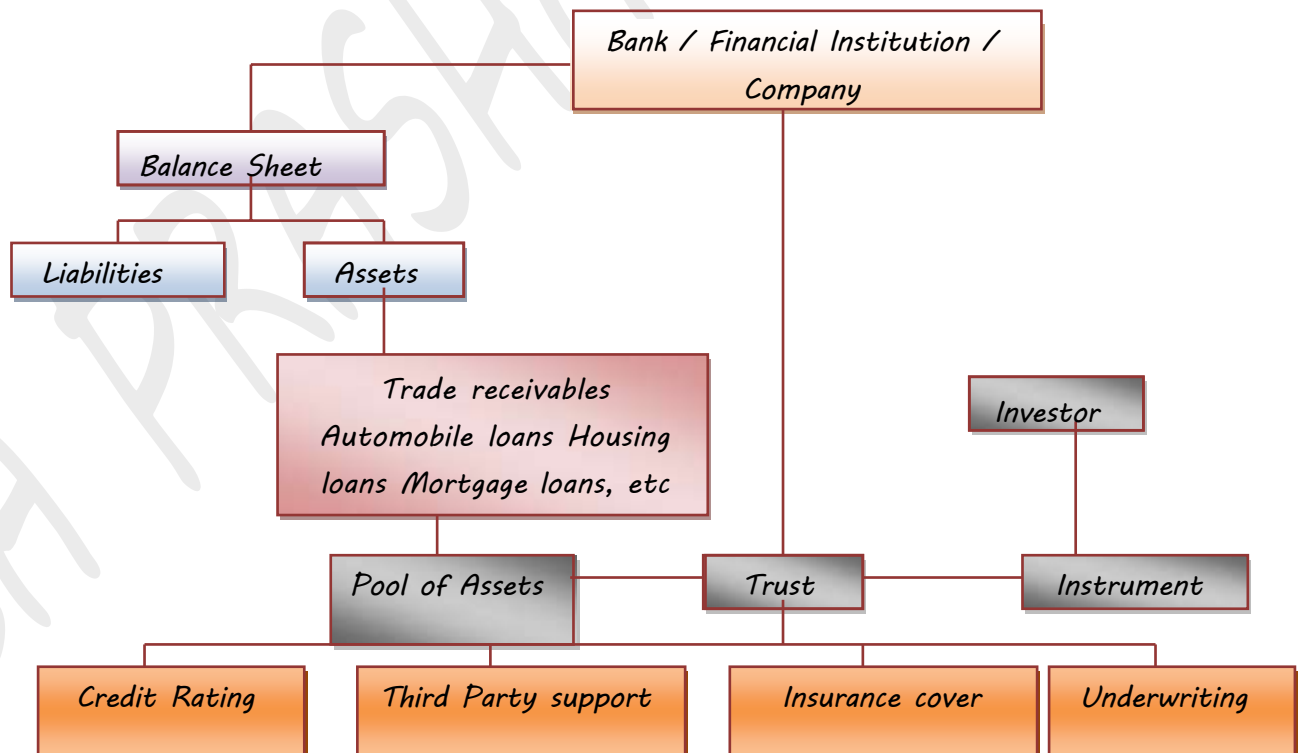
### 3. The Securitisation Function:

It is the SPV's job now to structure and issue the securities on the basis of asset pool. The securities carry a coupon and on expected maturity which can be asset based or mortgage based. They are generally sold to investors through merchant banker. The investors interested in this type of securities are generally institutional investors like mutual fund, insurance companies etc. The originator usually keeps spread available between yield from secured assets and interest paid to investors.

Thus trustees act as receiving and paying agent. Thus good quality loans will be eligible for securitisation. The repayment pattern of assets in particular will be deciding factor to structure the instrument.

The process of securitisation is generally without recourse i.e. investor bears the credit risk or risk of default and issuer is under an obligation to pay to the investors only if the cash flows are received by him from the collateral. The issuer however, has a right to legal recourse in the event of default. The risk run by the investor can be further reduced by obtaining insurance cover, often provided by a pool insurance policy.

Process flow chart of Asset Securitisation is as follows:



**10. Euro Issues:**

After decades of regulated economic policies, the Government of India started major economic reforms in 1991 aimed at integration of Indian economy with Global economies.

In 1992 Government of India permitted Indian Companies with consistent track record of good performance (for a minimum period of 3 years), to raise funds by issuance of equity / debt capital in International market through Global Depository Receipt (GDR), Foreign Currency Convertible Bonds (FCCB), Euro issues are outside the ambit of SEBI guidelines and regulations.

**Benefits to the issuer:**

1. International market being very large and liquid has capacity to absorb larger issue.
2. Broaden the base of shareholders and quality of investors.
3. It offers better comparative share value.
4. Cost of raising funds from international market is generally lower than the cost of domestic issues.
5. It implies acceptance of sophisticated western investors, which in turn will enhance the image of the company and product internationally.

**Benefits to the investor:**

1. Euro issues are made by companies with proven track record.
2. Listed and traded in international stock market.
3. It is generally denominated in US Dollars and hence minimise foreign exchange risk.
4. Dividend, interest and capital gains generally carry concessional tax rates.
5. Market for most of the scripts is liquid and hence facilitates faster entry and exit.
6. Investors are required to comply simplified formalities.

Some of the financial instruments dealt with in the international market are listed below:

**1. Euro Bonds:**

Debt instrument denominated in a currency other than the currency of that country e. g. A sterling Pound Bond issued in Germany.



**2. Foreign Bonds:**

Debt instruments denominated in a currency which is foreign to the borrower and is sold in the country of that currency e.g. A British firm places US Dollar Bond in USA.

**3. Fully Hedged Bonds:**

In foreign bond, the risk of currency fluctuation exists fully hedged bonds eliminates the risk by selling in forward market the entire stream of principal and interest payment.

**4. Floating Rate Notes:**

In these notes interest rates are adjusted to reflect the prevailing exchange rates. Generally, the maturity period is up to 7 years.

**5. Euro Commercial Papers:**

These are short term money market instrument. They are usually designated in US Dollar.

**6. Foreign Currency Option:**

A Foreign Currency Option is the right to buy or sell but not the obligation, spot, future or forward a specified foreign currency. It provides hedge against financial and economical risk.

**7. Foreign Currency Futures:**

Foreign Currency Futures are obligations to buy or sell a specified currency in the present for settlement at a future date.

**8. Foreign Euro Bond:**

In domestic capital markets of different countries these bonds are referred as Yankee bonds in the US, Swiss Francs in Switzerland, Samurai bonds in Tokyo and Bulldogs in UK.

**9. Medium Term Notes(MTN):**

When the issuers need frequent financing through bonds including euro bonds. It may be very costly and ineffective to frequently issue bonds. In this case MTN programme allow several lots of bonds to be issued having different features w.r.t. coupon rates, currency, timing etc. The various formalities including documentation can be done at one point of time.

**10. External Commercial borrowings(ECB):**

It refers to commercial loans availed from non-residents with minimum average maturity of 3 years. ECB can be raised from internationally recognised sources like international bank, international capital markets, multilateral financial

institutions like IFC, ADB etc. Foreign collaborators, foreign equity holders, suppliers of equipment.

ECB can be availed from 2 routes: 1) Automatic Route 2) Approval Route In the case 1 there is no need to take RBI/ Government approval whereas the same is required under route 2.

In India, two principal forms of international offering are made by companies tapping the international capital market

1. Foreign Currency Convertible Bonds (FCCB).
2. Depository Receipts (DR). - American Depository Receipts and Global Depository Receipts.

### 1. Foreign Currency Convertible Bonds (FCCB):

- a. The FCCB is a bond issued in accordance with the relevant scheme and subscribed by a non - resident in a foreign currency and convertible into equity shares of issuing company, either in whole or part, on the basis of equity related warrants attached to the debt instrument.
- b. FCCBs are unsecured, carry fixed rate of interest and option to convert into fixed number of equity shares of the issuer company. Interests' rates are very low as compared to domestic market.
- c. FCCBs are denominated in freely convertible foreign currency.
- d. FCCBs are popular with issues, as domestic market can be restricted with comparatively shorter maturities with high rate of interest. On the other hand low coupon security option and arbitrage opportunities available with the investors is also an attractive feature.
- e. The major drawback is that issuing company cannot plan its capital structure, as it is not assured of conversion of FCCBs. Moreover projection of cash out flow on maturities also cannot be made.
- f. FCCBs are also subject to foreign exchange risk. FCCBs result in creation of external debt, that requires foreign exchange outflow from the country, if conversion option is not exercised by the investors.

### 2. Depository Receipts: (DR)

DR is an instrument in the form of depository receipt or certificate created by the overseas Depository Bank outside India and issued to the non - resident investors against the issue of equity shares. A depository receipt is a negotiable instrument evidencing a fixed number of equity shares of the issuing company generally denominated in US Dollars. DRs are commonly used by those companies

which sell their securities in international market and expand their shareholdings abroad. These securities are listed and traded in International Stock Exchanges. These are either American Depository Receipts (ADR) or Global Depository Receipts (GDR). ADRs are issued in case the funds are raised through retail market in United States. In case of GDRs, the invitation to participate in the issue cannot be extended to retail US investors.

While DRs denominated in freely convertible foreign exchange, are issued by the depository in the international market, the underlying shares denominated in Indian Rupees are issued in the domestic market by the issuing company are custodised with local bank called "Custodian".

**a. American Depository Receipts (ADRs):** These are securities offered by non-US companies who want to list on any of the US exchange. Each ADR represents a certain number of a company's regular shares. ADRs allow US investors to buy shares of these companies without the costs of investing directly in a foreign stock exchange.

The Indian companies have preferred the GDRs to ADRs because the US market exposes them to a higher level of responsibility than a European listing in the areas of disclosure, costs, liabilities and timing. The regulations are somewhat more stringent and onerous, even for companies already listed and held by retail investors in their home country. The most onerous aspect of a US listing for the companies is to provide full, half yearly and quarterly accounts in accordance with, or at least reconciled with US GAAPs.

**b. Global Depository Receipts (GDRs):** These are negotiable certificates held in the bank of one country representing a specific number of shares of a stock traded on the exchange of another country. These financial instruments are used by companies to raise capital in either dollars or Euros. These are mainly traded in European countries and particularly in London.

**ADRs/GDRs and the Indian Scenario:** Indian companies are shedding their reluctance to tap the US markets. Infosys Technologies was the first Indian company to be listed on Nasdaq in 1999. However, the first Indian firm to issue sponsored GDR or ADR was Reliance industries Limited. Beside these two companies there are several other Indian firms which are also listed in the overseas bourses. These are Wipro, MTNL, State Bank of India, Tata Motors, Dr. Reddy's Lab, etc.

*c. Indian Depository Receipts (IDR) - The concept of the depository receipt mechanism which is used to raise funds in foreign currency has been applied in the Indian Capital Market through the issue of Indian Depository Receipts (IDRs). The IDRs are similar to ADRs/GDRs in the sense that foreign companies can issue IDRs to raise funds from the Indian Capital Market in the same lines as an Indian company uses ADRs/GDRs to raise foreign capital. The IDRs are listed and traded in India in the same way as other Indian securities are traded.*

### **11. Public Deposits:**

- a. Public deposits are tapped as a source of short term or medium term finance. This had become important source of finance during the period of credit squeeze by RBI.*
- b. A company can accept public deposits, subject to stipulations, upto a maximum of 35% of its paid up capital and reserves from the public and shareholders.*
- c. These are unsecured deposits and may be accepted for a period ranging six months to three years.*
- d. As the deposits are available for a period of not more than three years, they are used for financing working capital requirements.*
- e. The public deposits are renewable on maturity.*

### **12. Lease Financing:**

#### **LEASING:**

*Meaning - A lease is contractual arrangement under which the owner of an asset (called the lessor) agrees to allow the use of his asset by another party (called the lessee) in exchange of periodic payments (called lease-rental) for a specified project. At the end of the lease contract, the asset reverts back to the real owner, i.e., the lessor. However, in long term lease contracts, the lessee is generally given the option to buy or renew the lease.*



#### **Parties to a Lease Agreement -**

- A. Lessor - Who is the owner of the asset permitting use to the other party on payment of periodical amount*
- B. Lessee - Who acquired the right to use the asset on payment of periodical amount.*

**Types of leasing:**

**A. Operating Lease** - In this, the lessee acquires the use of an asset on a period to period basis.

**The main characteristics of operating lease is as follows:**

- i. The lease can be cancelled by the lessee prior to its expiration at a short notice.
- ii. The lessor is responsible for upkeep and maintenance of the asset.
- iii. The lessee is not given any option to purchase the asset at the end of the lease period.
- iv. The lease is for a smaller period.
- v. The sum of all the lease payments by the lessee does not necessarily fully provide for the recovery of the cost of the asset.
- vi. The lessor has the option to lease out the asset again to another party.
- vii. This type of lease is preferred by the lessee when the long term suitability of asset is uncertain, when the asset is subject to rapid obsolescence or when the asset is required for immediate use to tide over a temporary problem. Computers and Office Equipment are the very common assets which form the subject matter of many operating lease agreement.

**B. Financial Lease (Capital Lease)** - The characteristics of a Financial Lease are:

- i. The lease is for a longer period
- ii. They are non-cancellable, in the sense that the lessee is contractually obliged to make lease payments during the entire period specified in the contract.
- iii. This form of lease entails lower risk to the lessor as compared to operating lease.
- iv. The insurance, maintenance and service costs are borne by lessee.
- v. The lessee acquires most of the economic values associated with the outright ownership of the asset.
- vi. At the end of lease period, generally, the lessor agrees to transfer the title of the asset to the lessee at a nominal cost.
- vii. The lessee is given an option to purchase the asset at the expiry of the lease.
- viii. Usually 90 per cent of the fair value of the asset is recovered by the lessor as lease rental.

Financial leases are commonly used for leasing land, buildings and large pieces of fixed equipment.

### Other types of Leases:

i) **Leveraged Lease:** A leveraged lease is one that involves a third party who is a lender, in addition to the Lessor and Lessee. Under this arrangement, the lessor borrows fund from the lender and himself acts as equity participant. Normally, the amount borrowed is substantial vis-à-vis the funds provided by the Lessor himself. The third party usually involved in financing the transaction is a Financial Institution like UTI, Insurance Company, Commercial Banks, etc.

Such types of Lease are popular in structuring leases of very expensive assets such as the Lease of a plane or a ship.

### Sale and Lease Back Leasing:

Under this arrangement, the firm sells an asset, already owned by it or another firm/party and hires it back from the buyer. The lessor is ordinarily a financial institution. A sale lease back arrangement is preferred by a firm that is suffering from the shortage of funds for its operations.



By such an arrangement, the firm can salvage its liquidity position and also retain the services of the asset for the life of the lease. This lease is similar to financial lease.

ii) **Sales-aid Lease:** Under this lease contract, the lessor enters into a tie up with a manufacturer for marketing the latter's product through his own leasing operations, it is called as sales-aid lease. In consideration of the aid in sales, the manufacturer may grant either credit or commission to the lessor. Thus, the lessor earns from both sources i.e., from lessee as well as the manufacturer.

iii) **Close-ended and open-ended Leases:** In the close ended lease, the assets get transferred to the lessor at the end of lease, the risk of obsolescence, residual value etc., remain with the lessor being the legal owner of the asset. In the open-ended, the lessee has the option of purchasing the asset at the end of the lease period.

### Advantages of Leasing:

- It is an easy method of financing capital asset having a heavy cost because it spreads the capital cost over a reasonable period and sufficiently flexible as the lease rentals can be structured according to the needs of the lessee.
- It helps to conserve funds which can be used for other urgent needs.
- The procedure is simple for both the lender and the borrower.
- Lease rentals are deductible expense for the purpose of tax.

- e. It is an 'off Balance-sheet' method of financing and thus helps in window dressing.
- f. The lessee is protected from technological obsolescence particularly under operating lease arrangement.
- g. Piecemeal financing of small equipment is conveniently possible through lease arrangement only, as a debt financing for such items is impracticable.
- h. The use of leased asset does not affect the borrowing capacity of the lessee as lease payment may not require normal lines of credit and are payable from income during the operating period. This neither affects the debt-equity ratio or the current ratio of the lessee.
- i. This method has several advantages to lessor also, e.g.,
  - (i) It is a safe asset based financing for a productive purpose.
  - (ii) The lessor enjoys tax benefit by depreciation on the asset.
  - (iii) Lease rentals provide regular cash income maintaining liquidity of the concern.

#### **Disadvantages:**

- a. The lease rentals become payable soon after the acquisition of assets and no moratorium period is permissible as in case of term loans from financial institutions. The lease arrangement may, therefore, not be suitable for setting up of the new projects as it would entail cash outflows even before the project comes into operation.
- b. The leased assets are purchased by the lessor who is the owner of equipment. The seller's warranties for satisfactory operation of the leased assets may sometimes not be available to lessee.
- c. Lessor generally obtain credit facilities from banks etc. to purchase the lease equipment which are subject to hypothecation charge in favour of the bank. Default in payment by the lessor may sometimes result in seizure of assets by banks causing loss to the lessee.
- d. Lease financing has a very high cost of interest as compared to interest charged on term loans by financial institutions / banks.

#### **13. Credit from Trade and Expense creditors:**

This represents credit granted by supplies of goods or expense creditors as a term of contract. Usually trade creditors grant a credit varying between 15 to 90 days. It generates automatically in the course of business and is common to all business operations. It may be in the form of "Open Account" or "Bills Payable". It is without any explicit cost, keeps on rotating, is a source of finance for the gross working capital.

Expense creditor period may vary according to the terms and conditions of contract e.g. salaries and wages are payable monthly but a bonus is payable annually or royalty may be payable on quarterly basis. This type of credit has also no explicit cost and keeps on rotating on a going concern. A manufacturer or contractor engaged in producing or constructing costly goods involving length of time usually demand advance from customers at time of accepting order for execution. Similarly monopolistic organisations may demand advance from customers before the order is accepted. This source of finance has no explicit cost of Capital.

#### 14. Bank Advances:

Bank advances are in the form of:

1. Overdraft
2. Short Term Loans
3. Clean overdrafts
4. Cash Credit
5. Advances against goods
6. Bills Discounting
7. Working Capital Term Loan
8. Letter of Credit
9. Financing of export trade by banks
  - a. Pre - Shipment Packing Credit Finance
  - b. Post - Shipment Packing Credit Finance

These are considered as short term sources of funds, though the limits are renewed from time to time. These funds are utilised for working capital purpose. Usually these are secured by way of hypothecation of inventory and debts. Some times bank also allows clean overdraft limits to the selected customers.

#### 1. Overdraft:

Under this facility, customer is allowed to withdraw in excess of his balance in current account upto a fixed limit. Though overdraft is repayable on demand, it generally continues for long period by annual renewals. Interest on this facility is charged on the basis of daily products and usually the rate of interest is higher than other short term finance. The security for overdraft account may be by way of shares; debentures, Government securities, Fixed Deposits etc.



Bank also allows clean overdraft to customers, who are financially sound and reputed for their integrity. In case of clean overdraft, banks usually rely upon personal security of the borrower. A clean overdraft is generally granted for a short period only.

## 2. Short Term Loans:

In a loan account, the entire advance is disbursed at one time either in cash or by transfer to the current account of the borrower. It is a single advance and given against securities like shares, government securities, life insurance policies and fixed deposit receipts, etc. Except by way of interest and other charges, no further adjustments are made in this account. Repayment under the loan account is made either by way of repaying the full amount or by way of schedule of repayments agreed upon as in case of term loans.

## 3. Clean Overdrafts:

When the bank has to rely on the personal security of borrower who is financially sound and reputed for clean advances, it is referred as clean overdrafts. While entertaining the proposal of clean advances, bank exercise a good deal of check since they have no backing of any tangible security.

## 4. Cash Credit:

Under cash credit, a limit is sanctioned by bank and the borrower can withdraw required funds at any time, within that limit. The withdrawable amount may be fixed on the basis of drawing power, which is calculated at a certain prefixed percentage of inventory / receivables. The interest is charged on daily product basis. Cash credit is usually secured against hypothecation of inventory and security of book debts. Though this is short term finance used for working capital purpose, the facility continues for a longer period on its annual renewals.

The borrower some time provides the security of goods by way of pledge. In this case, the borrower delivers the goods from pledged godown only on depositing the borrowed amount with the bank. Similarly on pledge of additional goods, the borrower is allowed to withdraw additional funds.

## 5. Advances against goods

Advances against goods occupy an important place in total bank credit. They provide a reliable source of repayment. Advances against them are safe and liquid. Also, there is a quick turnover in goods, as they are in constant demand. So a banker generally accepts them as security. Furthermore, goods are charged to the bank either by way of pledge or by way of hypothecation. The term 'goods' includes all forms of movables which are offered to the bank as security. They may be agricultural commodities or industrial raw materials or partly finished goods.

**6. Bill Discounting:**

Bank also provides short term capital by discounting the bill of exchange drawn on customers. Out of working capital total limit, Bill Discounting limit also may be fixed by bank. The discount depends upon the amount of the bill, the maturity period and the prevailing rate of interest.

One of the shortcomings of the bill, discounting system is that the bank which discounts the bill must establish and verify creditworthiness of the buyer, which at times may be difficult, complicated and time consuming process.

**7. Financing of Export Trade by Banks:****a) Pre - Shipment Packing Credit Finance:**

Packing credit is an advance extended by banks to an exporter for the purpose of buying, manufacturing or processing, packing and shipping the goods to overseas buyers. An exporter having in hand firm order placed with him by a foreign buyer or irrevocable letter of credit opened in his favour, can approach bank for availing packing credit. An advance so taken is required to be liquidated within 180 days from the date of its commencement by negotiation of export bills or receipt of export proceeds in an approved manner. Packing credit in the case of customers of long standing, may also be allowed against firm contracts entered into by them with overseas buyers.

**Types of Packing Credit****i. Clean Packing Credit:**

It is a clean type of export advance each proposal is weighed according to requirement of trade and credit worthiness of the exporter. Export credit Guarantee Corporation [ECGC] cover is obtained by the bank.

**ii. Packing credit against hypothecation of goods:**

Export finance is made available on certain terms and conditions, where the exporter has pledge able interest and goods are hypothecated to the bank as security with stipulated margin. In this case borrower is required to submit periodical stock statement to bank.

**iii. Packing credit against pledge of goods:**

Export finance is made available on certain terms and conditions, where the exportable finished goods are pledged to the bank with approved clearing agents who will ship the goods from time to time as required by the exporter. The possession of the goods so pledged lies with the bank and kept under lock and key.

**iv. ECGC Guarantee:**

Any loan given to an exporter for the manufacturing, processing, purchasing or packing of goods meant for export against firm order qualifies for packing credit guarantee issued by ECGC.

**v. Forward Exchange Contract:**

It is required that if the export bill is to be drawn in foreign currency, the exporter should enter into forward exchange contract with the bank thus avoiding possible risk due to rate of exchange.

**b) Post - Shipment Packing Credit Finance:**

Bank provides finance to exporters by purchasing export bills drawn payable at sight or by discounting usance export bills covered by confirmed sales and backed by documents of the title of the goods such as bill of lading, air / ship consignment notes. It is necessary that exporter should obtain a shipment or contract risk policy of ECGC.

Finance is also provided by banks to exporters by way of advance against bill forwarded through them for collection, taking into account creditworthiness of the party, nature of goods exported, usance etc.

**15. Commercial Papers :**

Commercial Paper (CP) is an unsecured promissory note issued as a debt instrument that enables highly - rated corporate borrowers to raise funds for a short period. The maturity period may vary between 7 days to one year. The amount raised by CP is also large.

The firm or the dealers in CP sell these to the short term lenders, who use it as interest earning investments of temporary surplus operating funds. The maturity term of CP is fixed.

The CPs are issued with face value but the issue price is less than face value. The difference is discount on the issue price work as a return to the lender at the time of maturity. Discount on CP depends upon the amount involved, maturity period and prime lending rate of commercial banks. The main advantage of CP is that the cost involved is lower than the prime lending rates. In addition to this cost the borrower has to bear another cost in the form of stamp duty and placement fees payable to the dealer of CP who arrange the sale.

CP comes under the purview of RBI which has issued guidelines in 1990 on the basis of recommendations of the Vaghul Committee.

**16. Inter Corporate Deposits (ICD):**

Sometimes the companies borrow funds for a short term period, say upto six months, from other companies which have surplus liquidity for the time being. The ICD are generally unsecured and are arranged by a financier. The ICD are very common and popular in practice as these are not subject to legal hassles. Convenience is the basic virtue of this method of financing. There is no regulation at present in India to regulate these ICD. Moreover these are not covered by Sec. 76 of the companies Act, 2013. The rate of interest on ICD varies depending upon the amount involved and time period. The entire working of ICD market is based upon the personal connection of the lenders, borrowers and financiers.

**17. Bridge Finance:**

Bridge finance refers, normally to loans taken by a business usually from commercial banks for a short period, pending disbursement of sanctioned term loan by financial institutions. Normally it requires a time for the financial institution to finalise procedures of creation of security, tie - up participation with other institutions etc. even though appraisal of the project is made. Once the loans are sanctioned in principle, in order to avoid delay in project implementation, bridge finance arrangement is made. Such temporary finance is repaid out of the disbursement of the principal term loan. It is secured by hypothecation of movable assets, personal guarantees and demand loans. Generally the rate of interests on bridge finance is higher than as compared to that on term loans.

**18. Certificate of Deposit: (CD)**

The CD is a document of title similar to time deposit receipt issued by a bank, except that there is no prescribed interest rate on such funds. The main advantage of CD is that banker is not required to encash the deposit before maturity period and the investor is assured of liquidity because he can sell the CD in a secondary market. CD generally have maturity date.

**19. Treasury Bills:**

Treasury bills are a class of Central Government Securities. Treasury bills, commonly referred to as T-Bills are issued by Governments of India to meet short term borrowing requirements with maturities ranging between 14 to 364 days.

**20. Deferred payment Guarantee in case of fixed Assets -**

- a. Suppliers of machinery may provide deferred credit facility under which payment for the purchase of machinery can be made over a period of time.
- b. Sometimes, an initial down payment is made and the balance paid in suitable instalments. In some other cases, the entire cost of the machinery is financed and the company is not required to contribute any amount initially towards acquisition of the machinery.

- c. Normally, the supplier of machinery insists that bank guarantee should be furnished by the buyer.
- d. Deferred Payment Guarantee does not have a moratorium period for repayment. Hence, it is advisable only for an existing profit making company.

### 21. Internal Cash Accruals:

Existing profit-making companies which undertake an expansion/ diversification programme may be permitted to invest a part of their accumulated reserves or cash profits for creation of capital assets. In such cases, past performance of the company permits the capital expenditure from within the company by way of disinvestment of working/invested funds. In other words, the surplus generated from operations, after meeting all the contractual, statutory and working requirement of funds, is available for further capital expenditure.

### 22. Unsecured Loans:

Unsecured loans are typically provided by promoters to meet the promoters' contribution norm. These loans are subordinate to institutional loans. The rate of interest chargeable on these loans should be less than or equal to the rate of interest on institutional loans and interest can be paid only after payment of institutional dues. These loans cannot be repaid without the prior approval of financial institutions. Unsecured loans are considered as part of the equity for the purpose of calculating debt equity ratio.

### 23. New Debt Instruments:

In the changing scenario, it has become imperative for the corporate sector to device new debt instruments for raising funds from the market.

#### 1. Deep Discount Bonds (DDB)

IDBI for the first time issued DDB at a deep discount price of ₹ 2,700 for which an investor got a bond with a face value of ₹ 1 lakh with a maturity period of 25 years. It allows investor to lock-in the yield to maturity or withdrawing from the scheme on a specified period (After 5,10,15 or 20 years). The effective rate of interest to maturity works out to 15.54% p.a. The investor can also sell the bonds on stock exchange. The difference between the sale price / maturity proceeds and cost of acquisition will be treated as capital gain, which is subject to indexation of cost and concessional rate of income tax.

#### 2. Zero Interest Bonds (ZIB) / Zero Coupon Bonds (ZCB):

ZIB refers to those bonds which are sold at discount from their eventual maturity value and have zero interest rate. These bonds are sold to the investor for discount. The difference between the face value of the certificate and acquisition cost is capital gain to the investors, which is subject to

indexation of cost and concessional rate of income tax. The investors are not entitled to any interest and are entitled only repayment of principal sum on the maturity period. It operates in the same manner as Deep Discount Bond, but the lock in period is comparatively lesser.

The investor prefer ZIB because of lower investment cost. ZIB may be fully or partly convertible bonds. Companies also find ZIB quite attractive because there is no immediate interest Commitment. On maturity the bonds can be converted into equity shares or non - convertible debentures depending upon the desired capital structure of a company.

### 3. Secured Premium Notes (SPN):

The SPN is a tradable instrument with detachable warrant against which the holder gets right to apply for equity shares after a fixed period of time. The SPN have feature of medium to long term notes

Example: Infotech Limited Issue SPN the face value of ₹ 1,000. No interest will accrue on the instrument during first three years after allotment. Subsequently in year 4 to 7 SPN will be repaid in 4 equal instalments of ₹ 250 each, along with additional premium of ₹ 250 each over 4 to 7 years. With each SPN, a warrant will be attached, which will give the holder the right to apply and get 20 equity shares of ₹ 10 each at the end of 4 years at a premium of ₹ 20 per share.

### 4. Option Bonds:

These are cumulative and non - cumulative bonds, where interest is payable on maturity or periodically. Redemption premium is also offered to attract investors.

### 5. Inflation Adjusted Bonds (IAB)

IAB are bonds which promise to repay both the principal and the interest adjusted with inflation.

### 6. Floating Rate Bonds:

The interest rate paid to the floating rate bond holder's changes periodically depending upon the market rate of interest payable on gilt-edged securities. These bonds are also called adjustable interest bonds or variable rate bonds.

### 7. Zero interest fully convertible debentures

- These are fully convertible debentures, which do not carry any interest.
- The debentures are compulsorily and automatically converted after a specified period of time and its holders are entitled to new equity shares of the company at the predetermined price.
- The Company is benefited since no interest is to be paid on it. The investor is benefited if the market price of the Company's shares is very high since he tends to get equity shares of the company at an agreed lower rate.

**8. Euro Convertible Bonds:**

It is a Euro-Bond, a debt instrument which gives the bondholders an option to convert them into a pre-determined number of equity shares of the company. Usually the price of the equity shares at the time of conversion will have a premium element. These bonds carry a fixed rate of interest. These bonds may include a Call Option (where the issuer company has the option of calling / buying the bonds for redemption prior to the maturity date) or a Put Option (which gives the holder the option to put / sell his bonds to the issuer company at a pre- determined date and price).

**9. Euro Bonds with Equity Warrants:**

These bonds carry a coupon rate determined by market rates. The warrants are detachable. Pure bonds are traded at a discount. Fixed Income Funds Management may like to invest for the purposes of regular income.

**10. Euro Convertible Zero Bonds:**

These bonds are structured as a convertible bond. No interest is payable on the bonds. But conversion of bonds takes place on maturity at a pre-determined price. Usually there is a five years maturity period and they are treated as a deferred equity issue.

Type	Yankee Bond	Samurai Bond	Bulldogs
Issued in	US	Tokyo(Japan)	London (UK)
Denominated in	US Dollars	Japanese Yen(JPY)	Great Britain Pound (GBP)
Issuer	Non-US Banks/Corporations	Non-Japanese Company	Non-UK company
To access capital in	US Market	Japanese Market	UK market
Applicable Regulations	Securities and Exchange Commission (SEC) of US	Japanese Regulations	UK / Great Britain Regulations
Other Points	Interest Rate is dollar LIBOR (London Interbank Offered Rate)	Issue Proceeds can be used to finance Japanese or other country operations of Issuer.	Issue Proceeds can be used to finance UK or other country operation of the Issuer.

Type	Description
Masala Bond	<p>Masala means Spice. So, Masala Bond is an Indian name used for a Bond-</p> <ul style="list-style-type: none"> <li>✓ Issued by Indian Corporate Entity</li> <li>✓ Issued to Investors in overseas markets i.e. issued outside India, &amp;</li> <li>✓ Denominated in Indian Rupees.</li> </ul>
Municipal Bonds	These are issued by Local Bodies/Municipalities/Corporations, to finance Urban Infrastructure.
Government Bonds or Treasury Bonds	These are bonds issued by Government of India, RBI any State Government or any other Government Department. They are actively traded in the Money Market.
Callable Bonds	It has call option which gives the issuer the right to redeem the bond before maturity at a pre-determined price known as 'Call Price'.
Puttable Bonds	It has put option which gives the investor the right to sell the bonds to the company before maturity at a pre-determined price known as 'Putt Price'.
Plain Vanilla Bond	<ul style="list-style-type: none"> <li>✓ The issuer would pay the principal amount along with the interest rate.</li> <li>✓ This type of bond would not have any options.</li> <li>✓ This bond can be issued in the form of discounted bond or can be issued in the form of coupon bearing bond.</li> </ul>
Convertible Floating Rate Notes (FRN)	<ul style="list-style-type: none"> <li>✓ A convertible FRN with an option for the holder to convert it into longer term debt security with a specified coupon</li> <li>✓ It protects an investor against falling interest rate</li> <li>✓ The long- term debt security can be sold in the market and the investor can earn profit</li> <li>✓ Capital gain is not applicable to FRN</li> </ul>
Drop Lock Bond	<ul style="list-style-type: none"> <li>✓ A Floating Rate Note with a normal floating rate</li> <li>✓ The floating rate bond would be automatically converted into fixed rate bond if interest rate falls below a predetermined level</li> <li>✓ The new fixed rate stays till the drop lock bond reaches its maturity</li> <li>✓ The difference between the convertible floating rate note and drop lock bond is that the former is long option holder structure and the later one is the short option structure</li> </ul>
Variable Rate Demand Obligations	<ul style="list-style-type: none"> <li>✓ A normal floating rate note with a nominal maturity</li> <li>✓ The holder of the floating rate note can sell the obligation back to the trustee at: At par, Plus accrued interest</li> <li>✓ It gives the investor an option to exit, so more liquid than the normal FRN</li> </ul>

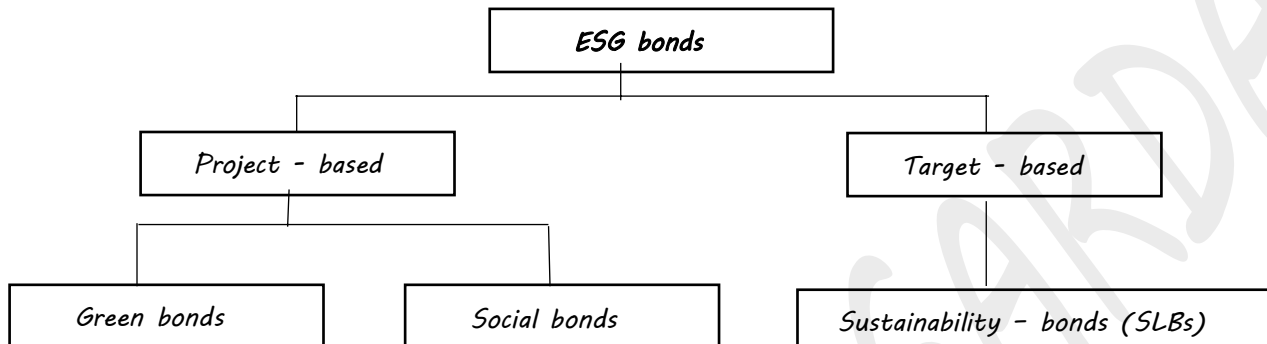


Yield Curve Note (YCN)	<ul style="list-style-type: none"> <li>✓ It is a structured debt security</li> <li>✓ Yield increases when prevailing interest rate declines</li> <li>✓ Yield decreases when prevailing interest rate increases</li> <li>✓ This is used to hedge the interest rate</li> <li>✓ This works like inverse floater</li> </ul>
Euro Bond	<ul style="list-style-type: none"> <li>✓ Euro bonds are issued or traded in a country using a currency other than the one in which the bond is denominated. This means that the bond uses a certain currency, but operates outside the jurisdiction of the Central Bank that issues that currency.</li> <li>✓ Eurobonds are issued by multinational corporations, for example, a British company may issue a Eurobond in Germany, denominating it in U.S. dollars</li> <li>✓ It is important to note that the term has nothing to do with the euro, and the prefix "euro-" is used more generally to refer to deposit outside the jurisdiction of the domestic central bank</li> </ul>

### 11. Seed Capital Assistance:

- a. **Applicability:** The Seed Capital Assistance Scheme is designed by the IDBI for professionally or technically qualified entrepreneurs and / or persons possessing relevant experience, skills and entrepreneurial traits. All the projects eligible for financial assistance from IDBI directly or indirectly through refinance are eligible under the scheme.
- b. **Amount of Finance:** The project cost should not exceed ₹ 2 crores. The maximum assistance under the scheme will be (a) 50% of the required promoter's contribution or (b) ₹ 15 lacs, whichever is lower.
- c. **Interest and Charges:** The assistance is initially interest free but carries a service charge of 1% per annum for the first five years and at increasing rate thereafter. When the financial position and profitability is favourable, IDBI may charge interest at a suitable rate even during the currency of the loan.
- d. **Repayment:** The repayment schedule is fixed depending upon the repaying capacity of the unit with an initial moratorium of upto five years.
- e. **Other Agencies:** For projects with a project cost exceeding ₹ 2 crores, seed capital may be obtained from the Risk Capital and Technology Corporation Ltd. (RCTC). For small projects costing upto ₹ 5 lakhs, assistance under the National Equity Fund of the SIDBI may be availed.

**Environmental, Social and Governance - linked bonds (ESG):** These bonds carry a responsibility of the issuer company to prioritize optimal environmental, social and governance (ESG) factors. Investing in ESG bonds is considered as **socially responsible investing**. ESG bonds can be project - based - green bonds and social bonds, and target - based - sustainability - linked bonds (SLBs).



- ◆ **Green bonds:** These are the most popular ESG bonds that are issued by a financial, non - financial or public institution, where the bond proceeds are used to finance “green projects”. Green projects are aimed at positive environmental and / or climate impact including the cultivation of eco - friendly technology. India is the second - largest green bond market. For example: Ghaziabad Municipal Corporation (GMC) becomes the first Municipal Corporation to raise ₹ 150 crore from Green Bond in the Year 2021.
- ◆ **Social bonds:** These bonds finance the socially impactful projects. The projects here are related to the social concerns such as Human rights, Equality, animal welfare etc. For example, “Vaccine bonds” are social bonds, issued to fund the vaccination of vulnerable childrens and protection of people in lower income countries.
- ◆ **Sustainability - linked bonds (SLBs):** These bonds are combination of green bonds and social bonds. Proceeds of SLBs are not meant for a specific project but for general corporate purpose to achieve Key Performance Indicator (KPIs). For example: Ultra Tech Cement raises US\$ 400 million through India’s first sustainability - linked bonds in year 2021. The company aims to reduce carbon emissions through the life of bond of 10 years.

### MAJOR SOURCES OF FOREIGN CURRENCY FUNDS

The major sources of foreign currency funds are :

- a. **Commercial banks:** Commercial Banks extend foreign currency loans for international operations, just like rupee loans (domestic loans). The banks also provide facilities for overdraft.
- b. **Development banks:** Development banks offer long and medium term loans including foreign currency loans. These are national level agencies and offer a number of concessions to foreign companies to invest within their country and to finance exports from their countries, e.g. EXIM Bank.
- c. **Discounting of Trade Bills:** It is short term financing widely used in Europe and Asian countries for domestic and International business needs.
- d. **International agencies:** International agencies like the International Finance Corporation (IFC), The International Bank for Reconstruction & Development (IBRD), The Asian Development Bank (ADB), The International Monetary Fund (IMF), etc. provide indirect assistance for obtaining foreign currency.
- e. **International Capital Markets:** Savings of individual investors can be effectively tapped by issue of shares or debentures in the world market and not just in the local market. International Capital Markets in Tokyo, London, Luxembourg, New York cater to the needs of Multi National Corporations raise substantial sums from investors spread across the globe, not just in one country.

### CONTEMPORARY SOURCES OF FUNDING

- a. **Crowd funding:** In simple terms, crowdfunding means raising money for an individual or organisation from a group of people to fund a project, typically via internet (social media and crowdfunding websites). It generally involves collecting funds from family, friends, strangers, corporates and many more in exchange of equity (known as Equity funding), loans (known as P2P lending) or nothing at all (i.e. donation). This source of funding also helps start-up to substantiate demand for their product before entering into production.

In the crowdfunding process, three parties are involved i.e. fund raiser, mediator and fund investor. The platforms (mediator) may also charge certain fees in the form of processing fee, transaction fee, etc. either as a fixed amount or a percentage or in combination of both.

- b. **Equity funding:** Equity crowdfunding is a mechanism where investor invests money in an organisation and receive securities of that organisation in return. Every

investor would be entitled to a stake in the organisation depending on their investment. The digital nature of crowdfunding targets large number of investors with small contributions. This type of funding is mostly adopted by startups. Some of the platforms offering equity crowdfunding are StartEngine, EquityNet, SeedInvest, etc.

- c. **Peer-to-Peer (P2P) lending:** It is that category of crowdfunding where lenders match with the borrowers in order to provide unsecured loans through online platform. The fund raised are paid back by the borrowers with interest, though this kind of lending involves certain risk of defaults (just as the banks bear in the case of conventional method of lending). Anyone interested in investing money under P2P lending can visit the P2P lending platforms and choose amongst borrowers considering risk & returns. Some of the platforms offering P2P lending are i2iFunding, Lendbox, Faircent, RupeeCircle, etc.
- d. **Start-up funding:** A start-up company being newly formed needs fund before starting any project. However, as a start-up, it is difficult to manage loans from bank, leaving crowdfunding as one of the sources of finance. Through crowdfunding, a start-up company can raise money from large group of people. The crowdfunding may be in the form of equity funding, P2P lending or both.
- e. **Donation-based Crowdfunding:** It is a source of finance where large group of people donate money as a charity for some cause with no expectation of any ownership or debt. Some of the platforms that are used for donation-based crowdfunding are GoFundMe (used for donations against medical needs, education, etc.), Ketto (used for donation against medical needs), FuelADream (used for donation against charity projects, new ideas), etc.



# CAPITAL BUDGETING

## I. CAPITAL BUDGETING:

Capital investment involves a cash outflow in the immediate future in anticipation of returns at future date. The investment of funds requires a number of decisions to be taken in which funds are invested and benefits are expected over a long period. A capital investment decision involves a largely irreversible commitment of resources that is generally subject to significant degree of risk. The finance manager, therefore is required to do proper planning of project to know in advance technical and financial feasibility of the project.

## II. CONCEPT OF CAPITAL BUDGETING:

- Capital budgeting refers to the long term planning of expenditure whose returns stretch themselves over future period.
- It is the process of deciding whether or not to commit resources to a project whose benefits would be spread over several time periods.
- It considers proposed capital outlay and its financing. Thus it includes both raising of long term funds as well as their utilisation.
- The exercise involved in capital budgeting is to co-relate the benefits to costs in some reasonable manner which would be consistent with the profit maximising objectives of the business.
- It is a managerial decision, since it involves more extended estimation and prediction of things to come requiring high order of intellectual ability.
- The economic justification for a capital expenditure programme requires a long term estimates of profits, which in turn involves projection of sales and cost of operation over a period of years.
- It includes searching for new and more profitable investment proposals, investigation, engineering and marketing considerations to predict the consequences of accepting the investment and making economic analysis to determine the profit potential of each investment proposal.

## III. IMPORTANCE OF CAPITAL BUDGETING DECISION

Capital Budgeting decisions should be taken after careful analysis and review. The importance of Capital Budgeting can be understood from the following points:

- a. **Cost:** Initial Investment in substantial. Hence commitment of resources should be made properly.
- b. **Time:** The effect of decision is known only in the near future and not immediately.
- c. **Irreversibility:** Decisions are irreversible and commitment should be made on proper evaluation.
- d. **Complexity:** Decisions are based on forecasting of future events and inflows. Quantification of future events involves application of statistical and probabilistic techniques. Careful judgement and application of mind is necessary.

#### IV. CAPITAL BUDGETING PROCESS

- a. **Planning:** The capital budgeting process begins with the identification of potential investment opportunities. The opportunity then enters the planning phase when the potential effect on the firm's fortunes is assessed and the ability of the management of the firm to exploit the opportunity is determined.
- b. **Evaluation:** This phase involves the determination of proposal and its investments, inflows and outflows. Investment appraisal techniques, ranging from the simple payback method and accounting rate of return to the more sophisticated discounted cash flow techniques, are used to appraise the proposals.
- c. **Selection:** Considering the returns and risk associated with the individual projects as well as the cost of capital to the organisation, the organisation will choose among projects so as to maximise shareholders' wealth.
- d. **Implementation:** When the final selection has been made, the firm must acquire the necessary funds, purchase the assets, and begin the implementation of the project.
- e. **Control:** The progress of the project is monitored with the aid of feedback reports.
- f. **Review:** When a project terminates, or even before, the organisation should review the entire project to explain its success or failure. This phase may have implication for firms planning and evaluation procedures.

#### V. BASIC FINANCIAL FACTORS USED IN PROJECT EVALUATION

The following basic financial factors are used in project evaluation techniques:

- a. **Initial Investment:** This equals the cash outflow at the initial stage, net of salvage value of old machinery if any.  $\text{Initial Investment} = \text{Cost of New Asset purchased} - \text{Less Sale Value of old assets if any.}$
- b. **Cash Flow After Taxes (CFAT):** This equals the cash inflows generated by the
- c. **projects at various points of time.** Generally  $\text{CFAT} = \text{PAT (Profit after Tax)} + \text{Depreciation and other amortizations.}$

- d. **Project Life:** The time period during which the project generates positive Cash Flow After Taxes is called Project Life.
- e. **Time Value of Money :** The value of money differs at different point of time. So the present value of further cash flows will be computed by discounting the same at the appropriate discount rate.
- f. **Discount Rate:** It represents the cut-off rate for capital investment evaluation. A project which does not earn at least the cut-off rate should not be accepted. Generally, the rate used for discounting is the Weighted Average Cost of Capital of the enterprise.
- g. **PV Factor and Annuity Factor Tables:** For the purpose of discounting future cash flows, the PV factor (Present Value Factor) and Annuity Factor tables are used. The utility of tables is as under
- In case of uniform Cash Flows during the project life : Annuity Factor at the end of the project life.
  - In case of differential Cash Flows during the project life : PV Factors for each year.

#### VI. TYPE OF INVESTMENT PROPOSALS:

##### 1. Cost reduction proposals

- by replacement of machinery and equipment
- plant re-arrangement programmes
- mechanisation of process
- provision of facilities to manufacture components currently purchased

##### 2. Income maintaining proposals

- Replacement of worn out equipment

##### 3. Income increasing proposals

- Additions and extensions to plant and machinery for having additional volume of existing production
- Installation of new plant and machinery for taking up a new product or product lines.

##### 4. Research and Development proposal

Summary of proposals

- Replacement proposal
- Expansion proposal



- New product line or diversification proposal
- Strategic investment proposal
- Contractual investment proposal

### VII. CLASSIFICATION OF PROPOSALS:

A firm may have several proposals for its consideration. It may adopt one of them, some of them or all of them depending upon whether they are independent, contingent or dependent or mutually exclusive.

#### 1. Independent proposals:

These are the proposals, which do not compete with one another. In case of such proposals the firm may straightway accept or reject on the basis of a minimum return on investment required.

#### 2. Contingent or dependent proposals:

These are the proposals, whose acceptance depends on the acceptance of one or more other proposal. When a contingent investment proposal is made, it should also contain the proposal on which it is dependent in order to have better perspective of the situation.

#### 3. Mutually Exclusive Proposals:

These are proposals which compete with each other in way a way the acceptance of one precludes the acceptance of other or others. Thus in case of two or more mutually exclusive proposals, only one of the proposals can be accepted.

### VIII. FACTORS AFFECTING CAPITAL INVESTMENT DECISIONS:

#### 1. Amount of investments:

It covers amount of funds committed to project -

- Cost of purchase of land, building, plant etc.
- Increase in level of working capital
- Salvage value from old assets (in case of replacement) or write off of assets not fully depreciated
- Cost of installation and other incidental costs
- Opportunity cost of using existing resources
- Tax impact on sale of old assets
- Residue / Terminal / Salvage value of capital expenditure
- Realisable value of working capital at the end of economic life
- Deferred investment
- Capital subsidy

#### 2. Operating cash flows:

It includes

- Cash receipts
- Cash Disbursements



- *Timing of cash receipts and disbursements*
- *Range of estimates - highest and lowest estimates considering the uncertainties*
- *After tax and without tax proceeds*
- *Absolute and relative cash flows*

*When cash flow of one project are not compared with a cash flow of other project, they are know as absolute cash flows.*

*The cash flow of one project can be compared directly with that of another project or difference in cash flows of 2 projects can be determined. If the difference is positive in a particular period, it may indicate how much better the cash flows from one project are than those from another. Such cash flows are known as relative cash flows.*

*Conceptual danger must be avoided in estimating relative cash flow i.e. almost any investment can be made to seem worthwhile if it is compared with sufficiently bad alternative.*

*The following principles should be kept in mind while estimating cash flows -*

- *The estimates should cover all costs and benefits resulting from the adoption of the proposed projects*
- *The estimates should be on an incremental basis i.e. with and without projects.*
- *Indirect costs and benefits can be taken into account to the extent appropriate to the decision making unit.*
- *It is necessary to compare the total performances with total costs and the practice of adjusting certain benefits against certain costs or vice versa should be discouraged as it often leads to wrong ranking of projects.*
- *Interest payment on borrowed or dividend on shareholders funds is ignored as it involves double accounting. The tax impact on interest however may be considered.*
- *As there is a large amount of uncertainty connected with level of business, nature of production, future availability of improved equipment, cost factors demand, tax etc., it is necessary to make a note that computations are indications rather than 100% certain and accurate figures.*

#### **Risk and Uncertainty involved in appraisal:**

*Evaluation of capital expenditure proposal involves projections of the future. Future is always uncertain. Nobody can say with certainty about the quantum and frequency of the future cash flows. There are too many unknown and uncertain*

factors which influence cash flow and therefore, it is important to recognise that each cash inflow or outflow is only a probable figure. It is necessary to consider risk and uncertainty while carrying out the capital budgeting exercise. Risk and return have a direct relationship. Higher the return from the project, higher would be the risk normally and vice versa. It is, therefore, necessary that the capital budgeting exercise should attempt to optimise both the return and risk factors.

### 3. Choice of horizons:

Selection of the time period is important for the decision makers for evaluating benefits and costs. The most practical way of resolving the horizon problems is to let the discount rate take care of it. In fact, many companies impose a shorter limit of benefits and costs, considered for many type of projects.

Life of the project may be divided into -

- Physical life
- Economical life

The relevant period in investment analysis is economic life as investments are made for the economic benefits.

## IX. CAPITAL BUDGETING TECHNIQUES

There are several methods / techniques for evaluation and ranking of the capital investment proposals. In case of all these methods the main emphasis is the return which will be derived on the capital investment in the project.

### 1. Payback period:

Payback period refers to the period in which the project will generate the necessary cash to recoup the initial investment. In case of even cash flows,

$$\text{Payback period} = \frac{\text{Initial investment}}{\text{Annual Cash inflow}}$$

Annual cash flows = Estimated cash inflow resulting from the proposed investment (i.e. net income on account of investment before depreciation but after taxation)



### Procedure for calculation of simple pay back periods

Step	Procedure
1	Determine the total outflow of the project. (Initial Investment)
2	Determine the cash inflow after taxes (CFAT) for each year.
3	Determine the cumulative CFAT at the end of every year.
4	Determine the year in which cumulative CFAT exceeds Initial Investment.
5	<p>Compute Payback Period as under :</p> <p>In case of uniform annual CFAT : <math>\text{Payback period} = \text{Initial Investment} / \text{CFAT per annum}</math></p> <p>In case of differential CFAT : <math>\text{Payback period} = \text{Time at which cumulative CFAT} = \text{Initial Investment}</math></p>

#### Accept or reject criterion:

A project whose actual pay-back period is **more** than what has been predetermined by the management will be straightway **rejected**. The fixation of maximum acceptable pay-back period is generally done by taking into account the reciprocal of the cost of capital (i.e.  $\text{maximum acceptable pay-back period} = 100 \text{ divided by desired rate of return}$ )

The pay back period can also be used in case of mutually exclusive projects. The projects are then arranged in ascending order according to the length of their pay back periods. It may be said that pay-back period is measure of liquidity of investments rather than their profitability. It should more appropriately be treated as a constraint to be satisfied rather than as a profitability measure to be maximised.

Sometimes payback period is calculated after discounting the cash flows by a predetermined rate. The payback period so calculated is called "Discounted Payback Period".

#### Merits / Advantages:

1. This method is simple to understand and easy to operate.
2. It clarifies the concept of profit or surplus. Surplus arises only if the initial investment is fully recovered. Hence, there is no profit on any project unless the payback period is over.
3. When funds are limited, projects having shorter payback periods should be selected, since they can be rotated more number of times.
4. This method is suitable in the case of industries where the risk of technological obsolescence is very high and hence only those projects which have a shorter payback periods should be financed.

5. This method focuses on projects which generates cash inflows in earlier years, thereby eliminating projects bringing cash inflows in later years. As time period of cash flows increases, risk and uncertainty also increases. Thus payback period tries to eliminate or minimise risk factor.
6. This method promotes liquidity by stressing on projects with earlier cash inflows. This is a very useful evaluation tool in case of liquidity crunch and high cost of capital.
7. The payback period can be compared to a break-even point, the point at which the costs are fully recovered but profits are yet to commence.

#### Demerits / Limitations:

1. It stresses on capital recovery rather than profitability.
2. It does not consider the post-payback cash flows, i.e. returns from the project after its payback period. Hence, it is not a good measure to evaluate where the comparison is between two projects, one involving a long gestation period and the other yield quick results but only for a short period.
3. This method becomes an inadequate measure of evaluating two projects where the cash inflows are uneven. There may be projects with heavy initial inflows and very less inflows in later years. Other projects with moderately higher but uniform CFAT may be rejected because of longer payback.
4. This method ignores the time value of money. Cash flows occurring at all points of time are treated equally. This goes against the basic principle of financial analysis which stipulates compounding or discounting of cash flows when they arise at different points of time.

#### 2. Discounted payback period:

When the payback period is computed after discounting the cash flows by a predetermined rate, it is called as the 'Discounted payback period'. It is computed as under:

Step	Procedure
1	Determine the total outflow of the project. (Initial Investment)
2	Determine the cash inflow after taxes (CFAT) for each year.
3	Determine the PV factor for each year and compute Discounted CFAT (DCFAT) for each year.
4	Determine the cumulative DCFAT at the end of every year.
5	Determine the year in which cumulative DCFAT exceeds Initial Investment

6	Compute Discounted Payback Period as the time at which cumulative DCFAT = Initial Investment
7	Accept if Discounted Payback Period less than maximum / benchmark period; else reject the project.

The following format may be adopted for presentation of the answer

Year	CFAT	PV Factor	DCFAT = CFAT X PV factor	Cumulative DCFAT
1				
2				
3				

### 3. PAYBACK RECIPROCAL:

$$= \frac{\text{Annual Cash Inflow}}{\text{Initial Investment}}$$

It is a reciprocal of payback period. It is calculated as follows:

Payback period method does not indicate any cut off period for the purpose of investment decision. The reciprocal of payback is a close approximation of the internal rate of return, if the life of the project is at least twice the payback period and project generates equal amount of the annual cash inflows

**Example :** A project with an initial investment of ₹ 50 lakhs and life of 10 years, generates CFAT of ₹ 10 lakhs per annum. Its payback reciprocal will be ₹ 10 lakhs / ₹ 50 lakhs = 20%.

### 4. ACCOUNTING OR AVERAGE RATE OF RETURN (ARR):

According to this method, the capital investment proposals are judged on the basis of their relative profitability. For this purpose, capital employed and expected income are determined according to commonly accepted accounting principles and practices over the entire economic life of the project and then the average yield is calculated. Such a rate is termed as Accounting rate of return. It may be calculated, according to either of the following formula -

$$i. \frac{\text{Average annual net earnings}}{\text{Original investment}} \times 100$$

$$ii. \frac{\text{Annual average net earnings}}{\text{Average Investment}} \times 100$$

The term "Average annual net earnings" is the average of the earnings (after depreciation and tax) over the whole of the economic life. One may calculate "Average annual net earnings" before tax. Such rate is known as pre-tax accounting rate of return.

The amount of "Average Investment" is calculated as follows:

$$\frac{\text{Original investment} - \text{Scrap value}}{2} + \text{Additional Net Working Capital} + \text{Scrap Value}$$

OR

$$\frac{\text{Opening WDV} + \text{Closing WDV}}{2}$$

#### Accept / Reject Criterion:

Any project expected to give a return below minimum desired rate of return will be straightway rejected. In case of several projects, where a choice has to be made, the different projects may be ranked in the descending order on the basis of their rate of return.

#### Merits:

1. The method is superior to pay-back period as it takes into account savings over the entire economic life, even though estimates of distant future may be subject to wide margin of errors.
2. The projects differing widely in character can be compared properly.
3. The method embodies the concept of 'Net earnings' after allowing for depreciation as it is of vital importance in the appraisal of a proposal.

#### Demerits:

1. The method suffers from the fundamental weakness as that of pay-back method i.e. it ignores the fact that receipts occur at different time intervals i.e. it ignores time value of money.
2. If earnings from different investments accrue at the same time, this method can be safely used.
3. The method has different variants, each of which emerge different rate of return for one proposal. This situation arises due to diverse concept of investments as well as earnings.
4. Some analyst are of the opinion that as the, method takes into account earnings after depreciation, it is gross error because it is only the cash flows, that are relevant for the decision making purpose.

**5. DISCOUNTED CASH FLOW (DCF) METHOD:**

An investment is essential outlay of funds in anticipation of future returns. The presence of time as a factor in investment is fundamental rather than incidental to the purpose of evaluation of investments. Time is always crucial for the investor, so that a sum received today is worth more than the same sum to be received tomorrow. Thus in evaluating investment projects, it is important to consider the timings of return on investments.

*Assumptions of Discounting Table:*

1. Opportunity for investment is available at any time for any amount.
2. Interest will accrue at the same rate.
3. Interest will be received at the end of the year.
4. Interest will be reinvested at the same opportunity rate.
5. Price level remains the same.

**a. Net Present Value Method:**

The net present value is the difference between present value of benefits and present value of costs. If the net present value is positive the conclusion is favourable to the decision to go ahead with the project but if it is negative, the project is rejected. The analyst who uses this method feels that it gives desired indication with the least confusion.

**Accept / Reject Criterion:**

Where  $NPV > \text{Zero}$  accept the proposal

$NPV =$  Indifference point

$NPV < \text{Zero}$  reject the proposal

$NPV =$  Net Present Value

**Procedure for computation of NPV :**

Step	Procedure
1	Determine the total cash outflow of the project and the time periods in which they occur.
2	Compute the Total Discounted Cash Outflow (DCO) = Outflow X PV factor
3	Determine the total cash inflows of the project and the time periods in which they arise.
4	Compute the Total Discounted Cash Inflows (DCF) = Inflow X PV factor
5	Compute NPV = Discounted Cash Inflows Less Discounted Cash Outflows (step 4 less step 2)
6	Accept Project if NPV is positive, else reject.

**Cash Outflows :** Generally, Cash Outflows consist of (a) Initial investment which occurs at Time "0" and (b) Special Payments and outflows e.g. Working Capital outflow which arises in the year of commercial production, Tax paid on Capital Gain made by sale of old asset, if any.

**Cash Inflows:** Cash Inflows = CFAT = PAT + Depreciation. Also, specific cash inflows like salvage value of new assets and recovery of working capital at the end of the project, tax savings on loss due to sale of old asset, should be carefully considered. The general assumption is that all cash inflows occur at the end of each year.

**Discounting cash inflows and outflows:** Each item of cash inflows and outflow is discounted to ascertain its present value. For this purpose, the discounting rate is generally taken as the Cost of Capital since the project must earn at least what is paid out on the funds blocked in the project. The Present Value tables are used to calculate the present value of various cash flows

**Use of Discounting Rate:** Instead of using the PV factor tables, the relevant discount

$$\text{Factor can be computed as } \frac{1}{(1 + k)^n}$$

Where  $k$  = cost of capital and  $n$  = year in which the inflow or outflow takes place.

Hence, PV factor at 10% after one year =  $1 / 1.10 = 0.9091$

Similarly, PV factor at the end of two years =  $1/(1.10)^2 = 0.8264$  and so on.

**Note:** The NPV method will give valid results only if money can be immediately reinvested at a rate of return equal to the firm's cost of capital.

#### Merits:

- It considers the time value of money. Hence it satisfies the basic criterion for project evaluation.
- Unlike payback period, all cash flows are considered.
- NPV constitutes addition to the wealth of shareholders and thus focuses on the basic objective of financial management.
- Since all cash flows are converted into present value (current rupees), different projects can be compared on NPV basis. Thus, each project can be evaluated independent of others on its own merit.

#### Demerits:

- It involves complex calculations.
- It involves forecasting cash flows and application of discount rate. Thus accuracy of NPV depends on accurate estimation of these two factors which may be quite difficult in practice.



- c. NPV and ranking of project may differ at different discount rates, causing inconsistency in decision making.
- d. It ignores the difference in initial outflows, size of different proposals etc, while evaluating mutually exclusive projects.

#### b. Modified Net Present Value (MNPV)

One of the limitations of NPV method is that reinvestment rate in case of NPV is Cost of Capital ( $k$ ). However, in case of MNPV, different reinvestment rates for the cash inflows over the life of the project may be used. Under this modified approach, terminal value of the cash inflows is calculated using such expected reinvestment rate ( $s$ ). Thereafter, MNPV is determined with present value of such terminal value of the cash inflows and present value of the cash outflows using cost of capital ( $k$ ) as the discounting factor.

Terminal value is the sum of the compounded value of cash inflows of different years at the end of the life of the project. If the life of the project is ' $n$ ' years, cash inflow of period ' $t$ ' is  $CF_t$  and reinvestment rate is ' $r$ ', the terminal value will be  $\sum(CF_t)^{n-t}$ .

#### c. Adjusted Net Present Value

For determining NPV, weighted average cost of capital is used as the discounting factor, based on the assumption that every project is financed by the same proportions of debt and equity as found in the capital structure of the firm. However, that may not be true. Moreover, tax advantages (savings in tax) due to use of borrowed fund is not usually considered in financial appraisal of investment proposals discussed so far. But impact of debt financing can be incorporated using Adjusted Present Value Method with an adjustment of tax aspects of debt financing with the Base Case NPV.

**Base Case NPV is the NPV under the assumption that the project is all-equity financed.**

**Adjusted NPV = Base case NPV + NPV of Tax Shields arising out of financing decisions associated with the project.**

#### d. Profitability Index / Desirability Factor / Present Value Index Method (PI):

If the present value method is used, the present value of the earnings of one project can not be compared directly with the present value of earnings of another, unless the investments are of the same size. In order to compare proposals of different size, the flows to investment must be related. This is done by dividing the present value of earnings by the amount of investment, to give a ratio i.e. called the profitability index

/ ratio or desirability factor.

$$\text{Profitability Index} = \frac{\text{Discounted Cash Inflow}}{\text{Discounted Cash Outflow}}$$

OR

$$\text{Profitability Ratio} = \frac{\text{Discounted Cash Inflow}}{\text{Discounted Cash Outflow}} \times 100$$

Higher the index number, the better the project. This is called benefit cost ratio  
Accept / Reject Criterion -

Where  $PI > 1$  accept the proposal

$PI = 1$  accept the proposal

$PI < 1$  reject the proposal

$PI =$  Profitability Index

#### Advantages:

- a. This method considers the time value of money.
- b. It is a better project evaluation technique than NPV and helps in ranking projects where NPV is positive.
- c. It focuses on maximum return per rupee of investment and hence is useful in case of investment in divisible projects, when funds are not fully available.

#### Disadvantages:

- a. It fails as a guide in resolving capital rationing when projects are indivisible. Once a single large project with high NPV is selected, possibility of accepting several small projects which together may have higher NPV than the single project is excluded.
- b. Situations may arise where a project with a lower profitability index selected may generate cash flows in such a way that another project can be taken up one or two years later, the total NPV in such case being more than the one with a project with highest Profitability Index.

**e. Internal rate of return (IRR) Method or Time adjusted rate of return:**

In the net present value method, the required earnings rate is selected in advance. There is an alternative method which finds the earnings rate at which the present value of the earnings equals the amount of the investment. This rate is called the time - adjusted rate of return, DCF rate of return, internal rate of return, yield rate, marginal efficiency of capital etc. IRR is the rate which brings the sum of the future cash flows to the same level as the original investment. Thus IRR is the rate of return at which the sum of discounted cash inflows equals the sum of discounted cash outflows.

**Accept / Reject Criterion:**

Where  $IRR > \text{Cut-off-rate}$  accept the proposal

$IRR = \text{Cut-off-rate}$  accept the proposal

$IRR < \text{Cut-off-rate}$  reject the proposal

The IRR is calculated under two situations -

1. When cash flows are uniform
2. When cash flows are not uniform

**1. When cash flows are uniform:**

In the case of those projects which generate uniform cash inflows, the IRR can be calculated by locating the factor in Annuity Table II

**Steps for Calculation of IRR:**

- a. Divide the Investment by the annual cash inflow. The result is called the 'Factor' or 'Payback'
- b. Go across the row of the year (equivalent to the life of the project) of Table II and Check up the closest figure to the fact (as determined in step (a) above) and ascertain the rate.
- c. If IRR is greater or equal to minimum desired rate of return accept the project. If IRR is less than minimum desired rate of return reject the project.

**Note:** Alternatively IRR may be calculated as per method prescribed for "Uneven Cash Flow" as stated below.

**2. If cash flows are not the same each year:**

The IRR can be found out by trial calculations. The cash flows of project for each year and its residue value are listed and various discount rates are applied to these amounts until the closest rate is found that makes their total present value equal to the amount of investment. The indication for discounting at higher or lower rate can be considered on the following basis:

$V > C$  = Higher the rate of discounting

$V < C$  = Lesser the rate of discounting

$V$  = Discounted Cash Inflow

$C$  = Cost of the investment

With the discounting rates (where there is positive NPV i.e. Start rate and Negative NPV i.e. end rate), IRR is obtained by interpolation as under -

$$\text{Start Rate} + \left( \frac{\text{Surplus}}{\text{Surplus} - \text{Deficit}} \times \text{Difference in start and end rate} \right)$$

$$\text{End Rate} + \left( \frac{\text{Deficit}}{\text{Surplus} - \text{Deficit}} \times \text{Difference in start and end rate} \right)$$

Surplus = Surplus at Start Rate

Deficit = Deficit at End Rate

Under this method it is presumed that cash inflows can be reinvested at internal rate of return.

IRR calculations are based upon the investment rate assumptions i.e. IRR method assume reinvestment at IRR

#### Advantages:

- Time value of money is taken into account.
- All cash inflows of the project, arising at different points of time are considered.
- Decisions are immediately taken by comparing IRR with the cost of capital.
- It helps in achieving the basic objective of maximisation of shareholders wealth

#### Disadvantages:

- It is tedious to compute in case of multiple cash outflows. Multiple IRR's may result, leading to difficulty in interpretation.
- It may conflict with NPV in case inflow / outflow patterns are different in alternative proposals.
- The presumption that all the future cash inflows of a proposal are reinvested at a rate equal to the IRR may not be practically valid.

**Merits of DCF Technique:**

1. Conceptually a DCF technique is superior to other methods. It is more objective because its conclusion is not directly influenced by decisions regarding depreciation methods, capitalisation v/s expense decisions etc.
2. Erratic flow of revenues and expenses over the project's life are directly considered under this method while they are averaged out under other methods.
3. DCF method automatically gives more weight to the units of money, which are nearer to than those which are distant, while, under other methods, distinct units of money are unrealistically treated with the same weight as present units.
4. The method enables a ready comparison to be made between projects having different lives and different timings of cash inflows because discounting process allows comparison to be made at the same point of time.
5. It is strictly comparable to cost of capital ratios so that decisions can be made quickly and safely by comparing rate of return and value of money to the firm.

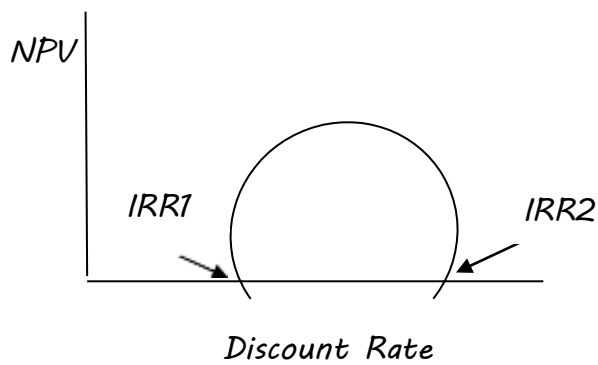
**Demerits of DCF Technique:**

1. It is pointed that other methods of ranking investment proposals are easier to understand and simple to apply than DCF methods. The supporters of this method argue that the difficulty is over estimated and reluctance in using this method is more on account of unfamiliarity than its complexity.
2. The method does not correspond to accounting concepts for recording costs and revenue with a consequence that special analyst is necessary for the study of a capital investment.
3. Though the method is an advanced one over the other methods, it is not dependable ranking method in as much as it does not reflect the firm's cost of capital. As a matter of fact the profitability of a capital proposal can be judged only when net income on account of operations is considered.
4. The method is based on the presumption that the cash inflow can be invested at the discounting rate in the new projects. However this assumption does not always hold good especially when IRR is much higher than normal opportunity rate say Bank Rate. This also depends upon available investment opportunities.

**Multiple Internal Rate of Return (MIRR)**

In cases where project cash flows change signs or reverse during the life of a project for example, an initial cash outflow is followed by cash inflows and subsequently followed by a major cash outflow, there may be more than one internal rate of return (IRR). The following graph of discount rate versus net present value (NPV) may be used as an

illustration:



In such situations if the cost of capital is less than the two IRRs, a decision can be made easily, however, otherwise the IRR decision rule may turn out to be misleading as the project should only be invested if the cost of capital is between IRR1 and IRR2. To understand the concept of multiple IRRs it is necessary to understand the implicit re-investment assumption in both NPV and IRR techniques.

#### **Modified Internal Rate of Return (MIRR):**

There are several limitations attached with the concept of the conventional Internal Rate of Return. The MIRR addresses some of these deficiencies. For example, it eliminates multiple IRR rates; it addresses the reinvestment rate issue and produces results, which are consistent with the Net Present Value method.

Under this method, all cash flows, apart from the initial investment, are brought to the terminal value using an appropriate discount rate (usually the cost of capital). This results in a single stream of cash inflow in the terminal year. The MIRR is obtained by assuming a single outflow in the zeroth year and the terminal cash in flow as mentioned above. The discount rate which equates the present value of the terminal cash in flow to the zeroth year outflow is called the MIRR.

### **X. COMPARISON OF THE PROFITABILITY INDEX Vs. INTERNAL RATE RETURN Vs. PRESENT VALUE APPROACH**

**NPV versus PI:** All the three techniques viz. NPV, PI and IRR use the time value of money. The discount rate used in NPV and PI methods are the same. Hence, for a given project, NPV and PI method give the same result, i.e. accept or Reject. However, if we have to select one project out of two mutually exclusive projects, the NPV method should be preferred. This is because the NPV indicates the economic contribution or surplus of the project in absolute terms. The higher the NPV, the better it is.

**NPV versus IRR:** Higher the NPV, higher will be the IRR. However, NPV and IRR may give conflicting results in certain cases particularly when:

➤ Cash Outflows arise at different points of time, rather than as Initial Investment only.

➤ There is a huge difference between initial CFAT and later years CFAT.

A project with heavy initial CFAT than compared to later years will have higher IRR and vice-versa. The NPV method considers the timing differences at the appropriate discount rate.

The presumption in IRR is that intermediate cash inflows will be reinvested at that rate (IRR); whereas in the case of NPV method, intermediate cash inflows are presumed to be reinvested at the cut-off rate. The latter presumption viz. Reinvestment at the Cut-off Rate, is more realistic than reinvestment at IRR.

Hence, in case of conflicting decisions based on NPV and IRR, the NPV method must prevail.

### XI. PROJECTS WITH VARYING LIVES

In appraising projects with varying lives, due thought must be given to the reinvestment opportunities existing at the end of the different economic lives of the project. The longer period project will be selected inspite of its lower IRR, if the estimated investment rate is sufficiently lower relating to the IRR of the longer life project, the shorter life project will be preferred as its quicker cash throw-off making funds available for investment soon.

The problem can be handled by annualising the respective cash flow patterns of the alternative projects under study. The process of annualising the net present value of the cash inflow or outflow of an investment proposal involves conversion of the present value into an annuity over the economic life of the proposal at suitable opportunity.

$$\text{Annualised net benefit} = \frac{\text{NPV}}{\text{PV Annuity factor over the project life}}$$

Or

$$\text{NPV} \times \text{Capital recovery factor over the project life}$$

The annualising net benefit can be compared directly with similar results for projects with entirely different lives and cash flow patterns.

Projects with equal cash outflow but varying cash inflows can be ranked on the basis of annualised benefit-

$$\text{Annualised benefit} = \frac{\text{Present Value of Cash Inflow}}{\text{PV Annuity factor over the project life}} \quad \text{Or}$$

$$= \text{Present value of cash inflow} \times \text{Capital recovery factor over the project life}$$

Projects with equal annual benefit but varying cash outflows can be ranked on the basis of annualised cost -

$$\text{Annualised net benefit} = \frac{\text{Present value of Cash Outflow}}{\text{PV Annuity over the Project Life}} \quad \text{Or}$$

$$\text{NPV} \times \text{Capital recovery factor over the project life}$$

#### Procedure for Evaluating Projects with differential lives:

In case of evaluation based on NPV method, comparison of two projects is possible only if initial investment and project lives are the same. If project lives are different, e.g. Machine A operates for 7 years whereas Machine B operates for 10 years, the following procedure is adopted.

Step	Procedure
1	Compute the Initial Investment of each alternative
2	Determine the project lives of each alternative.
3	Determine the annuity factor relating to the project life of each alternative.
4	Compute Equivalent Annual Investment (EAI) = Initial Investment / Relevant Annuity Factor
5	Compute CFAT per annum or Cash Outflows per annum, of each alternative.
6	Compute Equivalent Annual Benefit (EAB) = CFAT per annum less EAI OR Compute Equivalent Annual Costs (EAC) = Cash Outflows per annum + EAI
7	Select Project with Maximum EAB or Minimum EAC, as the case may be.

#### XII. CAPITAL RATIONING

A firm normally fix up maximum amount that can be invested in capital projects during a given period of time. The firm then attempts to select a combination of investment proposals, that will within the specific limits provide maximum profitability and put them in descending order according to their rate of return. Such a situation is called 'Capital Rationing'. The situation may arise due to -

- Financing capital expenditure only by way of retained earnings.



- Allocation of specified departmental limits.
- Restricted availability of own funds and thereby restrictions on borrowings.

**Classification of Investment Proposals:** For Capital Rationing purpose, the investment proposals are classified as under:

<i>Nature of Project</i>	<i>Indivisible</i>	<i>Divisible</i>
<i>Meaning</i>	<i>Investment should be made in full. Partial or Proportionate investment is not possible.</i>	<i>Partial Investment is possible and proportionate NPV can be generated.</i>
<i>Steps involved in Decision Making</i>	<i>Determine the combination of projects to utilise amount available. Compute NPV of each combination. Select the combination with maximum NPV.</i>	<i>Compute PI of various projects and rank them. Projects are selected based on maximum Profitability Index.</i>

## PROBLEMS

1. Ash Limited is considering the purchase of a new machine which would carry out some operations at present performed by manual labour. The two alternative models under consideration are 'Damsel' and 'Shylock'.

The following information, from which a profitability statement is to be prepared for submission to the Board of Directors, is available

	<b>Machine 'Damsel'</b> ₹	<b>Machine 'Shylock'</b> ₹
Cost of machine	3,00,000	5,00,000
Estimated Life (in years)	10	12
Estimated savings in scrap per annum	20,000	30,000
Additional cost of Supervision per annum	24,000	32,000
Additional cost of maintenance per annum	14,000	22,000
Cost of Indirect Material per annum	12,000	16,000
Estimated Savings in Wages -		
Wages per Worker per annum	1,200	1,200
Workers not required	150	200

The rate of taxation may be regarded as 35 % of profits.

Which model can be recommended for purchase? Give reasons for your answer.

2. Your company is considering investing in a project for which the investment data are as follows

Capital outlay                      ₹ 2,00,000/-

Depreciation charges        20 % per annum

Forecasted annual income before charging depreciation but after all other charges is

Year	Income (in ₹)
1	1,00,000
2	1,00,000
3	80,000
4	80,000
5	40,000
<b>Total</b>	<b>4,00,000</b>

In connection with foregoing, you are asked to employ methods of measuring the return on capital employed with a view to ascertaining value of the proposed investment to the company

On the basis of the figures given, above, set out calculations illustrating and comparing the following methods of evaluation the return on capital employed.

- a. Payback Period
- b. Rate of Return on original investment
- c. Rate of Return on average investment
- d. Discounted cash flow
- e. Discounted Pay back Period.

State clearly any assumptions you would make. Taxation to be ignored. Discounting should be done @ 10%. Calculations may be approximate.

3. A Company has an investment opportunity costing ₹ 40,000 with the following expected net cash flow (i.e. after taxes and before depreciation) -

Year	Net Cash Flow (₹)
1	7,000
2	7,000
3	7,000
4	7,000
5	7,000
6	8,000
7	10,000
8	15,000
9	10,000
0	4,000

Using 10% as the cost of capital, determine the following

- Pay back period
  - Net present value at 10% Discounting Factor.
  - Profitability Index at 10% Discounting Factor
  - Internal rate of return with the help of 10% discounting factor and 15% Discounting Factor
  - Discounted Pay back Period
4. A firm whose cost of capital is 10% is considering two mutually exclusive projects X and Y, the details of which are –

	Project X ₹	Project Y ₹
Investment	70,000	70,000
Cash Flow year 1	10,000	50,000
Cash Flow year 2	20,000	40,000
Cash Flow year 3	30,000	20,000
Cash Flow year 4	45,000	10,000
Cash Flow year 5	60,000	10,000
	1,65,000	1,30,000

Compute the payback period, discounted pay back period, pay back reciprocal, net present value at 10%, profitability index and Internal Rate of Return for the two projects.

#### Discounting Factor

Year	10%	15%	20%	25%	30%	35%	40%
1	.909	.870	.833	.800	.769	.741	.714
2	.826	.756	.694	.640	.592	.549	.510
3	.751	.658	.579	.512	.455	.406	.364
4	.683	.572	.482	.410	.350	.301	.260
5	.621	.497	.402	.328	.269	.223	.186

5. A company has to make a choice between two projects namely P and Q. The initial capital outlay of two Projects are ₹ 1,35,000 and ₹ 2,40,000 respectively for P and Q. There will be no scrap value at the end of the life of both the projects. The opportunity Cost of Capital of the company is 16%. The annual incomes are as under :

Year	Project P ₹	Project Q ₹	Discounting factor @ 16%
1	--	60,000	0.862
2	30,000	84,000	0.743
3	1,32,000	96,000	0.641
4	84,000	1,02,000	0.552
5	84,000	90,000	0.476

You are required to calculate for each project:

- Discounted payback period
  - Profitability index
  - Net present value.
6. The Amitabh Company Limited is considering the purchase of a new machine. Two alternative machines. (X and Y) have been suggested each costing ₹ 4,00,000. Earnings after taxation are expected to be as follows

Year	Cash Flow	
	Machine X ₹	Machine Y ₹
1	40,000	1,20,000
2	1,20,000	1,60,000
3	1,60,000	2,00,000
4	2,40,000	1,20,000
5	1,60,000	80,000

The company has a target of return on capital of 10 per cent and on this basis, you are required to compare the NPV of the machines and state which alternative you consider financially preferable.

7. A Company proposes to install a machine involving a Capital Cost of ₹ 3,60,000. The life of the machine is 5 years and its salvage value at the end of the life is nil. The machine will produce the net operating income after depreciation of ₹ 68,000 per annum. The Company's tax rate is 45%.

The Net Present Value factors for 5 years as under:

Discounting Rate	:	14	15	16	17	18
Cumulative factor	:	3.43	3.35	3.27	3.20	3.13

You are required to calculate the internal rate of return of the proposal.

8. Company X is forced to choose between two machines A and B. The machines are designed differently, but have identical capacity and do exactly the same job. Machine A costs ₹ 1,50,000 and will last for 3 years. It costs ₹ 40,000 per year to run. Machine B is an 'economy' model costing only ₹ 1,00,000 but will last only for 2 years, and costs ₹ 60,000 per year to run. These are real cash flows. The costs are forecasted in rupees of constant purchasing power. Ignore tax. Opportunity cost of capital is 10 percent. Which machine company X should buy?
9. A firm is considering to install a large stamping machine. Machine A costs ₹ 50,000 and will require running expenses of ₹ 15,000 per year. It has useful life of 6 years and is expected to yield ₹ 2000 salvage value at the end of its useful life. Machine B costs ₹ 65,000 but cash running expenses are expected to be ₹ 12,000. This machine is expected to have useful life of 10 years with salvage value of ₹ 5000. Both the machine will be depreciated on straight line basis. The tax rate is 50% and cost of capital is 10%, which machine should be purchased?
10. A firm is considering to install either of the two machines which are mutually exclusive. Their purchase price and operating costs are –

Year	Machin X ₹	Machin Y ₹
Purchase cost	10,000	8,000
Operating cost 1	2,000	2,500
Operating cost 2	2,000	2,500
Operating cost 3	2,000	2,500
Operating cost 4	2,500	3,800
Operating cost 5	2,500	3,800
Operating cost 6	2,500	3,800
Operating cost 7	3,000	
Operating cost 8	3,000	
Operating cost 9	3,000	
Operating cost 10	3,000	

Machine X will recover salvage value of ₹ 1,500 in the year 10 while Machine Y will recover ₹ 1,000 in the year 6. Determine which machine is cheaper at 10 per cent cost of capital, assuming that the machines operate at the same efficiency. Present value of ₹ 1 at 10% discounting factor.

Year	Factor	Year	Factor
1	0.9091	6	0.5645
2	0.8264	7	0.5132
3	0.7513	8	0.4665
4	0.6830	9	0.4241
5	0.6209	10	0.3855

Present value of an annuity of ₹ 1 per period at 10 % discounting factor: At the end of year 6  
= 4.3553  
At the end of year 10  
= 6.1446

11. A firm is considering to buy one of the following two mutually exclusive investment projects–  
 Project A – Buy a machine that requires an initial investment outlay of ₹ 100,000 and will generate the cash flow after tax (CFAT) of ₹ 30,000 per year for 5 years.  
 Project B – Buy a machine that requires an initial investment outlay of ₹ 1,25,000 and will generate the CFAT of ₹ 27,000 per year for 8 years.  
 Which project should be undertaken by the firm? Assume cost of capital as 10%.
12. M/s. Katrina Ltd., is faced with the problem of choosing between two mutually exclusive projects. Project A requires a cash outlay of ₹ 2,00,000 and require cash running expenses of ₹ 70,000 per year. On the other hand, Project B will cost ₹ 3,00,000 and require cash running expenses of ₹ 40,000 per year. Both the machines have an eight year life. Project A has a ₹ 8,000 salvage value and project B has ₹ 28,000 salvage value. The company's tax rate is 50% and has a 10 percent required rate of return. Assuming depreciation on straight line basis you are required to state about the project which should be accepted.
13. A company has to make a choice between buying of two machines. Machine A would cost ₹ 1,00,000 and require cash running expenses of ₹ 32,000 p.a. Machine B would cost ₹ 1,50,000 and its cash running expenses would amount to ₹ 20,000 p.a. Both the machines have a life of 10 years with zero salvage value. The company follows straight line depreciation and it is subject to 35% tax on its income. The company's required rate of return is 10%. Which machine should it buy?  
 NOTE: Present value of ₹ 1 per annum for 10 % discount rate is 6.1446.
14. A Ltd. is evaluating two alternative system – A and B for internal transportation. While the two system serve the same purpose, system A has life of 7 years, and system B has a life of 5 years. The initial outlay and operating costs (in ₹) associated with these systems are as follows :

Year	A	B
0	10,00,000	8,00,000
1	1,00,000	75,000
2	1,25,000	1,00,000
3	1,50,000	1,20,000
4	1,75,000	1,40,000
5	2,00,000	1,00,000
6	2,25,000	
7	2,00,000	

Calculate the annual capital charge / Annualised cost associated with these two system, if the cost of capital is 12%.

15. The management of a firm is considering an investment project costing ₹ 1,50,000 and it will have a scrap value of ₹ 10,000 at the end of its 5 years life. Transportation charges are expected to be ₹ 5,000 and installation charges are expected to be ₹ 25,000. If the project is accepted, a spare parts inventory of ₹ 10,000 must also be acquired and maintained, it is estimated that the spare parts will have an estimated scrap value after 5 years to 60% of their initial costs.

Annual revenue from the project is expected to be ₹ 1,70,000 and annual labour, material and maintenance expenses are estimated to be ₹ 15,000, ₹ 50,000 & ₹ 5,000 respectively. The depreciation & taxes for each of the five years will be

Year	Depreciation ₹	Taxes ₹
1	72,000	11,200
2	43,200	22,720
3	32,400	27,040
4	21,600	31,360
5	800	39,680

Calculate Net Cash Flows for each year and the NPV of the project. (Discount Factor = 12%)

16. Ranbir Limited an existing company, is considering a new project for manufacture of pocket video games involving a capital expenditure of ₹ 600 lakhs and working capital of ₹ 150 lakhs. The capacity of the plant is for an annual production of 12 lakhs units and capacity utilisation during the 6 year working life of the project is expected to be as indicated below -

Year	Capacity utilization %
1	33 1/3%
2	66 2/3%
3	90%
4-6	100%

The average price per unit of the product is expected to be ₹ 200 netting a contribution of 40%. Annual fixed costs, excluding depreciation, are estimated to be ₹ 480 lakhs per annum from the third year onwards; for the first and second year it would be ₹ 240 lakhs and ₹ 360 lakhs respectively. The average rate of depreciation for tax purposes is 33 1/3 % on the capital assets. No other tax reliefs are anticipated. The rate of income-tax may be taken at 35%.

At the end of the third year, an additional investment of ₹ 100 lakhs would be required for working capital.

The company, has targeted for a rate of return of 15%. You are required to indicate whether the proposal is viable, giving your working notes and analysis.

Terminal value for the fixed assets may be taken at 10 % and for the current assets at 100%.

17. JKG ELECTRONICS is considering a proposal to replace one of its machines. In this connection, the following information is available:

The existing machine was bought 3 years ago for ₹ 10 lakhs. It was depreciated at 25% p.a. on reducing balance basis. It has remaining life of 5 years, but its maintenance cost is expected to increase by ₹ 50,000 p.a. from the 6<sup>th</sup> year of its installation. Its present realisable value is ₹ 6 lakhs.

The new machine costs ₹ 15 lakhs and is subject to the same rate of depreciation. On sale after 5 years, it is expected to net ₹ 9 lakhs. With the new machine, operating costs (excluding depreciation) are expected to decrease by ₹ 1 lakh p.a.

In addition, the speed of the new machine would increase productivity on account of which net revenues would increase by ₹ 1.5 lakhs p.a.

The tax rate applicable is 35% and the cost of capital 10%. The present value factors at 10% rate of discount for years 1 to 5 are respectively 0.909, 0.826, 0.751, 0.683 and 0.620.

Is the proposal financially viable? Please advise the firm on the basis of Net Present Value of the proposal.

**(Question on replacement)**

18. A Company is presently using a crane for a major irrigation project. This crane was brought 2 years ago for ₹ 10 lakhs and has been depreciated at the rate of 20% p.a. as per WDV method. The company requires such a crane for 3 more years. An improved version of this crane is available now for ₹ 42.50 lakhs. Determine the cash flows associated with the replacement of the existing crane by the improved crane, given the following information :

- The salvage value of the existing crane is equal to its book value.
- The improved crane can be sold after 3 years for ₹ 12 lakhs. The existing crane, if used for 3 years, will have nil salvage value.
- The annual savings in operating expenses with the improved crane will be ₹ 3 lakhs.
- The depreciation rate for improved crane is 33 1/3 % p.a. as per WDV method.
- The effective tax rate for the company is 50%.

Should the company replace the old crane? Assume cost of capital = 10%. Ignore capital gain tax.

**(Question on replacement)**

19. Following are the data on a capital project being evaluated by the management of X Ltd

	Project M
Annual cost saving	₹ 40,000
Useful life	4 years
I.R.R.	15%
Profitability Index (PI)	1.064
NPV	?
Cost of capital	?
Cost of project	?
Payback	?
Salvage value	0



Find the missing values considering the following table of discount factor only:

Discount factor	15%	14%	13%	12%
1 year	0.869	0.877	0.885	0.893
2 years	0.756	0.769	0.783	0.797
3 years	0.658	0.675	0.693	0.712
4 years	0.572	0.592	0.613	0.636
PVAF	2.855	2.913	2.974	3.038

16. S Ltd. has ₹ 10,00,000 allocated for capital budgeting purposes. The following proposals and associated profitability indexes have been determined:

Project	Amount ₹	Profitability Index
1	3,00,000	1.22
2	1,50,000	0.95
3	3,50,000	1.20
4	4,50,000	1.18
5	2,00,000	1.20
6	4,00,000	1.05

Which of the above investments should be undertaken? Assume that projects are indivisible and there is no alternative use of the money allocated for capital budgeting.

20. A Company has ₹ 7 lakhs available for investment. It has evaluated its options and has found only 4 investment given below have positive NPV. All these investments are divisible. Advise the management which investment(s) / projects, it should select?

Project	Initial Investment	NPV	PI
X	300,000	60,000	1.20
Y	200,000	50,000	1.25
Z	250,000	150,000	1.60
W	600,000	180,000	1.30

21. M Ltd. for a construction company and asked you to calculate the MIRR for two mutually exclusive projects to determine which project should be selected.

Project X has a total life of 3 years with a cost of capital 12% and a financing cost 14%.

Project Y has a total life of 3 years with a cost of capital 15% and a financing cost 18%.

The expected cash flows of the projects are in the table below: (₹)

Year	Project X	Project Y
0	-1,000	-800
1	-2,000	-700
2	4,000	3,000
3	5,000	1,500

22. The following information is available for two projects of a company.

Particulars	Project I (₹)	Project II (₹)
Investment	2,20,000	2,20,000
Year 1	62,000	1,42,000
Year 2	80,000	80,000
Year 3	1,00,000	82,000
Year 4	1,40,000	40,000

Cost of Capital is 10% . You are requested to advise to the company. Assume reinvestment rate of 14%

23. A project costing ₹ 5,60,000 is expected to produce annual net cash benefits (CFAT) of ₹ 80,000 over a period of 15 year. Estimate the internal rate of return (IRR). Also, find the payback period and obtain the IRR from it. How do you compare this IRR with the one directly estimated?

24. Vedika Ltd., with a limited investment funds of ₹ 6,00,000 is evaluating the desirability of 5 (five) investment proposals. Their profiles are summarized below:

	Project Investment (₹)	Annual Cash flow (after tax) (₹)	Life (in years)
<b>M</b>	1,00,000	36,000	10
<b>N</b>	2,00,000	1,00,000	4
<b>O</b>	2,40,000	60,000	8
<b>P</b>	3,00,000	80,000	16
<b>Q</b>	4,00,000	60,000	25

Project N and Q are mutually exclusive. The cost of funds is 10%.

Find out the feasible combination of projects and rank them on the basis of Net Present Value (NPV).

PVIFA

Year	10	4	8	16	25
<b>PVIFA at 10%</b>	6.145	3.170	5.335	7.824	9.077

EXTRA PAGE.

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## 8

## DIVIDEND POLICY

### I. INTRODUCTION

The concept of "Dividend Policy" implies that companies through their Board of Directors evolve a defined pattern of dividend payments which has a bearing on future action. The policy relating to dividend pay-out and retention of earning varies not only from industry to industry but among companies within a given industry and within a company from time to time.

Growth companies are usually characterised with a low payout and high retention of earnings. More the growth, greater is the demand for additional funds for expansion. Higher the profitability, more it is logical to retain funds and employ them to earn higher returns than would be obtained if they were paid out to share holders and invested by them elsewhere. Thus while taking dividend decision, the management will obviously take into account the effect on the maximisation of shareholders' wealth.

### II. BASICS OF DIVIDEND

Dividends are paid out of profits. These could either be profits of the current year or the accumulated profits of the past. Dividends are paid quarterly, half yearly or annually. When paid quarterly or half yearly they are referred to as interim dividend. Dividend is expressed as a percentage of face value and is referred to as dividend rate. When the dividend amount is expressed as a percentage of market price, it's called dividend yield. When expressed as a percentage of earnings it is known as dividend payout. Hence dividend yield is the ratio of dividend per share to market price per share and dividend payout is the ratio of dividend per share to earnings per share.

Formula:

DY = Dividend Yield

DR = Dividend Rate

$$1. \text{ DY} = \frac{\text{DPS}}{P_0} \times 100$$

$$2. \text{ Payout} = \frac{\text{DPS}}{\text{EPS}} \times 100$$

$$3. \text{ DR} = \frac{\text{DPS}}{\text{EPS}} \times 100$$

Types of dividends:

- a. **Interim dividend:** This is declared before the declaration of final dividend.
- b. **Final Dividend:** The Board of Directors, keeping in view the financial strengths and weaknesses of the company recommends to the shareholders at the AGM the dividend to be paid to the shareholders.
- c. **Dividend on preference shares:** Holders of preference shares are entitled to receive dividend before any dividend is paid to the equity shareholders as per the terms of issue.

**III. FACTORS AFFECTING DIVIDENDS POLICY:**

The factors affecting the dividend policy are both external as well as internal.

**1. EXTERNAL FACTORS:****I) General state of economy**

In case of uncertain economic and business conditions, the management may like to retain the whole or part of the firm's earnings to build up reserves to absorb shocks in future. Similarly in the period of depression, the management may also withhold dividend payment to retain large part of earnings to preserve the firm's liquidity position. In the period of prosperity the management may not be liberal in dividend payments because of availability of large profitable opportunity.

**II) State of Capital Market:**

In case firm has an easy access to the capital market to raise funds, it can follow a liberal dividend policy. Otherwise it is likely to adopt more conservative dividend policy.

**III) Legal Restrictions:**

The management has to take into account all the legal restrictions before taking the dividend decision otherwise it may be declared as ultra vires.

**IV) Contractual Restrictions :**

Lending financial institutions generally put restrictions on dividend payments to protect their interests in periods where the firms is experiencing liquidity or profitability problems.

**V) Tax Policy:**

Prevailing Corporate Income Tax also effects the dividend policy.

## 2. INTERNAL FACTORS:

### i) Desire of the shareholders :

Shareholders are technically the owners of the company and therefore their desire cannot be overlooked while deciding the dividend policy. Shareholders expect two forms of return on their investment viz. dividend and capital gain. In most cases shareholders desire to get dividend gets priority over the desire to earn capital gain because of the following reasons

- Indication of Strength
- Reduction of uncertainty
- Need for Current Income

### ii) Financial Needs of the Company:

The financial needs of the company may be in direct conflict with the desire of the shareholders to receive large dividends. However a prudent management should give more weightage to the financial needs of the company, rather than the desire of the shareholders.

### iii) Nature of Earnings :

A firm having stable income can afford to have higher pay-out ratio as compared to a firm which does not have such stability in its earnings conditions

### iv) Desire of Control:

Dividend policy is not only influenced by the desire of Shareholders, but the management's desire to keep control over the company. Additional equity issue dilutes the control. In case of strong desire for control, the management will not pay substantial dividends and prefer a lower dividend pay-out ratio. However where the management is strongly in control either because of substantial share holding or because of the shares being widely held, the firm may offer a high dividend payout ratio.

### v) Liquidity Position:

The management always takes into account the cash position and overall liquidity position of the firm before and after payment of dividends while taking the dividend decision.

## IV. APPROACHES TO DIVIDEND POLICY

There are conflicting theories regarding impact of dividend decision on the valuation of a firm. According to one school of thought dividend decision does not affect the shareholders wealth and so also the valuation of the firm. While according to another school of thought, dividend decision materially affects the shareholders wealth and also the valuation of the firm.

**1. WALTER'S APPROACH:**

According to this approach dividend policy always affects the value of the enterprise. A Mathematical formula is suggested to evolve dividend policy with a view to maximise the wealth position of equity shareholders this is based on the relationship between the firms's -

- i) Return on investment or IRR (i.e. R) and
- ii) Cost of capital or required rate of return (i.e. K)

According to this approach if  $R > K$  the firm can earn higher return on their investment and the firm should retain the earnings.

Such firms are termed as growth oriented firms and in their case, the optimum dividend policy would be to plough back the entire earnings.

In case of firm which does not have profitable investment opportunities i.e.  $R < K$  the optimum dividend policy would be to distribute the entire earnings as dividend. The shareholders will stand to gain because they can utilise the dividends so received in channels which can give them higher return.

In case of firms where  $R = K$ , it does not matter whether the firm retains or distributes its earnings. In this case the value of the firm's share would not fluctuate with change in the dividend rates.

**Mathematical Formula:**

$$\text{Theoretical Market Value of equity share} = \frac{D + \frac{R(E - D)}{K_e}}{K_e}$$

$D$  = Dividend per share

$E$  = Earnings per share

$K_e$  = Cost of equity capital or market capitalization rate

$R$  = Internal Rate of return or Internal Productivity rate

**Assumption of Walter's Model:**

- i. The firm does the entire financing through retained earnings. It does not use external sources of funds such as new debt or new equity capital.
- ii. The firm's business risk does not change with additional investment. It implies the firms' IRR and cost of capital remain constant.
- iii. The firm has a very long life.

**Criticism on Walter's Model:**

The criticism is on account of its following unrealistic assumptions -

- i. **No external finance:** The assumption that financial requirements of a firm are met only by retained earnings and not by external financing, is seldom true in practice. Firms do raise funds by issuing new debentures or equity shares whenever they are in need of additional funds.
- ii. **Constant rate of return:** The assumption that firm's IRR will remain constant does not hold good. As a matter of fact, with increased investments, IRR also changes.
- iii. **Constant cost of capital:** The assumption that cost of capital will remain constant does not also hold good. A firm's risk pattern does not always remain constant.

**2. GORDON'S DIVIDEND CAPITALISATION MODEL**

Myron Gordon used the dividend capitalization approach to study the effect of the firms' dividend policy on the stock price. The model was however, based on the following assumptions:

**Assumptions:** The following are the assumptions based on which Gordon gave the dividend policy for firms:

- i. The firm will be an all-equity firm with the new investment proposals being financed solely by the retained earnings.
- ii. Return on investment ( $r$ ) and the cost of equity capital ( $K_e$ ) remain constant.
- iii. Firm has an infinite life.
- iv. The retention ratio remains constant and hence the growth rate also is constant ( $g = br$ ).
- v.  $K > br$  i.e. cost of equity capital is greater than the growth rate.

Gordon's model, which has assumptions same as the Walter's model is also similar to the Walter's model on dividend policy.

Gordon's model assumes that the investors are rational and risk-averse. They prefer certain returns to uncertain returns and thus put a premium to the certain returns and discount the uncertain returns. Thus, investors would prefer current dividends and avoid risk. Retained earnings involve risk and so the investor discounts the future dividends. This risk will also affect the stock value of the firm.

Gordon explains this preference for current income is explained by the bird-in-hand argument. Since a bird-in-hand is better than two in the bush, the investors would prefer the income that they earn currently to that income in future which may or may not be available. Thus, investors would prefer to pay a higher price for the stocks which earn them current dividend income and would discount those stocks which either postpone or reduce the current income. The discounting will differ depending on the retention rate (percentage of retained earnings) and the time.



Gordon's dividend capitalization model gave the value of the stock as follows

$$P = \frac{E(1-b)}{k_e - br}$$

Where,  $P$  = Share price

$E$  = Earnings per share

$b$  = Retention ratio

$(1 - b)$  = Dividend payout ratio

$k_e$  = Cost of equity capital (or cost capital of firm)

$br$  = Growth rate ( $g$ ) in the rate of return on investment.

Criticisms - It suffers from the same criticisms as the Walter's mode

### 3. MODIGLIANI AND MILLER'S APPROACH (M M HYPOTHESIS) :

The fundamental premise of this theory is that the price of the shares of a firm is determined by its earning potentiality and investment policy and never by the pattern of income distribution. The logical put forward in support of this theory is that only increase in shareholders wealth resulting from dividend payments will exactly offset the effect of raising additional capital.

**Assumptions of M. M. Hypothesis:**

- i) **Perfect Market** : Capital markets are perfect
- ii) **Rational Investors**: Investors behave rationally. Information is freely available to all of them and there are no flotation or transactions costs.
- iii) **No Taxes** : There are either no taxes or there are no differences in the rates applicable to capital gains and dividends
- iv) **Fixed Investment Policy**: The firm has a fixed investments policy under which at year end, it invests a specific amount as capital expenditure.
- v) **No risk of uncertainty**: Risk of uncertainty does not exist. Further dividend and market price can be predicted.

**Proof for M. M. Hypothesis:**

According to M. M. Hypothesis, the market value of a share at the beginning of the period is equal to the present value of dividends paid at the end of the period plus the market price of the share at the end of the period

$$P_0 = \frac{D_1 + P_1}{(1+K_e)} \quad \text{OR} \quad P_1 = P_0 (1 + k_e) - D_1$$

$P_0$  = Prevailing market price of a share

$D_1$  = Dividend to be received at the end of the period one  $P_1$  = Market price of share at the end of period one

$K_e$  = Cost of equity capital

Computation of the number of new shares to be issued:

$$\Delta n \times P_1 = I - (E - nD_1) \quad \text{OR} \quad \Delta n = \frac{I - (E - nD_1)}{P_1}$$

$\Delta n$	=	Number of shares to be issued
$P_1$	=	Price at which new issue is to be made
$I$	=	Amount of investments required
$E$	=	Total net profit of the firm during the period
$nD_1$	=	Total dividend paid during the year

$$\text{Value of the firm} = \frac{(n + \Delta n) P_1 - (I - E)}{1 + K_e}$$

$E$  = Total Earnings

$n$  = Existing number of share

### Criticism on M·M· Hypothesis:

There is a severe criticism on account of the following unrealistic assumptions

#### i) Tax differential:

M·M· Hypothesis assumption that taxes do not exist is far from reality. In practical life not only the shareholders has to pay tax but there are different rates of tax for capital gains and dividends. Capital gains are subject to lower rate of tax as compared to dividends. The cost of internal financing will therefore be cheaper as compared to cost of external financing.

#### ii) Costs of Floating:

A firm has always to pay floating costs in terms of underwriting commission and other incidental costs, whenever it wants to raise funds from outside, as a result the external financing is costlier than internal financing.

#### iii) Transaction costs:

The shareholders has also to pay brokerage, fee etc. when he sell the shares. Moreover, it is inconvenient to sell shares. On account of these reasons a shareholder would prefer to have dividends rather than capital gains on sale of shares, if no dividends are paid.

#### iv) Discount rate :

Under this Hypothesis application of single discounting rate for discounting cash inflows arising in different time period is not correct. Uncertainty increases with the length of the time period. Investors prefer immediate dividends to future dividends. It means the value of shares of that company which is paying higher dividends will have a higher value as compared to a company which is following the policy of retention of earnings.

**4. LINTNER'S MODEL :** The dividends are determined in the following manner -

- a. Firms have long-term target dividend payout ratio.
- b. Managers focus more on dividend changes than on absolute levels. Thus, paying a ₹ 2.00 dividend is an important financial decision if last year's dividend was ₹ 1.00, but no big deal if last year's dividend was ₹ 2.00.
- c. Dividend changes follows shifts in the long-run. The firm changes their dividends slowly even when there are large increase in earnings. This implies that firms have standards regarding the "speed" with which they attempt to move towards the full adjustment of payout to earnings.
- d. Managers are reluctant to make dividend changes that might have to be reversed. The dividend policy should be changed only when it can be maintained in future.

The formula to calculate future dividend value as per Lintner's Model -

$$D_1 = D_0 + [(EPS \times \text{Target payout}) - D_0] \times Af$$

Where,  $D_1$  = Dividend in the year 1

$D_0$  = Dividend in the year 0 (Last year)

EPS = earnings per share

Af = Adjustment factor

**5. TRADITIONAL POSITION (GRAHAM AND DODD MODEL) :**

The traditional approach to the dividend policy, which was given by B Graham and D L Dodd lays a clear emphasis on the relationship between the dividends and the stock market. According to this approach, the stock value responds positively to the higher dividends and vice-versa when there are low dividends.

The following expression, given by traditional approach, establishes the relationship between market price and dividends using a multiplier.

$$P = m \left( D + \frac{E}{3} \right)$$

Where,

$P$  = Market Price  $m$  = Multiplier

$D$  = Dividend per share  $E$  = Earnings per share

**Limitations of the Traditional Approach**

The traditional approach, further states that the PE ratios are directly related to the dividend payout ratios. i.e. a high dividend payout ratio will increase the PE, ratio and vice-versa. However, this may not be true in all situations. A firm's share price may rise even in case of a low payout ratio if its earnings are increasing. Here the capital gains for the investor will be higher than the cash dividends. Similarly for a firm having a high dividend payout ratio with a slow growth rate there will be a negative impact on the market price (because of lower earnings). In addition to this there may be a few investors of the company who would prefer the dividends to the uncertain capital gains and a few who would prefer lower taxed capital gains. These conflicting factors that have not been properly explained, form the major shortcoming of the dividend policy given by the traditional approach.

## V. STABILITY OF DIVIDENDS

The weightage of factors affecting the dividend policy may differ from company to company but the dividend policy emerging out of such weightage should have a degree of stability in it. The term stability of dividend means "Consistency" or "Lack of Variability" in the stream of dividend payment. To be more precise it means regular payment of certain minimum amount as dividend. The stability of dividend can be in any of the following three forms -

- i. Constant dividend per share.
- ii. Constant percentage (Consistent payout ratio with reference to earning of the year).
- iii. Stable rupee dividend plus extra dividend in periods of market prosperity.

Out of all the three policies, the most appropriate policy is that of constant dividend per share. A stable dividend policy is advantageous from the point of view of investors as well as the company from the long term point of view.

## VI. ALTERNATIVES TO DIVIDEND

### i. Stock split

At times a corporation will declare a stock split. The best way to explain what happens is through an example. Assume ABC Corporation has 5,000,000 outstanding common stock of ₹ 10 (FV). Further assume, that at the time the stock splits the price of the stock is Rs. 60.00 per share and that the company is splitting its stock 2 for 1. (Written as 2:1, read as 2 for every 1)

After the split, ABC Corporation will have 10,000,000 shares of stock outstanding, at a par value of ₹ 5 (per share), and the stock price will be ₹ 30.00. Remember that par value has nothing to do with the market price of a stock.

How does this impact the individual investor? Let's say a person owned 500 shares of ABC Corporation's common stock prior to the split. Before the split he had stock worth ₹ 30,000 (500 shares x ₹ 60.00 per share). After the split he owns 1,000 shares of ABC Corporation stock at ₹ 30 per share. He still owns ₹ 30,000 worth of stock. Now he has twice as many shares at half the price.

### Reasons for Stock Split:

1. To make it more attractive for investors to purchase. The reasoning is that more people will want to buy the stock at ₹ 30 rather than ₹ 60. It's mostly psychological. Unfortunately, just because the stock splits does not mean that it will rise in price after the split. Many times a stock declines in price after a split.
2. Another reason a company may want to declare a stock split is to make more shares available and broaden its stockholder base. Thus, the stock becomes more marketable and liquid.

After stock split, the same principle holds true regardless of the ratio. The stock price will decline, the par value will decline, and the amount of shares outstanding will increase.

**ii. Reverse stock split**

There is also a reverse split. When a company engages in a reverse stock split, it substitutes one share of stock for a predetermined amount of shares of stock. It does not increase the market capitalization of the company.

An example of a reverse split is the following. Assume ABC Corporation has 10,000,000 shares of common stock outstanding. Assume the market price is ₹ 10 per share. Assume that ABC Corporation declares a 1 for 4 reverse split.

After the reverse split ABC Corporation will have 1 / 4 as many shares outstanding or 2,500,000 shares outstanding. The stock will have a market price of ₹ 40. If an individual investor owned 100 shares of ABC before the split at ₹ 10 per share, he will own 25 shares at ₹ 40 after the split. In either case, his stock will be worth ₹ 1,000.

**Reasons for Reverse Stock Split:**

1. Shareholder is no better off before or after split. Except that the company hopes that the higher stock price will make the company look better and thus more investors will purchase the stock and the stock price will rise as more people buy it.
2. There is also evidence that small cap stocks which can generate better earnings receive benefit from a reverse split. These companies try to boost their price into a range which is more acceptable to traders. For these companies, a reverse stock split works well.

**iii. Bonus shares**

Because a corporation's dividends are sometimes not paid regularly, a company may choose to pay dividends in the forms of stock. Assume a corporation declares a 10% stock dividend. What happens is that for every 10 shares of stock a person owns he gets one new share as a dividend. If a corporation has 1,000,000 shares of common stock outstanding and declares a 10% stock dividend, the corporation will have 1,100,000 shares of stock outstanding after the stock dividend is paid.

The individual investor maintains his proportionate share and the same total book value in the company. Book value per share will be less. However, his investment in the company remains the same.

When a company issues a stock dividend, it retains its accumulated earnings. Therefore, some companies may want to issue a stock dividend to avoid paying out cash. They may want to use the cash elsewhere. Basically, the company is capitalizing their earnings. When the stock dividend is declared a transfer is made from earned capital to contributed or permanent capital.

**Advantages**

- a) It preserves the company's liquidity as no cash is used.
- b) The shareholders can liquidate these shares whenever they require.
- c) It is an excellent way to bring the paid capital of the company in line with actual capital employed by the company in the business.

- d) It broadens the capital base and improves the image of the company.
- e) It is an inexpensive method of raising the capital by which the cash resources of the company are conserved.
- f) It reduces the market price of the shares, rendering the shares more marketable.
- g) It is perceived as an indication by the market that the company financial position is sound.

#### Disadvantages:

- a. Since the reserves have been used to issue bonus shares, it indicates that future dividend would decline.
- b. Issue of bonus shares involve lengthy legal procedures and approvals.

#### iv. Buy back of shares

The corporates are empowered to purchase its securities by virtue of sections 68, 69 and 70 of the Companies (Amendment) Act, 2013.

#### Advantages:

1. **Utilisation of Reserves** - The profitable and cash rich companies can utilize their earnings and reserves to reduce the outstanding equity shares.
2. **Revival of the Capital Market** - Buyback can lead to revival of capital market by flaring up the market value of shares in a bearish market. It will help the company to maintain the market price of its shares and to keep it suitable.
3. **Rise in market price of shares** - Buyback leads to rise in earnings per share, which results in rise in market price of shares as the demand of the share increases.
4. **Restructure of capital base by companies with special reference to PSUs** - Buyback of PSU's shares correct any undervaluation and send powerful signals to the market of the PSU's faith in the intrinsic value of their shares. This also gives a boost to governments disinvestment programme.
5. **Proper Utilisation of Excess Funds** - Many companies have excess cash without any profitable investment option. It would be better for them to return surplus cash to shareholders than go on spending simply for want of alternatives.
6. **Increase Promoters stake in the company.**

#### Pricing of Buyback:

- A company should fix its buy back price so that an investor who does not accept the buy-back offer is not discriminated against in terms of his wealth with reference to an investor who accepts the buy-back offer.
- Buy-back is normally undertaken when there is surplus cash. Consequently the market capitalization pre and post buy-back are assumed to be equal. Remember market capitalization is the present value of future cash flows and future cash flows are going to be unaffected by buy-back since the same takes place from surplus cash.
- Based on the above, the theoretical post buy back price would be

$$\text{Formula} = \frac{S \times P_0}{(S - N)}$$

$S$  = No. of Shares outstanding before buy back  
 $P_0$  = Current Market Price

$N$  = No. of Shares bought back.

- The buy-back price will be the same as the theoretical post buy-back price in order to ensure that the investor who act and investor who does not act are not discriminated.

**Alternative pricing:** An alternative view point has it that since cash has a value and it goes out the theoretical ex buy back price is  $(S \times P_0) - \text{Cash} / (S - N)$ . This is analogous to the computation of theoretical ex-rights price.

## V. RIGHT SHARES

'Right' is a first option to buy a security at a specified price during a specified period. Right shares are the shares offered to the existing shareholders of the company.

**Issue of right shares serves two purpose -**

- It preserves the power of control of the present shareholders.
- It prevents loss to the existing shareholders on account of dilution in the value of their share holding.

### Valuation of Right:

When a company offers new shares to the existing shareholders, they are generally offered at a lower price than the market price. Since the right issue is being offered at a concessional price, an existing shareholders can make profit by selling his right. He may sell this right with or without selling his existing share holding. The price of the shares may be therefore a "Cum-Right-Price" or an Ex-right Price."

The cum-right price gives the buyer, besides the ownership of the shares already held the right to apply for new shares offered by the company. While the Ex-right price gives the buyer only the ownership of the existing shares held by the seller.

$$\text{Cum-right price} = \text{Ex-right Price} + \text{Value of the right (per share)}$$

$$\text{Value of the right alone} = \text{Ex-right price} - \text{Subscription cost}$$

The value of the right (per share) can be calculated by applying the following formula -

$$R = \frac{M - S}{N + 1}$$

$R$  = Value of one right

$M$  = Cum-right market price of a share

$S$  = Subscription price for a new share (Right)

$N$  = Number of old shares required to purchase one new share. (Right)

The Ex-right value of a share can be obtained by applying the following formula:

*Ex Right Price = cum right market price of one share - Value*

$$P = \frac{MN + S}{N + 1}$$

*P = Theoretical market value of a share ex-right M = Cum-right market price*

*N = Number of old shares entitled to purchase one new share.*

*Value of Right = (Value of Right per share) x No. of shares*



## PROBLEMS

1. The earnings per share of a company are ₹ 8 and the rate of capitalisation applicable to the company is 10%. The company has before it an option of adopting a payout ratio of 25 % or 50 % or 75 %. Using Walter's formula of dividend payment, compute the market value of the company's shares if the productivity of retained earnings is :

(i) 15 %      (ii) 10 % and (iii) 5 %.

Explain fully what inference can be drawn from the above exercise.

Dividend Payout	DPS	Value per Share		
		R = 15%	R = 10%	R = 5%

2. Babli Ltd. which earns ₹ 5 per share, is capitalised at 10 % and has a return on investment of 12%. Using walter's dividend policy model, determine (i) the optimum payout, (ii) the price of share at this payout.

3. Following are the details regarding three companies:

<b>X Limited</b>	<b>Y Limited</b>	<b>Z Limited</b>
$r = 15\%$	$r = 10\%$	$r = 8\%$
$K = 10\%$	$K = 10\%$	$K = 10\%$
$E = ₹ 10$	$E = ₹ 10$	$E = ₹ 10$

You are required to calculate the effect of dividend payment on the value of shares of each of the above companies under the following different situations

- When no dividend is paid
- When dividend is paid at ₹ 4 per share
- When dividend is paid at ₹ 8 per share
- When dividend is paid at ₹ 10 per share

Use Walter's Model.

4. From the following information, determine the theoretical market value of equity shares as per Walter's model.

Earnings - ₹ 15,00,000; Dividends paid = ₹ 500,000; No. of shares outstanding = 100,000; Price earning ratio = 10; Rate of return on investment = 12%. Are you satisfied with current dividend policy of the firm. What should be optimal dividend payout ratio.

5. The following figures are collected from the annual report of ABC Ltd.

	₹
Net Profit	30 lakhs
Outstanding 12% preference shares	100 lakhs
No. of equity shares	3 lakhs
Return on Investment	20%

What should be the approximate dividend pay-out ratio so as to keep the share price at ₹ 42 by using Walter model?

6. If  $K_e = 11\%$ ,  $E = ₹ 15$ , Calculate the stock value of ABC Ltd. for

- (i)  $r = 12\%$ ; (ii)  $r = 11\%$ ; (iii)  $r = 10\%$  for the following level of Dividend payout ratio.  
 (i) 10%; (ii) 20%; (iii) 30%; (iv) 40%; (v) 50%. Use Gordon Model.

Retention Ratio	Value per share		

7. With the help of the following figures calculate the market price of the share of the company using Walter formula and dividend growth model (Gordon's formula)

EPS = ₹ 10/-

Cost of capital (K) = 20%

R (Internal Rate of Return) = 25%

Retention Ratio = 60%.

8. A company has invested ₹ 500 lakhs in assets. There are 50 lakh shares outstanding. The par value per share is ₹ 10/-. It earns a rate of 15% on its investment and has a policy of retaining 50% of the earnings. If the appropriate discount rate of the firm is 10% what is the price of its share using the Gordon's model. What will happen to the price of the share if the company has a payout of 80% or 20%?

9. A share of Salman co. is currently quoted at, a price earning ratio of 7.5 times. The retained earning per share being 37.5% is ₹ 3 per share. Compute :

- The company's cost of equity, if investors expect annual growth rate of 12%.
- If anticipated growth rate is 13% p.a., calculate the indicated market price, with same cost of capital.
- If the company's cost of capital is 18% and anticipated growth rate is 15% p.a., calculate the market price per share, assuming other conditions remain the same.

Particulars	Amount (₹)

10. Bollywood Ltd. belongs to a risk class of which the appropriate capitalization rate is 12%. It currently has 1,00,000 shares selling at ₹ 100 each. The firm is contemplating the declaration of a ₹ 5 dividend at the end of the current fiscal year, which has just begun. Answer the following question based on the Modigliani and Miller model and the assumption of no taxes:

- a. What will be the price of the shares at the end of the year, if a dividend is not declared? What will it be if it is declared?
- b. Assuming that the firm pays dividend, has net income of ₹ 10,00,000 and makes new investments of ₹ 20,00,000 during the period, how many new shares must be issued?
- c. Is the MM model realistic with respect to valuation? What factors might mar its validity?

17. A Ltd. has 8 lakhs equity shares outstanding at the beginning of the year 2023. The current market price per share is ₹ 120. The Board of Directors of the company is contemplating ₹ 6.4 per share as dividend. The rate of capitalisation, appropriate to the risk-class to which the company belongs, is 9.6%.
- a. Based on M-M Approach, calculate the market price of the share of the company, when the dividend is – (i) declared; and (b) not declared.
  - b. How many new shares are to be issued by the company, if the company desires to fund an investment budget of ₹ 3.20 crores by the end of the year assuming net income for the year will be ₹ 1.60 crores?

12. What will be the dividend per share of City pride Ltd. for the year 2023, given the following information about the company –

EPS of 2023 = ₹ 3

DPS of 2022 = ₹ 1.2

Target payout ratio = 0.6

Adjustment rate = 0.7

Apply Linter Model.

13. Given last year's dividend is ₹ 9.80, speed of Adjustment = 45%, Target payout Ratio 60% and EPS for current year ₹ 20.

- i. Calculate current years dividend using Lintner's Approach.
- ii. If speed of Adjustment is considered 20%, Calculate current year's dividend.



74. Two companies – X Ltd. and Y Ltd. are in the same industry with identical earnings per share for the last five years. X Ltd. has a policy of paying 40% of earnings as dividends, while the Y Ltd. pays a constant amount of dividend per share. There is disparity between the market prices of the share of the two companies. The price of the X's share is generally lower than that of the Y, even though in some years X Ltd. paid more dividends than Y. The data on earnings, dividends and market price for the two companies are as under :

**X Ltd.**

<b>Year</b>	<b>EPS</b>	<b>DPS</b>	<b>Market price</b>
2019	₹ 4.00	₹ 1.60	₹ 12.00
2020	1.50	0.60	8.50
2021	5.00	2.00	13.50
2022	4.00	1.60	11.50
2023	8.00	3.20	14.50

**Y Ltd.**

<b>Year</b>	<b>EPS</b>	<b>DPS</b>	<b>Market price</b>
2019	₹ 4.00	₹ 1.80	₹ 13.50
2020	1.50	1.80	12.50
2021	5.00	1.80	12.50
2022	4.00	1.80	12.50
2023	8.00	1.80	15.00

- i. Calculate (a) payout ratio, (b) dividend yield and (c) earning yield for both the companies.
- ii. What are the reasons for the differences in the market prices of the two companies share?
- iii. What can be done by the X Ltd. to increase the market price of its shares?

15. X and Y are two fast growing companies in the engineering industry. They are close competitors, and their asset composition, capital structure, and profitability records have been very similar for several years. The primary difference between the companies, from a financial management perspective, is their dividend policy. Company X tries to maintain a non-decreasing dividend per share, while company Y maintains a constant dividend payment ratio. Their recent earnings per share (EPS), dividend per share (DPS), and average share price are as follows :

Year	Company X			Company Y		
	EPS	DPS	AVG. PRICE	EPS	DPS	AVG. PRICE
1	₹ 9.30	₹ 2.00	₹ 82.50	₹ 9.50	₹ 1.90	₹ 70.00
2	7.40	2.00	67.50	7.00	1.40	45.00
3	10.50	2.00	90.00	10.25	2.10	57.50
4	12.75	2.25	110.00	12.25	2.45	100.00
5	20.00	2.50	167.50	20.25	4.05	167.50
6	16.00	2.50	170.00	17.00	3.40	160.00
7	19.00	2.50	182.50	20.00	4.00	160.00

- Determine the dividend payment ratio, and price earnings ratio for both companies for all the years.
- Determine the average DP and PE for both the companies over the period 1 through 7.
- The management of company Y is puzzled as to why their share prices are lower than those of company X, in spite of the fact that profitability record of the company Y is slightly better (particularly of past three years). As a financial consultant, how would you explain the situation?

16. AB Ltd. is a fast growing manufacturing firm. It earns above industry return on its investment. It has been earning a rate of 25% on its investments in the past and has good prospects of earnings the same rate in future as well. AB Ltd. has been following a dividend policy of paying 70% of the earnings to the shareholders and retaining 30%. This dividend policy is justified by the company on the grounds that the sole objective of a company is to pay dividend and that dividends have a positive impact upon the price of the share.

If most of the company's shareholders are wealthy persons in high tax brackets, is the current dividend policy of the company justified? Dividend is taxable in the hands of the shareholders.

17. XYZ Ltd. Has 10000 shares of ₹ 10/- each. The company's retained earnings are ₹ 100 lakhs. The company's stock sells for ₹ 50 per share.
- If a 1:1 bonus is declared how many new shares would be issued?
  - What would be the market price after the bonus issue?
  - How would the equity account change?
  - If the company instead declares a 2:1 stock, split, how many shares will be outstanding? What would be the new par value? What would be the new market price?
  - If the company declares a 1:2 reverse split, how many shares will be outstanding? What would be the new par value? What would be the new market price?



19. XYZ Ltd. has 1 lakh shares outstanding quoting ₹ 30 per share. It wants to buy back 25,000 shares. What should be the buy back price? If the company has surplus cash of it ₹ 8 lakhs only can it buy back 25,000 shares? If the answer is "No" how many shares should buy back and at what price?

20. Existing paid-up share capital – 10000 shares ₹ 100 each  
 Market value of a share ₹ 200  
 Additional funds to be raised ₹ 300,000

Subscription price for the rights issues per share ₹ 120. The right issue is to be made in proportion of one new share for every four shares held. Calculate the value of right.

21. Amir Ltd. has issued 10,000 equity shares of ₹ 10 each. The current market price per share is ₹ 30. The company has a plan to make a rights issue of one new equity share at a price of ₹ 20 for every 4 shares held.

Required –

1. Calculate the theoretical post-right price per share.
2. Calculate the theoretical value of "right" alone.
3. Show the effects of the rights issue on the wealth of a share holder who has 1000 shares assuming he sells the entire rights;
4. Show the effect if the same shareholder does not take any action and ignores the issue.

Calculation of effect of right issue on wealth of shareholder:

<b>Particulars</b>	<b>Sells</b>	<b>Ignore</b>

22. AB Ltd. has issued 75,000 equity shares of ₹ 10 each. The current market price per share is ₹ 24. The company has a plan to make a rights issue of one new equity share at a price of ₹ 16 for every 4 shares held.

Required –

1. Calculate the theoretical post-right price per share.
2. Calculate the theoretical value of "right" alone.
3. Show the effects of the rights issue on the wealth of a share holder who has 1000 shares assuming he sells the entire rights;
4. Show the effect if the same shareholder does not take any action and ignores the issue.



23·AB Ltd. Belongs to the risk class of which the appropriate capitalisation rate is 10%. It currently has 1,00,000 shares at ₹ 100 each. The firm is contemplating declaration of dividend of ₹ 6 per share at the end of current fiscal year which has just begun. Answer the following questions based on **M & M model** & assume no taxes.

Required –

1. What will be the price of shares at the end of year, if a) Dividend is not declared b) Dividend is declared
2. Assuming that firm pays dividend, has net income of ₹ 10 lacs & makes new investment of ₹ 20 lacs during the period, how many no of shares must be issued.

EXTRA PAGE:

CA PRASHANT SARDA

## MANAGEMENT OF WORKING CAPITAL

### I. MEANING OF WORKING CAPITAL

1. Working Capital = \_\_\_\_\_.
2. Current Assets are those, which can be converted into cash within a short duration, i.e. Generally less than \_\_\_\_\_. Hence Current Assets = Sum of Inventories, Debtors, Cash and Bank Balances, Prepaid Expenses, Loans and Advances, Marketable Investments.
3. Current Liabilities are those which fall due for payment or settlement within a short duration, i.e. generally less than \_\_\_\_\_. Hence Current Liabilities = Sum of Creditors, Outstanding Expenses, Tax Provision, Proposed and Unclaimed Dividend, Short Term Loans, Bank Overdraft, Cash Credit.

### II. VARIOUS WAYS IN WHICH WORKING CAPITAL CAN BE CLASSIFIED

Working Capital can be classified based on (a) Concept or (b) Time Factor.

(a) Based on Concept - Gross and Net Working Capital:

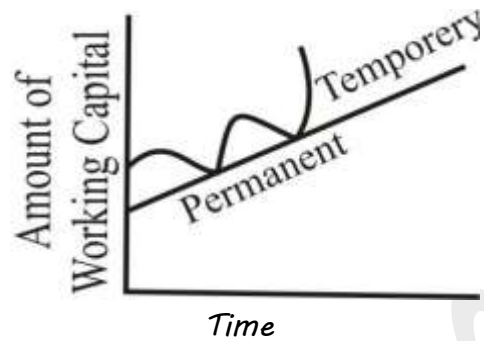
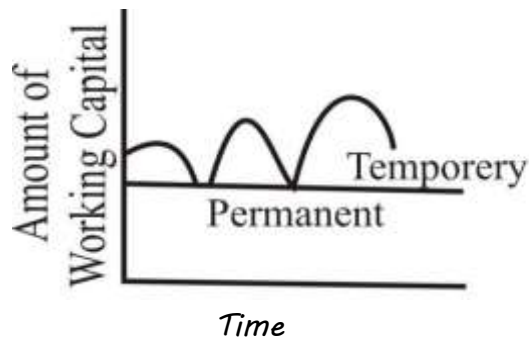
- Gross Working Capital = Current Assets only.
- Net Working Capital = Current Assets Less Current Liabilities

(b) Based on Time Factor - Permanent and Temporary Working Capital.

- **Permanent Working Capital:** It is the minimum level of investment required in the business at any point of time and hence at all points of time. It is also called Fixed or Hard Core Working Capital.
- **Temporary Working Capital:** It represents working capital requirements over and above permanent working capital and is dependent on factors like peak season, trade cycle, boom etc. It is also called as Fluctuating or Variable Working Capital.

There are two views as to the amount of Permanent Working Capital. (Refer Diagram)

- The first view is that the amount of Permanent Working Capital remains the same over all periods of time.
- The more logical second view is that the Permanent Working Capital increases in amount (rupee value) based on the activity levels of the firm. For example, Working Capital of ₹ 10 lakhs maybe sufficient for a turnover level of ₹ 50 lakhs. But when the turnover increases to ₹ 100 Crores after a certain time period, the amount of Working Capital should rise proportionately.



### III. IMPORTANCE OF ADEQUATE WORKING CAPITAL

The need for adequate investment in Working Capital can be understood from the following points:

1. Working Capital is required to use fixed assets profitably. For example, a machine cannot be used productively without raw materials.
2. Funds are required for day-to-day operations and transactions. These are provided by Cash and Cash Equivalents, forming part of Current Assets.
3. Adequate Working Capital determines the short-term solvency of the firm. Inadequate working capital means that the firm will be unable to meet its immediate payment commitments. This represents under-capitalisation.
4. Increase in activity levels and sales should be backed up by suitable investment in working capital.
5. The aspects of liquidity and profitability should be suitably analysed by the Finance Manager. Too much emphasis on profitability may affect liquidity.



Hence, working capital levels are said to be adequate when:

- Current Assets are \_\_\_\_\_ than Current Liabilities.
- Current Ratio = Current Assets / Current Liabilities is about 2:1. This may differ from industry to industry.
- Quick Ratio = Quick Assets / Quick Liabilities is at least 1:1. This may also differ from industry to industry.

### IV. ISSUES IN WORKING CAPITAL MANAGEMENT

Working Capital management entails the control and monitoring of all components of working capital i.e. cash, marketable securities, debtors (receivables) and stocks (inventories) and creditors (payables). The finance manager has to determine the levels and composition of current assets. He has to ensure a right mix of different current assets and that current liabilities are paid in time.

There are many aspects of working capital management which makes it important function of financial management.

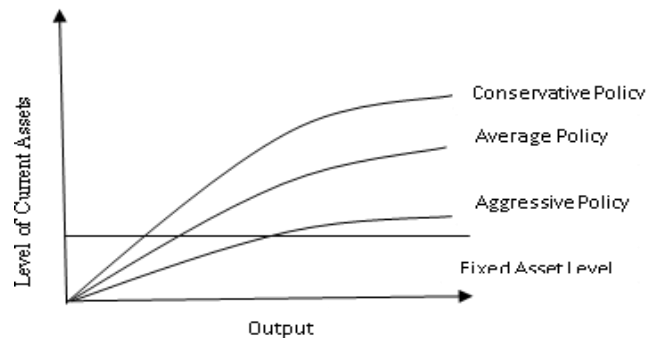
- ◆ **Time:** Working capital management requires much of the finance manager's time.
- ◆ **Investment:** Working capital represents a large portion of the total investment in assets.
- ◆ **Credibility:** Working capital management has great significance for all firms but it is very critical for small firms.
- ◆ **Growth:** The need for working capital is directly related to the firm's growth.

It is advisable that the finance manager should take precautionary measures for effective and efficient management of working capital. He has to pay particular attention to the levels of current assets and their financing. To decide the levels and financing of current assets, the risk return trade off must be taken into account.

a. **Current Assets to Fixed Assets Ratio:** The finance manager is required to determine the optimum level of current assets so that the shareholders value is maximized. A firm needs fixed and current assets to support a particular level of output. However, to support the same level of output, the firm can have different levels of current assets. As the firm's output and sales increases, the need for current assets also increases. Generally, current assets do not increase in direct proportion to output, current assets may increase at a decreasing rate with output. This relationship is based upon the notion that it takes a greater proportional investment in current assets when only a few units of output are produced than it does later on when the firm can use its current assets more efficiently.

The level of the current assets can be measured by creating a relationship between current assets and fixed assets. Dividing current assets by fixed assets gives current assets / fixed assets ratio. Assuming a constant level of fixed assets, a higher current assets / fixed assets ratio indicates a conservative current assets policy and a lower current assets / fixed assets ratio means an aggressive current assets policy assuming all factors to be constant. A conservative policy implies greater liquidity and lower risk whereas an aggressive policy indicates higher risk and poor liquidity. Moderate current assets policy will fall in the middle of conservative and aggressive policies. The current assets policy of most of the firms may fall between these two extreme policies.

The following diagram shows alternative current assets policies:



**b. Liquidity versus Profitability: Risk return trade off** – A firm may follow a conservative, aggressive or moderate policy as discussed above. However, these policies involve risk, return tradeoff. A conservative policy means lower return and risk. While an aggressive policy produces higher return and risk.

The two important aims of the working capital management are profitability and solvency. A liquid firm has less risk of insolvency that is, it will hardly experience a cash shortage or a stock out situation. However, there is a cost associated with maintaining a sound liquidity position. However, to have higher profitability the firm may have to sacrifice solvency and maintain a relatively low level of current assets. This will improve firm's profitability as fewer funds will be tied up in idle current assets, but its solvency would be threatened and exposed to greater risk of cash shortage and stock outs.

The following illustration explains the risk-return tradeoff of various working capital management policies, viz., and conservative, aggressive and moderate etc.

#### Illustration

A firm has the following data for the year ending 31 <sup>st</sup> March, 2022:	₹
Sales (1,00,000 @ ₹ 20/-)	20,00,000
Earning before Interest and Taxes	2,00,000
Fixed Assets	5,00,000

The three possible current assets holdings of the firm are ₹ 5,00,000/-, ₹ 4,00,000/- and ₹ 3,00,000/-. It is assumed that fixed assets level is constant and profits do not vary with current assets levels. The effect of the three alternative current assets policies is as follows:

#### Effect of alternative Working Capital Policies

Working Capital Policy	Conservative	Moderate	Aggressive
Sales	20,00,000	20,00,000	20,00,000
Earnings before Interest and Taxes (EBIT)	2,00,000	2,00,000	2,00,000
Current Assets	5,00,000	4,00,000	3,00,000
Fixed Assets	5,00,000	5,00,000	5,00,000
Total Assets	10,00,000	9,00,000	8,00,000
Return on Total Assets (EBIT / Total Assets)	20%	22.22%	25%
Current Assets / Fixed Assets	1.00	0.80	0.60

The aforesaid calculations shows that the conservative policy provides greater liquidity (solvency) to the firm, but lower return on total assets. On the other hand, the aggressive policy gives higher return, but low liquidity and thus is very risky. The moderate policy generates return higher than Conservative policy but lower aggressive policy. This is less risky than Aggressive policy but more risky than conservative policy. In determining the optimum level of current assets, the firm should balance the profitability - Solvency tangle by minimizing total costs, Cost of liquidity and cost of illiquidity.

#### V. ESTIMATING WORKING CAPITAL NEEDS

Operating cycle is one of the most reliable method of Computation of Working Capital. However, other methods like ratio of sales and ratio of fixed investment may also be used to determine the Working Capital requirements. These methods are briefly explained as follows:

- i. **Current assets holding period:** To estimate working capital needs based on the average holding period of current assets and relating them to costs based on the company's experience in the previous year. This method is essentially based on the Operating Cycle Concept.
- ii. **Ratio of sales:** To estimate working capital needs as a ratio of sales on the assumption that current assets change with changes in sales.
- iii. **Ratio of fixed investments:** To estimate Working Capital requirements as a percentage of fixed investments.

A number of factors will, however, be impacting the choice of method of estimating Working Capital. Factors such as seasonal fluctuations, accurate sales forecast, investment cost and variability in sales price would generally be considered. The production cycle and credit and collection policies of the firm will have an impact on Working Capital requirements. Therefore, they should be given due weightage in projecting Working Capital requirements.

#### VI. IMPORTANCE OF THE WORKING CAPITAL CYCLE

**Meaning:** Working Capital Cycle or Cash Cycle or Operating Cycle is the time duration for conversion of cash into cash equivalents like Raw Materials, Work-in-Progress, Finished Goods, sundry Debtors and thereafter back into cash.

**Segments:** The operating cycle has the following phases or segments:

- Conversion of Cash into Raw Materials - Lead Time
- Conversion of Raw Materials, into WIP and then into Finished
- Goods - Production / Process Cycle



Representation of the Operating Cycle

- Conversion of Finished Goods into Debtors through Sales
- Stockholding Period
- Conversion of Receivables into Cash - Average Collection Period.

**Computation:** Operating Cycle is computed in terms of number of days (or sometimes in months), It is computed as under:

$$\text{Net Operating Cycle} = (\text{Raw Material Storage Period} + \text{WIP holding Period} + \text{Finished Goods Storage Period} + \text{Debtors Collection Period}) \text{ Less} \\ \text{Creditors Payment Period}$$

The various components of working capital cycle are computed as under:

Component	Formula	Formula based on Turnover
Raw Materials Storage Period	$\frac{\text{Average Stock of Raw Materials}}{\text{Average Cost of RM per day}}$	$\frac{365}{\text{Raw Materials Turnover Ratio}}$
WIP Holding Period	$\frac{\text{Average Stock of WIP}}{\text{Average Cost of production per day}}$	$\frac{365}{\text{WIP Turnover Ratio}}$
Finished Goods Storage Period	$\frac{\text{Average Stock of Finished Goods}}{\text{Average Cost of Goods sold per day}}$	$\frac{365}{\text{FG Turnover Ratio}}$
Debtors Collection Period	$\frac{\text{Average Accounts Receivables}}{\text{Average Credit Sales per day}}$	$\frac{365}{\text{Debtors Turnover Ratio}}$
Creditors Payment Period	$\frac{\text{Average Accounts Payable}}{\text{Average Credit Purchases per day}}$	$\frac{365}{\text{Creditors Turnover Ratio}}$

### Significance:

1. **Surplus Generation:** It represents the activity cycle of the business, i.e. purchase, manufacture, sales and collection thereof. Hence the operating cycle stands for the process that creates surplus or profit for the business.
2. **Funds Rotation:** Operating cycle indicates the total time required for rotation of funds. The faster the funds rotate, the better it is for the Company.
3. **Going Concern:** Cash cycle lends meaning to the going concern concept. If the cycle stops in between, the going concern assumption may, be violated.

Hence, Working Capital Cycle should be on par with the industry average. A long cycle indicates overstocking of inventories or delayed collection of receivables and is considered unsatisfactory.

Using the Operating Cycle, the Working Capital Turnover can also be computed as  $365/\text{Working Capital Cycle}$ . A high turnover ratio indicates a better position.

## VII. APPROACHES TO ESTIMATION OF WORKING CAPITAL REQUIREMENTS

Working Capital Requirements can be forecast in two ways:

- By reference to the Operating Cycle
- By estimation of each component of Current assets and Current liabilities. The second method is more popularly used in practice.



### VIII. ESTIMATION OF CURRENT ASSETS

The estimates of various components of working capital may be made as follows:

- i. **Raw materials inventory** : The funds to be invested in raw materials inventory may be estimated on the basis of production budget, the estimated cost per unit and average holding period of raw material inventory by using the following formula :

$$\left[ \frac{\text{Estimated production (in units)} \times \text{Estimated cost of raw per unit}}{12 \text{ months} / 360 \text{ days}} \right] \times \text{holding Average raw material period}$$

**Note:** 360 days in a year are generally assumed to facilitate calculation.

- ii. **Work -In -progress inventory** : The funds to be invested in work-in-progress can be estimated by the following formula :

$$\left[ \frac{\text{Estimated production (in units)} \times \text{Estimated work- in - progress cost per unit}}{12 \text{ months} / 360 \text{ days}} \right] \times \text{holding Average holding period of W-I-P}$$

- iii. **Finished Goods** : The funds to be invested in finished goods inventory can be estimated with the help of following formula

$$\left[ \frac{\text{Estimated production (in units)} \times \text{Cost of production (Per unit) excluding depreciation}}{12 \text{ months} / 360 \text{ days}} \right] \times \text{Avg holding period of finished goods inventory}$$

- iv. **Debtors** : Funds to be invested in trade debtors may be estimated with the help of following formula :

$$\left[ \frac{\text{Estimated credit sales (in units)} \times \text{Cash cost of sales (Per unit)}}{12 \text{ months} / 360 \text{ days}} \right] \times \text{Average debtors collection period}$$

Note that only cash cost is considered for debtors and finished goods elements (as the sales to debtors include cost & profit whereas the funds required for working capital purposes doesn't need to include profit). Further, non-cash expense like depreciation is also excluded.

- v. **Cash and Cash equivalents**: Minimum desired Cash and bank balances to be maintained by the firm has to be added in the current assets for the computation of working capital.

**IX. ESTIMATION OF CURRENT LIABILITIES**

Current liabilities generally affect computation of working capital. Hence, the amount of working capital is lowered to the extent of current liabilities (other than bank credit) arising in the normal course of business. The important current liabilities like trade creditors, wages and overheads can be estimated as follows:

**i. Trade creditors :**

$$\frac{\text{Estimated credit purchases (in units)} \times \text{Credit period allowed by suppliers}}{12 \text{ months} / 360 \text{ days}}$$

**ii. Direct Wages**

$$\frac{\text{Estimated labour hours} \times \text{wages rate per hour}}{12 \text{ months} / 360 \text{ days}} \times \text{Average time lag in payment of wages}$$

**iii. Overheads: (other than depreciation and amortization) :**

$$\frac{\text{Estimated yearly production (in unit)} \times \text{OH cost per unit}}{12 \text{ months} / 360 \text{ days}} \times \text{Average time lag in payment of wages}$$

**X. VALUATION NORMS FOR VARIOUS ELEMENTS OF WORKING CAPITAL FOR ESTIMATION PURPOSES**

Estimation of working capital requirements by determination of each component of current assets and current liabilities involves the following steps:

<b>Step 1</b>	Determine the various items of Current Assets and Current Liabilities, which are required to be estimated.
<b>Step 2</b>	Determine the period of holding or quantity for each of the above items. For example, Raw Material Storage Period, WIP Holding Period, Finished Goods Storage Period, Average Collection Period, Creditors Payment Period, Lag in Outstanding Expenses etc.
<b>Step 3</b>	Determine the rate at which the above items are to be valued. [See Table below]
<b>Step 4</b>	Ascertain the amount of each item as Period or Quantity X Rate of Valuation.
<b>Step 5</b>	Find out Net Working Capital, after considering amounts such as cash balances, loans and advances, advances to suppliers, advances from customers etc.

**Rates of Valuation of various items**

Component	Total Approach	Cash Cost Approach
Raw Materials	Purchase Price net of discounts	Purchase Price net of discounts
Work in Progress	Raw Materials + 50% of [Direct Labour + Direct Expenses + All Production Overheads]	Raw Materials + 50% of [Direct Labour + Direct Expenses + Production Overheads excluding depreciation]
Finished Goods	Cost of Production	Cost of Production Less Depreciation
Sundry Debtors	Selling Price	Selling Price Less Profit Margin Less Depreciation
Sundry Creditors	Purchase Price net of discounts	Purchase Price net of discounts

## XI. IMPACT OF DOUBLE SHIFT WORKING ON WORKING CAPITAL REQUIREMENT

Working Double Shift leads to economies of scale due to greater use of fixed assets. As a firm increases the number of production hours, working capital requirements also increase. But the increase in the working capital may not be directly proportional. The impact of double shift working on various components of working capital is as under

Item	Effect on Quantity	Effect on Rate
Raw Materials	Stock requirements may double since consumption per day will be twice as earlier.	Due to bulk purchasing, the firm may avail of quantity discounts. Hence, average cost per unit of raw material may be reduced.
Work in Progress	There will be no change in the quantity of WIP since work commenced in the first shift will be completed in the second shift. Hence at the end of any day, the quantity of WIP will remain the same as it was in single shift working.	Due to reduction in raw material cost and economies of fixed costs, the average cost per unit of WIP may be reduced.
Finished Goods	Due to greater production, finished goods stocks may double in quantity.	Cost of production per unit stands reduced due to lower cost of materials and economies of fixed costs per unit.
Sundry Debtors	Increase in demand and increased sales will lead to higher amount of Debtors, for the same credit period. In case of reduction in credit period, the increase may not be proportional or double.	The Selling Price per unit may be reduced on account of price elasticity of demand. Additional quantities could be sold only by reducing the price.
Sundry Creditors	Raw Materials purchase quantity and creditors bill quantity may double, subject to credit period remaining constant. In case of extended credit periods, Creditors quantity may increase more than proportionately or double.	Due to bulk purchasing and better bargaining power, the firm may obtain discounts. Hence, amount payable per unit of purchase stands reduced.

**Note:** In examination questions, the quantity of all items except WIP may be doubled, unless other indications are available in the question.

## XII. FACTORS TO BE TAKEN INTO ACCOUNT WHILE DETERMINING WORKING CAPITAL REQUIREMENTS

A number of factors determine whether the amount of Working Capital held by a firm is high or low. Some illustrative factors are listed below:

Sr. No.	Factor	High Working Capital	Low or Moderate Working Capital
1.	Production Policies	High Production during peak season e.g. diaries, calendars etc.	Uniform Production over the year
2.	Production Process	Labour Intensive Process	Capital Intensive Process
3.	Length of manufacturing Process	Long manufacturing process or Production cycle	Short and quick manufacturing process, more batch runs etc.
4.	Nature of Business	Manufacturing concerns	Trading Concerns
5.	Credit Policy	Liberal Credit Policy and low efforts for debtors follow-up	Strict Credit and efficient credit collection Mechanism

6.	Market Standing	Newly established concern - Credit Sales are made but purchases are settled in cash.	Reputed and established companies - better and advantageous credit terms with debtors and suppliers.
7.	Inventory Policy	High Storage period or Stockholding Period	Just in Time Inventory Policy and moderate stockholding period
8.	Market conditions	Fierce Competition or Buyer's market	Seller's market - quick disposal of stocks and immediate collection of receivables
9.	Inflationary conditions	In case of highly inflationary conditions.	For moderate and mild inflationary conditions.
10.	Business Cycle	During peak or boom conditions	During moderately active conditions

### XIII. MAJOR CONSIDERATIONS IN WORKING CAPITAL MANAGEMENT AND POLICIES

The three major considerations in working capital management are:

- (a) **Profitability:** If the amount of Working Capital is high, liquidity is high. But due to low Capital Turnover ratio, the return on investment or profitability will also be low
- (b) **Liquidity:** If the amount of Working Capital is less, a high turnover indicates higher profitability. But liquidity may be seriously affected, causing loss of reputation in the short run.
- (c) **Structural Health:** The structural health of the firm on the long-term and short-term basis depends upon the optimum amount of working capital.

Hence, the Finance Manager has to strike a balance between liquidity and profitability without affecting the structural health of the firm.

### XIV. TREASURY MANAGEMENT

Treasury Management refers to efficient management of liquidity and financial risk in business. The responsibilities of Treasury Management include:

- (a) Management of Cash, while obtaining the optimum return from surplus funds;
- (b) Management of foreign exchange rate risks, in accordance with the Company policy;
- (c) Providing long-term and short-term funds as required by the business, at the minimum cost;
- (d) Maintaining good relationship and liaison with financiers, lenders, bankers and investors (shareholders) ; and
- (e) Advising on various issues of corporate finance like capital structure, buy-back, mergers, acquisitions, disinvestments etc.

## XV. FUNCTIONS OF THE TREASURY DEPARTMENT

The responsibilities of the Treasury Department are discharged through its functions. These are as under:

**(a) Cash Management:** This involves aspects such as:

- Planning or forecasting future cash requirements through Cash Budgets.
- Efficient collection of receivables and payment of liabilities through float management.
- Monitoring of funds position at various divisions / branches and identifying surplus or idle funds to transfer them to other divisions.
- Investment planning or parking of surplus funds in marketable securities to optimise return.
- Centralisation of collections and release of funds to various divisions.

**(b) Currency Management:** This involves aspects such as :

- Managing the foreign currency risk exposure through hedging or forward or futures.
- Timely settling or setting off of intra-group indebtedness when there are divisions in various countries.
- Matching transactions of receipts and payments in the same currency to save transaction costs.
- Decision on currency to be used while invoicing export sales.

**(c) Funding or Financing Management:** This involves aspects such as:

- Planning of long-term, medium-term and short-term cash needs.
- Participation in decisions concerning capital structure, dividend payout etc.
- Obtaining the fund requirements from various sources like bank loans, public issues etc.

**(d) Banking Liaison:** This involves aspects such as:

- Maintaining cordial and good relationships with bankers, lending institutions and financiers.
- Coordinating, liaising and negotiating with the lenders during the course of obtaining finance.

**(e) Corporate Finance:** This involves aspects like:

- Advising on various issues such as buy-back, mergers, acquisitions and divestments.
- Investor relationships.
- Capital Market Intelligence - obtaining information on market trend, timing of public issue etc.

**XVI. TECHNIQUES OF INVENTORY MANAGEMENT**

Techniques of Inventory Management are discussed in Materials Cost Chapter. A few techniques are:

- (a) Setting up various stock levels.
- (b) Economic Ordering Quantity.
- (c) ABC Analysis.
- (d) Receipt and-Inspection Procedures.
- (e) Stores Location and Layout decisions.
- (f) Review of slow and non-moving items.

**XVII. APPROACHES OF FINANCING WORKING CAPITAL REQUIREMENTS**

The approaches to financing working capital requirements are:

Name of the approach	Matching Approach	Conservative Approach	Aggressive Approach
Long Term Funds Used in	Fixed Assets and Permanent Working Capital	Fixed Assets, Permanent Working Capital and part of Temporary Working Capital	Fixed Assets and part of Permanent Working Capital
Short Term Funds Used in	Temporary Working Capital	Balance of Temporary Working capital	Balance of Permanent Working Capital and entire Temporary Working Capital
Impact on Liquidity	Comparatively well - balanced	High Liquidity	Low Liquidity
Impact on Profitability	Comparatively well-balanced	Low profitability and return on Asset	High return on assets but risky

**XVIII. VARIOUS SOURCES AVAILABLE FOR FINANCING WORKING CAPITAL REQUIREMENTS**

Some sources of financing working capital are:

- (1) Trade credit - Credit period availed, use of Bills payable etc.
- (2) Bank credit - Cash Credit, Overdrafts, Bills Discounting, Working Capital Demand Loan etc.
- (3) Non-bank short - term borrowings - Short term unsecured loans
- (4) Factoring of Receivables
- (5) Commercial Paper

(For various forms of Bank Credit, please refer Chapter - Sources of Financing)

**XIX. MAXIMUM PERMISSIBLE BANK FINANCE**

**Q. 1.** What do you understand by MPBF? How is MPBF computed presently? Write short notes on recent changes in MPBF computed presently?

MPBF stands for Maximum Permissible Bank Finance, i.e. the maximum amount that Banks can lend a borrower towards his working capital requirements.

The RBI had constituted various study groups / committees to study the trends of working capital financing by banks and recommend the norms to be followed in lending. The recommendations of the Tandon Committee (formed in July 1974) have had far-reaching impact in lending norms.

**MPBF based on Tandon Committee's recommendations:**

This Committee suggested three different methods of computing the MPBF.

**Method I:**  $MPBF = 75\% \text{ of } [Current \text{ Assets Less Current Liabilities}]$  i.e. 75% of Net Working Capital

**Method II:**  $MPBF = [75\% \text{ of Current Assets}] \text{ Less Current Liabilities}$

**Method III:**  $MPBF = [75\% \text{ of Fluctuating Current Assets}] \text{ Less Current Liabilities}$

The Committee suggested gradual shift from Method I to Method III, in order to make the borrower more self-reliant in financing his working capital requirements.

**Current Trends in MPBF:** In 1997, the RBI scrapped the concept of MPBF and introduced a new system of lending. The salient features of the new system are:

- **Upto ₹ 25 lakhs:** For borrowers with requirements of upto ₹ 25 lakhs, credit limits will be computed after detailed discussions with borrower, without going into detailed evaluation.
- **Upto ₹ 5 Crores:** For borrowers with requirements above ₹ 25 lakhs but upto ₹ 5 Crores, credit limit can be offered upto 20% of the projected gross sales of the borrower.
- **Above ₹ 5 crores:** For large borrowers not falling in the above categories, i.e. more than ₹ 5 Crores, cash budget system may be used to identify the working capital needs. Consortium arrangements between different banks and financial institutions are now optional for this category. However, Tandon Committee guidelines may also be followed with necessary modifications.





2. ABC Ltd. is desirous to purchase a business and has consulted you and one point on which you are asked to advise them is the average amount of working capital which will be required in the first years working.

You are given the following estimate and instructed to add 10% to your computed figure to allow for contingencies –

	Figures for the year
	₹
a. Average amount, locked up in stock – Stock of finished product	5,000
Stock of stores, materials etc.	8,000
b. Average credit given – Inland sales – 6 weeks credit	3,12,000
Exports sales – 1.5 weeks credit	78,000
c. Lag in payment of wages and other outgoings : Wages 1.5 weeks	2,60,000
Rent, Royalties etc. 6 months	10,000
Clerical staff – 0.5 months	62,400
Manager – 0.5 months	4,800
Misc. Expenses 1.5 months	48,000
d. Payment in advance : Sundry expenses (paid quarterly in advances)	8,000

Set up your calculation for the average amount of working capital required.

3. A proforma cost sheet of a company provides the following particulars –

Elements of cost	Amount per unit ₹
Raw material	80
Direct labour	30
Overheads	<u>60</u>
Total cost :	170
Profit	<u>30</u>
Selling Price	200

The following further particulars are available –

Raw materials are in stock in average one month. Materials are in process on average half a month. Finished goods are in stock on average one month.

Credit allowed by suppliers is one month. Credit allowed to debtors is 2 months. Lag in payment of wages is 1.5 weeks. Lag in payment of overhead expenses is one month.

One-fourth of the output is sold against cash. Cash on hand and at bank is expected to ₹ 25,000. You are required to prepare a statement showing the working capital needed to finance a level of activity of 1,04,000 units of production.

You may assume that production is carried on evenly throughout the year, wages and overheads accrue similarly and a time period of 4 weeks is equivalent to a month.

**Statement showing computation of estimated working capital:**

Sr.No.	Particulars	Basis	Computation	Amount (₹)

4. The Board of Directors of Rajesh Limited, request you to prepare a statement showing the working capital Requirements Forecast for activity of 1,56,000 units of production. The following information is available for your calculation.

A.

Elements of cost	Amount per unit ₹
Raw material	90
Direct labour	40
Overheads	<u>75</u>
Total cost :	205
Profit	<u>60</u>
Selling Price	265

- B. i. Raw materials are in stock on average one month.  
 ii. Materials are in process, on a average 2 weeks  
 iii. Finished goods are in stock on average one month.  
 iv. Credit allowed by suppliers one month  
 v. Time lag in payment from debtors 2 months  
 vi. Lag in payment of wages 1.5 weeks  
 vii. Lag in payment of overheads is one month.

20% of the output is sold against cash. Cash in hand and at Bank is expected to be ₹ 60,000. It is to be assumed that production is carried on evenly throughout the year, wages and overheads accrue similarly and a time period of 4 weeks is equivalent to a month.

**Statement showing computation of estimated working capital:**

Sr.No.	Particulars	Basis	Computation	Amount (₹)

5. From the following details, prepare an estimate of the requirement working capital –

Production	60,000 Units p.a.
Selling price per unit ₹5	
Raw materials	60% of selling price
Direct wages	10% of selling price
Overheads	20% of selling price
Materials in hand	2 months requirements
Production Time	1 month
Finished goods in stores	3 months
Credit for materials	2 months
Credit allowed to customers Average	3 months
Cash Balance	₹ 20,000

Wages and overheads are paid at the beginning of the month following. In production all the required materials are charged in the initial stage and wages and overheads accrue evenly.

**Statement showing computation of estimated working capital:**

Sr.No.	Particulars	Basis	Computation	Amount (₹)

6. The following annual figures relate to Katrina Co.:

	₹
Sales (at two month's credit)	36,00,000
Materials consumed (Suppliers extend two months credit)	9,00,000
Wages paid (monthly in arrear)	7,20,000
Manufacturing expenses outstanding at the end of the year (Cash expenses are paid one month in arrear)	80,000
Total administrative expenses, paid as above	2,40,000
Sales promotion expenses, paid quarterly in advance	1,20,000

The company sells its products on a gross profit of 25% counting depreciation as part of the cost of production. It keeps one month's stock each of raw materials and finished goods, and a cash balance of ₹ 1,00,000.

Assuming a 20% safety margin, work out the working capital requirements of the company on cash cost basis. Ignore work-in-progress.

**Statement showing computation of estimated working capital:**

Sr.No.	Particulars	Basis	Computation	Amount (₹)

**Working Note: 1 – Calculation of**

Particulars	Amount (₹)


7. ABC Ltd. is commencing a new project for manufacture of a plastic component. The following cost information has been ascertained for annual production of 12,000 units which is the full capacity :

	Cost per unit (₹)
Materials	40
Direct Labour and Variable expenses	20
Fixed Manufacturing expenses	6
Depreciation	10
Fixed Administration expenses	4
<b>Total</b>	<b>80</b>

The selling price per unit is expected to be ₹ 96 and the selling expenses ₹ 5 per unit, 80% of which is variable. In the first two years of operations, production and sales are expected to be as follows :

(No. of units)

Year	Production	Sales
1	6,000	5,000
2	9,000	8,500

To assess the working capital requirements the following additional information is available:

- Stock of Materials 2.25 month's average consumption
- Work in progress Nil
- Debtors 1 month's average sales
- Cash balance ₹ 10,000
- Creditors for supply of materials 1 month's average purchases during the year
- Creditors for expenses 1 month's average of all expenses during the year.

Prepare, for the two years,

- A Projected statement of Profit / Loss (ignoring taxation); and
- A Projected statement of working capital requirements.

#### Statement of projected Profit / Loss

Particulars	Year 1	Year 2


**Statement showing computation of estimated working capital:**

Sr.No.	Particulars	Basis	Year 1 (₹)	Year 2 (₹)

**Working Note: 1 – Calculation of**

Particulars	Year 1 (₹)	Year 2 (₹)

**Working Note: 2 – Calculation of**

Particulars	Year 1 (₹)	Year 2 (₹)

**NOTE: If stock is valued using weight average method:**

8. Y Ltd. sells goods at a gross profit of 20%. It includes depreciation as part of cost of production. The following figures for the 12 months period ending 31<sup>st</sup> December, 2015 are given to enable you to ascertain the requirements of working capital of the company on a cash cost basis.

In your working, you are required to assume that:

- a safety margin of 15% will be maintained;
- cash is to be held to the extent of 50% of current liabilities;
- there will be no work-in-progress;
- tax is to be ignored.

Stock of raw material and finished goods are kept at one month's requirements.

	₹
Sales – at 2 months' credit	27,00,000
Materials consumed (suppliers' credit is for 2 months)	6,75,000
Wages (paid at the beginning of the next month)	5,40,000
Manufacturing expenses outstanding at the end of the year (Cash expenses are paid one month in arrear)	60,000
Total Administrative expenses (paid as above)	1,80,000
Sales promotion expenses – paid quarterly and in advance	90,000

**Statement showing computation of estimated working capital:**

Sr.No.	Particulars	Basis	Computation	Amount (₹)




**Working Note: 1 – Calculation of**

<b>Particulars</b>	<b>Amount (₹)</b>

9. A newly formed company has applied to the commercial bank for the first time for financing its working capital requirements. The following information is available about the projections for the current year :

Estimated level of activity: 1,04,000 completed units of production plus 4,000 units of work-in- progress. Based on the above activity, estimated cost per unit is:

Raw material	₹ 80 per unit
Direct wages	₹ 30 per unit
Overheads (exclusive of depreciation)	₹ 60 per unit
Total Cost	₹ 170 per unit
Selling price	₹ 200 per unit

Raw materials in stock: average 4 weeks consumption, work-in-progress (assume 50% completion stage in respect of conversion cost) (materials issued at the start of the processing).

Finished goods in stock	8,000 units
Credit allowed by suppliers	Average 4 weeks
Credit allowed to debtors / receivables	Average 8 weeks
Lag in payment of wages	Average 1 ½ weeks

Cash at banks (for smooth operation) is expected to be ₹ 25,000.

Assume that production is carried on evenly throughout the year (52 weeks) and wages and overheads accrue similarly. All sales are on credit basis only.

Find out the net working capital required.

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10. Compute "Maximum Bank Borrowings" permissible under method I, II and III of Tondon Committee norms from the following figures and comment on each method

Liabilities	₹ in Lakhs	Assets	₹ in Lakhs
Creditors for purchases	200	Raw materials	400
Other current liabilities	100	Work-in-progress	40
	300	Finished goods	180
Bank borrowings	440	Receivable including bills	
		Discounted with bankers	100
		Other Current Assets	20
<b>Total</b>	<b>740</b>	<b>Total</b>	<b>740</b>

Assume core current assets are ₹ 190 lakhs.

11. From the following information of XYZ Ltd., you are required to calculate :

- Net operating cycle period
- Number of operating cycles in a year.

	₹
i. Raw material inventory consumed during the year	6,00,000
ii. Average stock of raw material	50,000
iii. Work-in-progress inventory consumed during the year	5,00,000
iv. Average work-in-progress inventory	30,000
v. Finished goods inventory consumed during the year	8,00,000
vi. Average finished goods stock held	40,000
vii. Average collection period from debtors	45 days
viii. Average credit period availed	30 days
ix. No. of days in a year	360 days

Sr. No.	Particulars	Calculation	Days

12. H Ltd. has been operating its manufacturing facilities till 31.3.2023 on a single shift working with the following cost structure :

Per unit ₹

Cost of Materials	6.00
Wages (40% fixed)	5.00
Overheads (80% fixed)	5.00
Profit	2.00
Selling Price	18.0

Sales during 2022-23 – ₹ 4,32,000. As at 31.3.2023 the company held :

₹

Stock of raw materials (at cost)	36,000
Work-in-progress (valued at prime cost)	22,000
Finished goods (valued at total cost)	72,000
Sundry debtors	1,08,000

In view of increased market demand, it is proposed to double production by working an extra shift. It is expected that a 10% discount will be available from suppliers of raw materials in view of increased volume of business. Selling price will remain the same. The credit period allowed to customers will remain unaltered. Credit availed of from suppliers will continue to remain at the present level i.e. 2 months. Lag in payment of wages and expenses will continue to remain half a

month.

You are required to assess the additional working capital requirement, if the policy to increase output is implemented.

13. An engineering company is considering its working capital investment for the next year. Estimated fixed assets and current liabilities for the next year are respectively ₹ 2.60 crores & ₹ 2.34 crores. Sales & profit before interest & taxes ( PBIT ) depend on current assets investment- particularly inventories and book debts. The Company is examining the following alternative working capital policies:

Working Capital policies	Investment in current Assets (₹ in Crores )	Estimated sales (₹ in Crores)	EBIT (₹ In crores)
Conservative	4.50	12.30	1.23
Moderate	3.90	11.50	1.15
Aggressive	1.50	10.00	1.00

Assuming that firm has chosen the moderate working capital policy (that is, investment of ₹ 3.90 crores in current assets). The company is now examining the use of long term and short-term borrowing for financing its assets. The company will use ₹ 2.50 crores of equity funds The corporate tax rate is 35 per cent. The company is considering the following debt alternatives

Financing Policies	Short-term Debt (₹ in Crores)	Long term Debt (₹ in Crores )
Conservative	0.54	1.12
Moderate	1.00	0.66
Aggressive	1.50	0.16

The average effective interest rate on short run debt is 12 percent. While on long-term debt it is 16 percent. Determine the following for each of the following policies

- Rate of return on share holder equity
- Net working capital position
- Current ratio

Also evaluate the return-risk trade offs of these policies.

Sr.No.	Particulars			
		Conservative	Moderate	Aggressive

*EXTRA PAGE.*

CA PRASHANT SARDA

## MANAGEMENT OF ACCOUNTS RECEIVABLES & PAYABLE

### I. IMPORTANCE OF PROPER MANAGEMENT OF SUNDRY DEBTORS

**High Investment:** If large amounts are tied up in sundry debtors, working capital requirements and consequently interest charges will be \_\_\_\_\_.

Also, bad debts and cost of collection of debts would be \_\_\_\_\_.

**Low Investment:** If the investment in sundry debtors is low, the sales may be restricted, since the competitors may offer more liberal credit terms.

Hence, management of sundry debtors is an important issue and requires proper policies and efficient execution of such policies.

### II. ASPECTS OF MANAGEMENT OF DEBTORS

The three basic aspects of management of sundry debtors are:

(1) **Credit Policy** - decisions on credit period to be allowed, early payment discount rates etc.

(2) **Credit Analysis** - decision on whether credit can be extended to a particular customer

(3) **Control over Receivables** - steps for debtors follow-up, faster collection of debtors

### III. COSTS OF MAINTAINING RECEIVABLES

The cost of maintaining receivables comprises the following:

(1) **Interest on Investment:** Additional funds are blocked in receivables. This involves cost in the form of interest (in case of loan funds) or opportunity cost of capital (in case of own funds).

(2) **Administrative Costs:** Costs of record keeping, investigation of credit worthiness etc.

(3) **Delinquency Costs:** Costs of reminders, phone calls, follow-up letters etc.

(4) **Collection Costs:** Cost of contacting customers, collecting cheques in person, outstation collection charges, etc.

(5) **Defaulting Costs:** Bad debts, legal charges in respect of suits pending against debtors etc.

**Note:** These costs are compared with benefits, i.e. Additional Contribution, in the evaluation of credit period or credit policy.



#### IV. CREDIT POLICY

**Credit Policy:** This involves decisions relating on the following aspects of credit:

- (1) Length of the credit period;
- (2) Discount Policy;
- (3) Other special items.

**Role:** The credit policy determines the investment in sundry debtors, average collection period and bad debt losses. Hence, credit policy of a firm should enable it to achieve the following objectives:

- (1) Increasing sales and market share
- (2) Increasing profits due to higher sale and higher margins on credit sales.
- (3) Meeting competition.

#### V. CREDIT PERIOD

**Meaning:** Credit Period denotes the period allowed for payment by customers, in the normal course of business.

**Factors:** Credit period depends on a number of factors, for example:

- (1) Nature of product i.e. if demand is inelastic or if product is perishable, credit period may be small.
- (2) Quantum of Sales - Credit may not be allowed if small quantities are purchased.
- (3) Customs and Practices - normal trade practices and those followed by competitors
- (4) Funds available with the Company
- (5) Credit Risk i.e. possibility of bad debts

**Expression:** The credit period is generally stated in terms of net days. For example, if the credit terms are "net 45", it means that customers will repay credit obligations not later than 45 days.

#### VI. DISCOUNT POLICY

**Meaning:** In the context of Debtors Management, Discount Policy involves decisions relating to:

- Percentage of Cash Discount to be offered as incentive for early settlement of invoice
- Period within which cash discount can be availed.

**Role:** Discounts are given to speed up the collection of debts. Hence, it improves the liquidity of the seller. It also ensures prompt collection and reduces risk of bad debts.

**Expression:** Normally, credit terms are expressed in this order: (a) the rate of cash discount, (b) the cash discount period and (c) the net credit period. For example,

credit terms of "2/10 net 60" means that a cash discount of 2% will be granted if customer pays within 10 days; if he does not avail the offer he must pay within 60 days, being the credit period.

### VII. FACTOR TO BE ANALYSED BEFORE CREDIT IS GRANTED TO A CUSTOMER

A firm selling on credit terms cannot extend credit to all customers. Credit granting decision is taken on a case to case basis, based on the following illustrative factors:

- (a) **Credit worthiness of the customer:** The credit-worthiness of the customer is the most crucial factor in deciding whether credit should be granted or not. This is based on past experience (for existing customers) and credit analysis (for existing and new customers).
- (b) **Nature of Product:** Generally perishable items are sold on "cash and carry" basis, while durable / non-perishable items may be sold on credit.
- (c) **Nature of customer:** A Valued customer, who has long and favourable past dealings with the firm may be given credit immediately, than a new customer. However, credit may also be offered for attracting new customers.
- (d) **Quantity purchased:** Firms may decide to grant credit only beyond a certain lot size. For example sale upto 5 kg per invoice is made on cash basis only, while orders beyond 5 kg may be supplied on credit.
- (e) **Value of Sales:** Sometimes, the invoice value (instead of quantity) may be the determinant in a credit decision. For example, credit may be granted for amounts exceeding ₹ 15,000
- (f) **Risk of Bad Debts:** The extent of risk of bad debts that a firm can bear should be determined. For example, if there is a 1 % chance of bad debts, the firm may take the risk of credit supply, but when the chance of bad debts is 55%, credit should not be granted.

Credit granting is a two-phase decision making process:

Phase I - Whether Credit should be granted at all? - Decision to be based on Credit Rating.

Phase II - Upto what limits and how long credit be granted? - Decision to be based on Cost Benefit Analysis.

### VIII. VARIOUS SOURCES OF CREDIT RATING INFORMATION

The following are the important sources of credit information:

- (1) **Trade references:** The prospective customer may be required to give two/three trade references. Thus, the customers may give a list of personal acquaintances or some

other existing credit-worthy customers. The credit manager can send a short questionnaire, seeking relevant information, to the referees.

- (2) **Bank references:** Sometimes, the customer is asked to request the banker to provide the require information. In India, bankers do not generally give detailed and unqualified credit reference.
- (3) **Credit bureau reports:** Associations for specific industries may maintain a credit bureau which provide useful and authentic credit information for their members.
- (4) **Past experience:** The past experience of dealings with an existing customer is a valuable source of essential data. The transactions should be carefully scrutinized and interpreted for finding out the credit risk involved.
- (5) **Published financial statements:** Published financial statements of a customer, (in case of limited companies) can be examined to determine the credit-worthiness.
- (6) **Salesman's interview and reports:** Credit-worthiness can be evaluated by the reports provided by consulting salesmen or sales representatives. Such reports provide firsthand information to the Company for proper determination of the credit limit.

## IX. DECISION TREE ANALYSIS OF CREDIT GRANTING

**Meaning:** Decision Tree Analysis is one of the techniques of Cost - Benefit Analysis, as to whether credit can be granted or not.

**Probability:** Under this technique, future uncertain events (like payment by customer, non-payment by customer) are assigned probabilities, based on the chances estimated by the firm. For example, if the chances of recovering the dues are 9 out of 10, the probability of recovery is 0.9 or 90% and that of default is 0.1 or 10%.

**Expectations:** The net expected earnings of each event is determined on the basis of probabilities:

- Expected Profit in case of payment = [Sales Less Costs] X Probability of Payment
- Expected Loss in case of default = Costs X Probability of Default

This is because, when a customer pays, the seller makes profit but when he fails to pay the amount the cost of the product is also lost.

**Decision:** Decisions are based on the expected profits / losses. If there is net expected profit, credit may be granted. However in case of net expected loss, credit should not be granted.

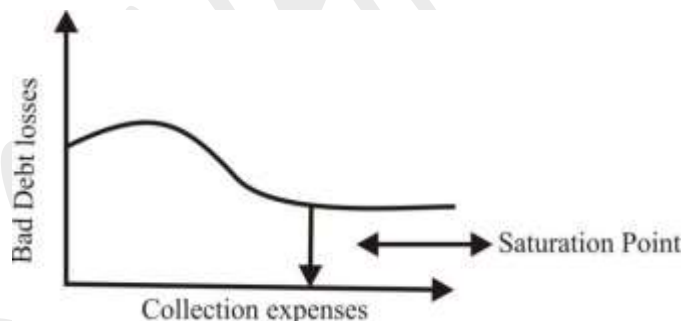
## X. COLLECTION POLICY

**Role of collection Policy:** Average Collection Period and Bad Debt losses are reduced by efficient and timely collection of debtors. Hence, a proper collection policy should be laid down.

**Aspects of Collection Policy:** The following aspects should be covered in Collection Policy and procedures.

- Timing of the collection process - when to start reminding etc.
- Dispatch of reminder letters to Customers.
- Personal follow-up by Company's representatives and telephonic calls.
- Appointment of agents for collection or follow-up.
- Dealing with default accounts, legal action to be initiated, notice to defaulting customer etc.

**Cost Benefit Analysis:** There are certain routine costs associated with collection from customers e.g. contacting customers, collecting cheques in person, collection agency fees etc. If a firm spends more on collection of debts, it is likely to have smaller bad debts. Hence the amount of collection costs to be incurred should be determined by Cost-Benefit Analysis i.e. level of expenditure on one hand and decrease in bad debt losses and investment in debtors on the other.



## XI. MEASURES FOR MONITORING RECEIVABLES

Monitoring of receivables involves the following measures:

- (1) **Average Age of Receivables:** Debtors Turnover Ratio and Average Collection Period are worked out at periodic intervals. These are compared with the industry norms or the standards set by firm. In case of high collection period, intense collection efforts are initiated.
- (2) **Ageing Schedule:** The pattern of outstanding / receivables is determined by preparing the Ageing Schedule. If the receivables denote old outstanding due for longer periods, suitable action should be taken to collect them immediately.
- (3) **Collection Programme:** The procedures for collection e.g. reminding letters, direct follow-up etc. should be initiated based on the company's policies and procedures.

## XII. NOTES ON AGEING SCHEDULE

**Meaning:** In an 'Ageing Schedule', the receivables are classified according to their age, i.e. period for which they have been outstanding. e.g. less than 30 days, 30-45 days, 45-60 days, above 60 days etc. **Role:** Preparation of ageing schedule helps management in the following ways:

- Analysis of quality of individual accounts
- Intra-firm and Inter-firm comparison, i.e. comparing liquidity of present receivables with the past periods and also comparing current liquidity of receivables of one firm with that of other firms
- Trend Analysis of debtors
- Supplement to average collection period of receivables / sales analysis.
- Recognition of recent increase and slump in sales.
- An illustrative Ageing Schedule is given below:

Period due	No. of parties	No. of bills	Amount due	% of Total	Remarks
< 15 days	65	70	34,180	3.42%	Less than normal credit period
16 - 30 days	12	80	46,840	4.68%	Less than normal credit period
31 - 45 days	86	241	3,83,690	38.37%	Normal Credit Period debts
46 - 60 days	91	196	3,59,960	36.00%	Regular reminders sent
61 - 90 days	43	52	97,100	9.71%	Special reminders sent
91 - 180 days	12	22	41,350	4.13%	₹ 18, 150 doubtful - party may be insolvent.
181-365 days	6	9	8,000	0.80%	Legal notice sent - reply due
> 1 year	3	3	17,860	1.79%	Suit filed - decision awaited
> 2 years	2	2	11,020	1.10%	Suit filed - decision awaited
<b>Total</b>	<b>320</b>	<b>675</b>	<b>10,00,000</b>	<b>100.00%</b>	

The above schedule shows that about 75% of the company's receivables are about 31-60 days due. It can be compared with corresponding schedules for previous years so as to analyse trend of Collection Management.

## XIII. COLLECTION PROGRAMME

The following are the illustrative steps in a collection programme.

- Monitoring the state of receivables.
- Intimation of due dates to customers.
- Telegraphic and telephonic advice to customers on the due date.
- Threat of legal action on overdue accounts.
- Legal action on overdue accounts.

#### XIV. ALTERNATIVES FOR EXTERNAL FINANCING OF RECEIVABLES

The following are some alternatives for external financing of Accounts Receivables / Debtors:

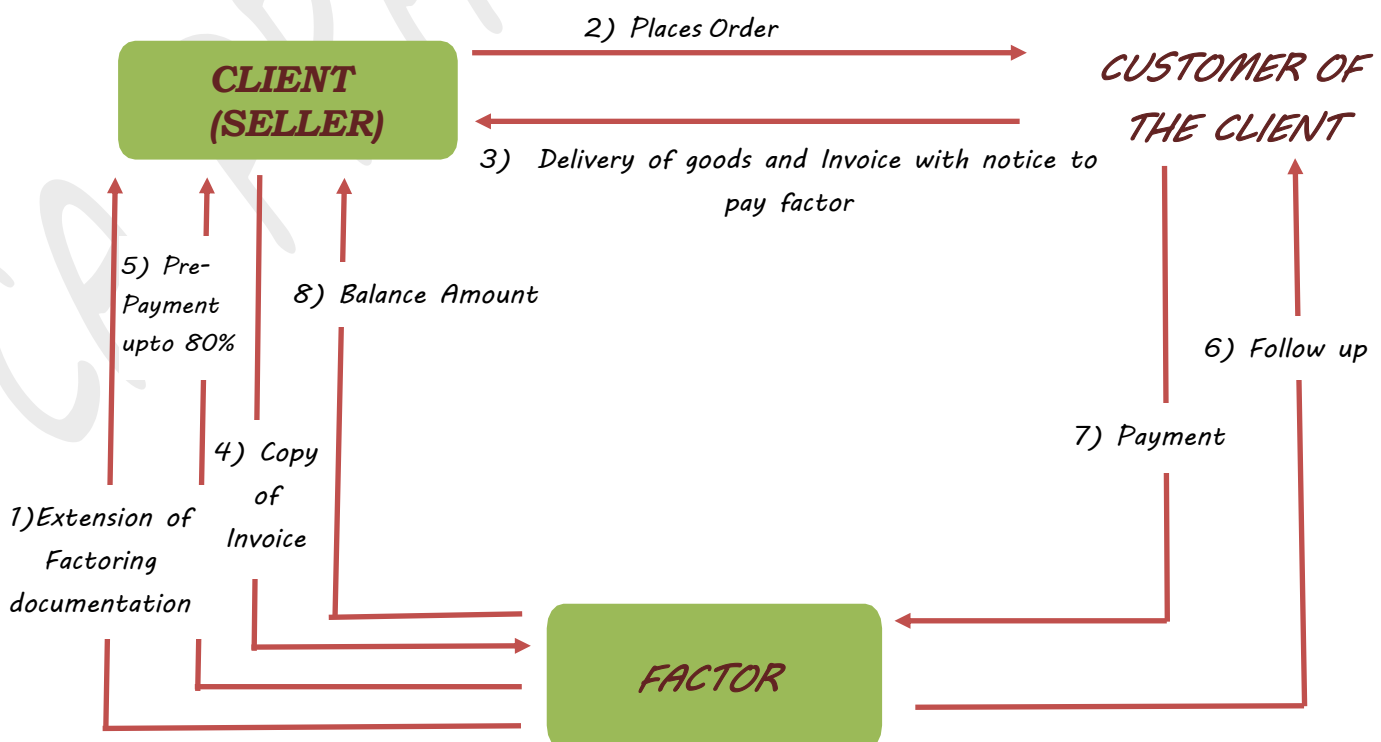
- (a) Bills Discounting.
- (b) Loans against Book Debts.
- (c) Loans against supply of bills to Government Departments.
- (d) Factoring, Forfaiting etc.
- (e) Debt Securitisation.
- (f) Advances from Customers.
- (g) Inter Corporate Deposits
- (h) Commercial Papers
- (i) Public Deposits

The above techniques are explained in the Chapter on Sources of Financing.

#### XV. FACTORING

A factor is a financial institution which offers services relating to management and financing of debts arising from credit sales. While factoring is well established in Western countries, entry of factoring in Indian market, in April, 1991, is a new route for managing receivables. It is not just a single service, rather a portfolio of complementary financial services available to clients i.e., sellers. Factoring involves specialised services relating to credit investigation, sales ledger management, purchase and collection of debts.

##### MECHANICS OF FACTORING



## MECHANICS OF FACTORING

The following is the procedure in factoring service -

- Seller (Client) negotiates with the factor for establishing factors relationship.
- Request by seller for credit check on the buyer (customer) whose name and address is furnished to the factor.
- Factor checks the credit credentials and approves the buyer, a credit limit and the period upto which credit can be given are fixed.
- Seller sells goods to the buyer.
- Seller sends invoice to the factor. The invoice is accounted for in the buyers' accounts in the factor's sales ledger.
- Factor sends notice of assignment / copy of invoice to the buyer.
- Factor advises the amount to which seller is entitled after retaining margin, say, of 20%, the residual amount being paid later.
- On the expiry of the agreed credit period, buyer makes the payment of invoice to the factor. At this point the factor pays to seller margin money retained as per point above. If however, the buyer defaults to pay the factor, it would still make the final payment to the seller in the case of without recourse factoring.

### KEY FEATURES -

1. The factor selects the accounts of the client that would be handled by it and establishes, along with the client, the credit limits applicable to the selected accounts.
2. The factor assumes responsibility for collecting the debt of accounts handled by it. For each account, the factor pays to the client at the end of the credit period or when the account is collected, whichever comes earlier.
3. The factor advances money to the client against not yet collected and not yet due debts. The credit is usually extended upto 70% to 80% of the face value of the debts and carries interest rates which may be equal to or marginally higher than the lending rate of commercial banks.
4. Factoring may be on recourse basis (this means that the credit risk is borne by the client) or on a non recourse basis (this means that the credit risk is borne by the factor). Presently factoring in India is done on recourse basis.
5. Besides the interest on advances against debt, the factor charges a commission which may be 1 to 2 per cent of the face value of the debt factored.
6. Generally, client notifies to the customer the existing factoring arrangement between the seller and factor and advises customer to pay directly to the factor. This is known as disclosed factoring. Whereas in undisclosed factoring, such notification is not made and the client makes over payment to the factor on receipt from debtors, if advance has been availed of against such debts.

**ADVANTAGES -**

1. Conversion of Account Receivable in cash without botheration of repayment.
2. Ensuring definite pattern of cash flow from credit sales.
3. Continuous factoring may eliminate the need of Credit and Collection Department.
4. Relieving the borrowing firm of substantial credit and collection costs.

**LIMITATIONS -**

- Cost of factoring tends to be higher than the cost of Other forms of short term borrowing.
- Factoring of debt may be perceived as a sign of financial weakness.

**TYPES / FORMS OF FACTORING:**

- a. **Recourse Factoring** - Under recourse factoring, the factor purchases the receivables on the condition that any loss arising out of irrevocable receivables will be borne by the client. In other words, the factor has recourse to the client if the receivable purchased turnout to be irrecoverable.
- b. **Non-recourse or Full factoring** - As the name implies, the factor has no recourse to the client if the receivables are not recovered, i.e. the client gets total credit protection. In this type of factoring, all the components of service, viz. Short-term finance, administration of sales ledger and credit protection are available to the client.
- c. **Maturity Factoring** - Under this type of factoring arrangement, the factor does not make any advance or pre-payment. The factor pays the client either on a guaranteed payment date or on the date of collection from the customer.
- d. **Advance Factoring** - In this , the factor makes prepayment of around 80% of the invoice value to the client. The balance is paid on collection / guaranteed payment date.
- e. **Notified Factoring** - In case of notified factoring, the customer is intimated about the assignment of debt to the factor and also directed to make payments to the factor instead of the firm. It is also called 'Disclosed Factoring'.
- f. **Non-notified (Undisclosed) Factoring** - This facility is one under which the supplier - factor arrangement is not disclosed to the customer unless there is a break of the agreement on the part of the supplier or, exceptionally, where the factor considers himself to be at risk.
- g. **Bank Participation Factoring** - In bank participation factoring, the supplier creates a floating charge on the factoring reserves in favour of banks and borrow against these reserves. For instance, if factor reserve is 20%, the supplier firm can borrow to the extent of 80%, of this reserve from Bank, thereby reducing its investments on receivable.



**h. International Factoring** - This deals with exports. The factoring service may include completing legal and procedural formalities pertaining to export. It is also called export cross-border factoring. The parties in this factoring are exporter (client), importer (customer), export factor and import factor.

### DIFFERENCE BETWEEN FORFEITING VS. EXPORT FACTORING

Forfeiting	Export Factoring
1. A forfeiter discounts the entire value of the note/bill	1. In a factoring arrangement the extent of financing available is 75-80%
2. The forfeiter's decision to provide financing depends upon the financing standing of the availing bank	2. The export factor bases his credit decision on the credit statement of the exporter
3. It is a pure financial agreement	3. It includes ledger administration, collection, etc.
4. It is a short term financial deal.	4. It spreads over 3-5 years

### DIFFERENCE BETWEEN FACTORING VS. BILLS DISCOUNTING

Factoring	Bills Discounting
1. Also called 'Invoice Factoring'	1. Also called 'Invoice Discounting'
2. The parties are client, factor and debtor	2. The parties are drawer, drawee and payee
3. It is management of book debts.	3. It is sort of borrowing from commercial banks
4. Grace time is not given	4. Grace time is 3 days
5. There is no specific Act	5. Negotiable Instruments Act is applicable
6. Provision of advance payment on book debts is available	6. No such provision to available

## XVI. INNOVATIONS IN RECEIVABLE MANAGEMENT

Following are the major determinants for significant innovations in accounts receivable management and process efficiency.

**1. Re-engineering Receivable Process:** In some of the organizations real cost reductions and performance improvements have been achieved by re-engineering in accounts receivable process. Re-engineering is a fundamental re-think and re-design of business processes by incorporating modern business approaches. The nature of accounts receivables is such that decisions made elsewhere in the organization are likely to affect the level of resources that are expended on the management of accounts receivables.

The following aspects provides an opportunity to improve the management of accounts receivables.

- a. **Centralization:** Centralization of high nature transactions of accounts receivables and payable is one of the practice for better efficiency. This focuses attention on specialized groups for speedy recovery.
- b. **Alternative Payment Strategies:** Alternative payment strategies in addition to traditional practices, result into efficiencies in the management of accounts receivables. It is observed that payment of accounts outstanding is likely to be quicker where a number of payment alternatives are made available to customers. Besides, this convenient payment methods is a marketing tool that is of benefit in attracting and retaining customers. The following alternative modes of payment may also be used along with traditional methods like Cheque Book etc., for making timely payment, added customer service, reducing remittance processing costs and improved cash flows and better debtor turnover.
  - i. **Direct debit:** i.e. authorization for the transfer of funds from the purchasers bank account.
  - ii. **Integrated Voice Response:** This system uses human operators and a computer based system to allow customers to make payment over phone, generally by credit card. This system has proved to be beneficial in the organisations processing a large number of payments regularly.
  - iii. **Collection by a third party:** The payment can be collected by an authorized external firm. The payments can be made by cash, cheque, credit card or Electronic fund transfer. Banks may also be acting as collecting agents of their customers and directly depositing the collections in customers bank accounts.
  - iv. **Lock Box Processing:** Under this system an outsourced partner captures cheques and invoice data and transmits the file to the client firm for processing in that firm's systems.
  - v. **Payments via Internet.**
- c. **Customer Orientation:** Where individual customers or a group of customers have some strategic importance to the firm a case study approach may be followed to develop good customer relations.

**2. Evaluation of Risk:** Risk evaluation is a major component in the establishment of an effective control mechanism. Once risks have been properly assessed controls can be introduced to either contain the risk to an acceptable level or to eliminate them entirely. This also provides an opportunity for removing inefficient practices.

**3. Use of Latest Technology:** Technological developments now-a-days provides an opportunity for improvement in accounts receivables process. The major innovations available are the integration of systems used in the management of accounts receivables, the automation and the use of e- commerce.

- a. **E-commerce:** It refer to the use of computer and electronic telecommunication technologies, particularly on an inter-organisational level, to support trading in goods and services. It uses technologies such as Electronic Data Inter-change (EDI), Electronic Mail, Electronic Funds Transfer (EFT) and Electronic Catalogue System to allow the buyer and seller to transact business by exchange of information between computer application system.
- b. **Accounts Receivable System:** Now-a-days all the big companies develop and maintain automated receivable management systems. Manual systems of recording the transactions and managing receivables is not only cumbersome but ultimately costly also. These integrated systems automatically update all the accounting records affected by a transaction. For example, if a transaction of credit sale is to be recorded, the system increases the amount the customer owes to the firm, reduces the inventory for the item purchased, and records the sale. This system of a company allows the application and tracking of receivables and collections, using the automated receivables system allows the company to store important information for an unlimited number of customers and transactions, and accommodate efficient processing of customer payments and adjustments.

4. **Receivable Collection Practices:** The aim of debtors collection should be to reduce, monitor and control the accounts receivable at the same time maintain customer goodwill. The fundamental rule of sound receivable management should be to reduce the time lag between the sale and collection.

Any delays that lengthen this span causes receivables to unnecessary build up and increase the risk of bad debts.

The following are major receivable collection procedures and practices:

- i. Issue of Invoice
- ii. Open account or open-end credit
- iii. Credit terms or time limits
- iv. Periodic statements
- v. Use of payment incentives and penalties
- vi. Record keeping and Continuous Audit
- vii. Export Factoring
- viii. **Business Process Outsourcing:** This refers to a strategic business tool whereby an outside agency takes over the entire responsibility for managing a business process.

## PROBLEMS

1. A firm's product sells for ₹ 10 a unit of ₹ 7 represents variable costs before taxes (including credit departmental costs). Current annual sales are ₹ 12 lakhs, represented entirely by credit sales, and the average total cost per unit is ₹ 9 before taxes. The firm is considering a more liberal extension of credit which will result in slowing process of the average collection period from one to two months. This relaxation in credit standards is expected to produce a 25 % increase in sales, i.e. ₹ 15 lakhs annually. Advise the management on the policy of liberal extension of credit, assuming the required return on investment is 20 %.

### Statement showing evaluation of credit policy:

Sr.No.	Particulars	Existing policy	Proposed policy

2. In order to increase sales from the normal level of ₹ 2.4 lakhs per annum, the marketing manager submits a proposal for liberalising credit policy as under:

Normal Sales                      ₹ 2.4 Lakhs

Normal Credit period        30 days

PROPOSED INCREASE IN CREDIT period beyond normal 30 days	Relevant increase over normal sales ₹
15 days	12,000
30 days	18,000
45 days	21,000
60 days	24,000

The P. V. Ratios of the company is  $33 \frac{1}{3}\%$ . The company expects a pre tax return of 20 % on investment. Evaluate the above four alternatives and advise the management (assume 360 days a year).

3. Esha Ltd. which sells on credit basis has ranked its customers in categories 1 to 5 in order of credit risk -

CATEGORY	Percentage bad debts	Average collection Period
1	0.0	30 days
2	1.0	45 days
3	2.0	60 days
4	5.0	90 days
5	10.0	120 days

The company's current credit policy is to allow unlimited credit to firms in categories 1 to 3, limited credit to firms in category 4 and no additional credit to firms in category 5.

As a result orders amounting to ₹ 25,00,000 from category 4 and ₹ 75,00,000 from category 5 customers are rejected every year. If the Esha Ltd. makes a 10 % gross profit on sales and has opportunity cost on investment in receivables of 12%, what would be the effect on profits of allowing full credit to all categories of customers? (Assume 360 days)

Sr.No.	Particulars	Category 4	Category 5

4. The credit manager of XYZ Company has to decide a proposal for liberal extension of credit which will result in slowing process of the average collection period from one to two months. The company's product was sold for ₹ 20 per unit on which ₹ 15 represented variable cost (including credit department cost). The current actual sales amounted to ₹ 24 lakhs, represented entirely by credit sales. The average total cost per unit was ₹ 18. The relaxation in credit policy was expected to result in a 25 % increase in sales, i.e. ₹ 30 lakhs annually. The corporate management aimed at a return of 25 % in additional investment. You are required to make relevant calculations to help the credit manager in examining the financial implications of liberalising the credit policy.

**Statement showing evaluation of credit policy:**

Sr.No.	Particulars	Existing policy	Proposed policy

5. Ratan Corporation is considering relaxing its present credit policy and is in the process of evaluating two proposed policies. Currently the firm has annual credit sales of ₹ 50 lakhs and accounts receivable turnover ratio of 4 times a year. The current level of loss due to bad debts is ₹ 1,50,000. The firm is required to give a return of 25 % on the investment in new accounts receivables. The company's variable costs are 70 % of the selling price.

Given the following information, which is better option –

	Present Policy	Policy Option - I	Policy Option - II
Annual Credit Sales	₹ 50,00,000	₹ 60,00,000	₹ 67,50,000
Accounts receivables			
Turnover ratio	4 times	3 times	2.4 times
Bad debt losses	₹ 1,50,000	₹ 3,00,000	₹ 4,50,000

**Statement showing evaluation of credit policy using incremental approach:**

Sr.No.	Particulars	Existing policy	Proposed policy	
			Policy I	Policy II

6. A trader whose current sales are in the range of ₹ 6 lakhs per annual and an average collection period of 30 days wants to pursue a more liberal policy to improve sales. A study made by a management consultant reveals the following information –

Credit Policy	Increase in collection period	Increase in Sales	Default Anticipated
A	10 days	₹ 30,000	1.5%
B	20 days	₹ 48,000	2 %
C	30 days	₹ 75,000	3 %
D	45 days	₹ 90,000	4 %

The selling price per unit is ₹ 3. Average cost per unit is ₹ 2.25 and variable costs per unit are ₹ 2. The current bad debts loss is 1 %. Required return on additional investment is 20 %. Assume 360 days year. Which of the above policies would you recommend for adoption?







<b>SCHEDULE</b>	<b>Patterns</b>
At the end of 30 days	15 % of the bill
At the end of 60 days	34 % of the bill
At the end of 90 days	30 % of the bill
At the end of 100 days	20 % of the bill
Non recovery	1 % of the bill

Slow Payers want to enter in to a firm commitment for purchase of goods of ₹ 15 lakhs in 2021, deliveries to be made in equal quantities on the first day of the each quarter in the calendar year. The price per unit of commodity is ₹ 150 on which a profit of ₹ 5 per unit is expected to be made. It is anticipated by Goods Dealers Limited, that taking up of this contract would mean an extra recurring expenditure of ₹ 5,000 p.a., if the opportunity cost of funds in the hands of Goods Dealers is 24 % p.a., would you as the finance manager of the seller recommend the grant of credit to Slow Payers?

<b>Sr.No.</b>	<b>Particulars</b>	<b>Amount (₹)</b>

11. As a part of the strategy to increase sales and profits, the sales manager of a company proposes to sell goods to a group of new customers with 10 % risk of nonpayment. This group would require one and a half months credit and is likely to, increase sales by ₹ 1,00,000 p.a. Production and selling expenses amount to 80 % of sales and the income tax rate is 35 %. The company's minimum required rate of return (after tax) is 32.5 %.

Should the sales manager's proposal be accepted?

Also find the degree of risk of nonpayment that the company should be willing to assume if the required rate of return (after tax) were: (i) 39 % (ii) 52 % and (iii) 78 %.

12. Preity Limited is a company having an annual credit sales of ₹ 30 lakhs. It deals in only one product. Currently it has an average collection period of 30 days. It is anticipated that liberalisation of credit terms can lead to increased sales as indicated below

Increase in Collection period (days)	Increase in Sales ₹
15	2,00,000
30	3,00,000
45	3,50,000
60	3,75,000

The unit selling price for the product is ₹ 50 and its unit variable cost is ₹ 30. At current volume it has an unit total cost of ₹ 35

It is also noted that the liberalisation of credit will lead to the following incidence of bad debts losses.

Increased in Collection period (Days)	Bad Debts % on sales
15	0.5
30	1.0
45	1.5
60	2.0

Currently the company is free from bad debts losses. What will be the most rewarding credit policy under these circumstances. The company expects a return of 18 % on investment. Tabulate your presentation.

13. X Ltd. has annual sales of ₹ 12,50,000, out of which cash sales are 20%. At present 60 days credit is granted to customers without any cash discount facility. The company is considering to offer a discount of 3%, which is expected to bring down the total credit period from 60 days to 45 days and 50 % of the customers ( in value) are likely to avail the discount facility. The selling price of the product is ₹ 10, while the average cost per unit is ₹ 8.  
Advise the company whether to resort to discount facility if the rate of return is 20 % and month is equal to 30 days.

14. The present credit terms of P Company are 1/10 net 30. Its annual sales are ₹ 80 lakhs, its average collection period is 20 days. Its variable costs and average total costs to sales are 0.85 and 0.95 respectively and its cost of capital is 10 per cent. The proportion of sales on which customer's currently take discount is 0.5. P Company is considering relaxing its discount terms to 2/10 net 30. Such relaxation is expected to increase sales by ₹ 5 lakhs, reduce the average collection period to 14 days and increase the proportion of discount sales to 0.8. What will be the effect of relaxing the discount policy on company's profit? Take year as 360 days.

**Statement showing**

Sr.No.	Particulars	Existing policy	Proposed policy

15. A company wants to use a factor. The following information is relevant should the company enter into a factoring agreement?

- a) The current average collection period for the company's debts is 80 days & 0.5% of debtors default. The factor will pay over money due after 60 days, & it will suffer the loss of bad debts.
- b) The annual charge for factoring is 2% of turnover, payable annually in arrears. Administration cost savings will total ₹ 1 lakh per annum
- c) Annual sales all on credit are ₹ 100 Lakh. Variable cost total 80% of sales price. The company's cost of borrowing is 15% p.a.

Particulars	Amount (₹)	Amount (₹)



*EXTRA PAGE.*

CA PRASHANT SARDA

## MANAGEMENT OF CASH & MARKETABLE SECURITIES

### I. IMPORTANT AREAS OF CASH MANAGEMENT

The Finance Manager should consider the following important areas of Cash Management:

- (a) To ensure that sufficient cash is available at each division or section for routine operations.
- (b) To ensure liquidity in all divisions of the organisation.
- (c) To identify surplus funds in certain divisions and transfer them to other divisions requiring them.
- (d) To invest surplus or idle funds in marketable securities in order to optimise return on funds.

### II. BASIC NEEDS OR CONSIDERATIONS FOR HOLDING CASH

According to Lord Keynes, the basic considerations in determining the amount of cash or liquidity are:

- (a) **Transaction or Operation Needs:** Cash may be held sufficiently in order to meet day-to-day expenses, repayments, commitments etc. In case the forecast receipts or inflows do not arise as planned, the reserve cash balance will be available for meeting payment commitments.
- (b) **Speculative or Investment Needs:** Cash may be held in order to take advantage of profitable opportunities that may crop up. e.g. purchase of materials in bulk in case of temporary fall in price. Otherwise, such opportunities may be lost for want of ready cash.
- (c) **Precautionary or Safety Needs:** Cash may be held in order to provide safety against unexpected events and payments. Sufficient cash holding gives a sense of security or safety to the firm.

### III. CASH BUDGETS

Cash Budgets are a tool for forecasting short-term cash requirements of an enterprise. They provide a blueprint of the cash inflows and outflows that are expected to occur in the immediate future period. They assist the management in determining the surplus or shortage of funds and to take suitable action. Cash Budgets are generally prepared in the following format, for short periods, say month by month:

Particulars	Amount
a. Cash Inflows or Receipts:	
▪ Cash Sales	
▪ Receipts from Debtors	
▪ Other Revenue Receipts	
▪ Capital Receipts (to be specified)	



<b>b. Cash Outflows or Payments:</b> <ul style="list-style-type: none"> <li>▪ To Creditors for Goods</li> <li>▪ Expenses and To Creditors for Services</li> <li>▪ Other, payments, which occur periodically like debenture interest, advance tax, dividend, sales tax etc.</li> <li>▪ Capital Expenditures</li> <li>▪ Repayment of Loans</li> </ul>	
<b>c. Surplus or Shortage = a - b = Inflows less Outflows</b>	
<b>d. Opening Balance of Cash</b>	
<b>e. Closing Balance of Cash = c + d = Surplus + Opening Balance</b>	

### **METHODS OF CASH BUDGETS**

A cash budget can be prepared in the following ways:

1. **Receipts and Payments Method:** In this method all the expected receipts and payments for budget period are considered. All the cash inflow and outflow of all functional budgets including capital expenditure budgets are considered. Accruals and adjustments in accounts will not affect the cash flow budget. Anticipated cash inflow is added to the opening balance of cash and all cash payments are deducted from this to arrive at the closing balance of cash. This method is commonly used in business organizations.
2. **Adjusted Income Method:** In this method the annual cash flows are calculated by adjusting the sales revenue and cost figures for delays in receipts and payments (change in debtors and creditors) and eliminating non-cash items such as depreciation.
3. **Adjusted Balance Sheet Method:** In this method, the budgeted balance sheet is predicted by expressing each type of asset (except cash & bank) and short-term liabilities as percentage of the expected sales. The profit is also calculated as a percentage of sales, so that the increase in owner's equity can be forecasted. Known adjustments, may be made to long-term liabilities and the balance sheet will then show if additional finance is needed (if budgeted assets exceed budgeted liabilities) or if there will be a positive cash balance (if budgeted liabilities exceed budgeted assets).

It is important to note that the capital budget will also be considered in the preparation of cash flow budget because the annual budget may disclose a need for new capital investments and also, the costs and revenues of any new projects coming on stream will need to be incorporated in the short-term budgets.

The Cash Budget can be prepared for short period or for long period.

**Cash Budget for long period**

Long-range cash forecast often resemble the projected sources and application of funds statement. The following procedure may be adopted to prepare long-range cash forecasts:

- (i) Take the cash at bank and in the beginning of the year
- (ii) Add:
  - (a) Trading profit (before tax) expected to be earned;
  - (b) Depreciation and other development expenses incurred to be written off;
  - (c) Sale proceeds of assets;
  - (d) Proceeds of fresh issue of shares or debentures; and
  - (e) Reduction in working capital that is current assets (except cash) less current liabilities.
- (iii) Deduct:
  - (a) Dividends to be paid.
  - (b) Cost of assets to be purchased.
  - (c) Taxes to be paid.
  - (d) Debentures or preference shares to be redeemed.
  - (e) Increase in working capital that is current assets (except cash) less current liabilities.

**IV. VARIOUS TYPE OF FLOATS IN THE CONTEXT OF CASH MANAGEMENT**

The term "float" denotes a delay or lag between two events. In the context of cash management, the term float is usually used for the following delays

Dispatch of Finished Goods to Customer	Billing Float
Preparation of Bill or Invoice	Mailing Float
Receipt of invoice by customer	Credit Period
Payment of amount due under the invoice	Mailing Float
Receipt of Cheque (by the Seller)	Cheque Processing Float
Deposit of Cheque into Bank	Banking Processing Float
Credit of Cheque by Bank	

To convert receivables into cash quickly, all the floats have to be reduced to the minimum. While credit period is considered as a policy decision, all other floats can be reduced by judicious managerial action.

## V. MEASURES FOR REDUCING VARIOUS FLOATS IN MANAGEMENT OF CASH

Some measures to reduce floats in Cash Management are:

Type of Float	Technique
Billing Float	Immediate preparation of bill, on the date of dispatch of Goods
Mailing Float - in sending invoice to customer	Use of faster modes of mailing, including e-mail Sending the invoice by fax first, followed by normal mail.
Mailing Float - receipt of cheque from customer Cheque Processing Float Banking Processing Float	Concentration Banking and Lock Box System

## VI. CONCENTRATION BANKING

**Procedure:** This method of collection from customers operates as under:

- Identify locations or places where major customers are placed, i.e. a Company with Head Office at Chennai and customers based in Delhi, Kolkata and Mumbai.
- Open a Local Bank Account in each of these locations i.e. Delhi, Kolkata and Mumbai.
- Open a local collection center for receiving cheques from these customers at the respective places. A Branch Office or even an Agent can perform the role of a Collection Centre.
- Collect remittances from customers locally, either in person or through post.
- Deposit the cheques received in the local bank account for clearing.
- Transfer the funds to Head Office Bank Account, upon realisation of cheques.

**Advantages:**

- Reduction in Mailing Float:** Since remittances from customers are collected locally either in person or by local post / courier, mailing float is reduced substantially.
- Reduction in Banking Processing Float:** Cheques are cleared locally, and the funds are made available faster. There need not be any waiting time for clearance of outstation cheques.
- Centralised Cash Management:** As surplus funds are transferred to Head Office Concentration Bank Account, idle funds in various locations are avoided. Centralised Cash Management ensures optimum use of funds available to the company and enables payment planning.

## VII. ROLE OF LOCK BOX SYSTEM IN REDUCING FLOAT

**Procedure:** This method of collection from customers operates as under:

- Identify locations or places where major customers are placed, i.e. a Company with

Head Office at Chennai and customers based in Delhi, Kolkata and Mumbai.

- Open a Local Bank Account in each of these locations i.e. Delhi, Kolkata and Mumbai.
- Instruct customers to mail their payments to the Local Bank. [The invoice may carry instructions like "Mail your payment to Corporation Bank A/c No. 786 P.O. Box No. 5, Andheri Branch, Mumbai]
- Authorise the Bank to pick up remittances from the post box.
- Authorise the Bank to realise the cheques through local, collection / clearing.
- Transfer the funds to Head Office Bank Account, upon realisation of cheques.

#### Advantages:

- **Reduction in Mailing Float:** Since remittances from customers are collected locally either in person or by local post / courier, mailing float is reduced substantially.
- **Reduction in Cheque Processing Float:** The Bank would prepare a list of remittances received and forward it to the Company as a Credit Advice. This saves cheque processing float at the Company's office, prior to collection.
- **Reduction in Banking Processing Float:** Since cheques are cleared locally, the funds are made available faster. There is no delay in collection of outstation cheques.
- **Centralised Cash Management:** Since surplus funds are transferred to Head Office Bank Account, idle funds in various locations are avoided. Centralised Cash Management ensures optimum use of funds available to the company and enables payment planning.

### VIII. NOTES ON CASH MANAGEMENT MODELS

- (a) There are several mathematical models, which help to determine the optimum cash balance to be carried by a firm, at any given point of time.
- (b) The major objective of these models is to ensure that cash does not remain idle with the firm and at the same time it is not confronted with cash shortage.
- (c) The models can be broadly divided into two categories.
  - Inventory Type Models - Cash flows are expected to arise uniformly, day-by-day, during the year.
  - Stochastic Models - Cash flows are expected to be uneven and different on various dates.

### IX. WILLIAM J. BAUMOL'S EOQ MODEL FOR OPTIMUM CASH BALANCE

The Baumol model on Optimum Cash Balance is similar to Wilson's model on raw material EOQ.

**Assumptions:** The Optimum Cash Balance model is based on the following assumptions:

- (a) **Uniform Cash Flows:** Cash payments arise uniformly during a year. For example, if the total annual cash outflow is ₹ 36,00,000 and there are 300 working days, the average payment per day = ₹ 36,00,000 / 300 days = ₹ 12,000 per day.
- (b) **Fixed Transaction Costs:** Surplus cash can be invested in short-term marketable securities. However, for every purchase of securities (i.e. investments) and for every sale (i.e. disposal of investments), fixed transaction costs are incurred e.g. brokerage, registration costs, clerical expenses etc. Hence, these costs rise along with the number of transactions (i.e. purchase and sale of securities).
- (c) **Fixed Holding Costs:** Surplus cash, if held by the firm, entails loss of interest at a fixed rate. This constitutes the carrying costs of cash, i.e. the interest foregone on marketable securities.
- (d) **Free marketability:** Short-term instruments can be freely traded. The firm can invest them at anytime and sell off / dispose investments at any time.

**Theory:** According to this model, optimum investment size is that level of investment where the total of carrying costs and transactions costs per annum are the minimum. At that point, these two costs are equal and constitute half of the total costs.

**Formula:**

$$\text{Optimum Investment Size} = \sqrt{\frac{2AT}{I}}$$

Where A = Annual Cash Requirements

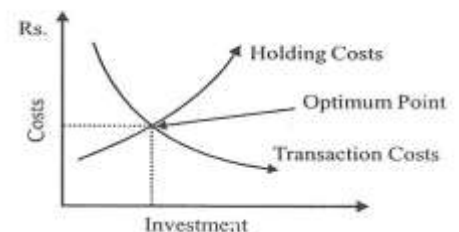
T = Costs per Transaction

I = Interest rate, i.e. Carrying Cost per rupee of Cash Per rupee investment

**Limitation of Baumol Model**

The limitation of the Baumol's model is that it does not allow the cash flows to fluctuate. Firms in practice do not use their cash balance uniformly nor they are able to predict daily cash inflows and outflows. The Miller-Orr (MO) model overcomes this shortcoming and allows for daily cash flow variation.

**Diagrammatic Representation :**

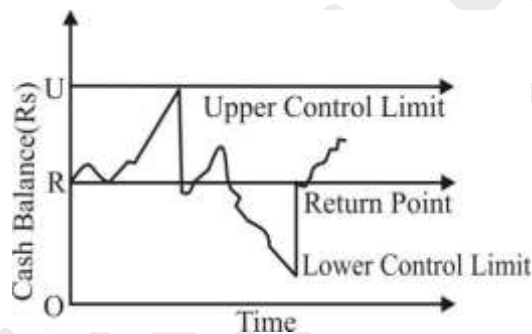


## X. MILLER-ORR CASH MANAGEMENT MODEL

**Stochastic Cash Flow Assumption:** Under this model, cash payments are presumed at different amounts on different days, i.e. stochastic. In practice, the payment flow is not uniform. For example, wage and salary payment arises in the first week, telephone bills fall due for payment once in a month etc. With this assumption, this model is designed to determine the time and size of transfers between an investment account and cash account.

**Theory:** This model operates as under:

- (a) Cash outflows are not uniform during the year.
- (b) Upper and lower limits can be fixed for cash balances, as outflows do not exceed a certain limit on any day. These limits are determined based on fixed transaction costs, interest foregone on marketable securities and the degree of likely fluctuations in cash balances.
- (c) When cash balance reaches the upper limit, surplus cash is invested in marketable securities, to bring down the cash balance to the average limit or return point.
- (d) When cash balance touches the lower limit, investments (marketable securities) are disposed off so that cash balances goes up to the average limit or return point.
- (e) During the period when cash balance stays between high and low limits, there are no transactions between cash and marketable securities.



## XI. RECENT DEVELOPMENT IN CASH MANAGEMENT

Now-a-days, electronic delivery and payment system are becoming increasingly important because of increased competition and the demand for more efficient and convenient capabilities. A considerable number of transactions and amounts of funds can be moved electronically from one place to another almost instantaneously. Therefore, we can easily observe the rapid transition from the most basic and traditional principles to now complex strategies dominated by the technology and globalization, but the basic goal is same i.e. the efficient utilisation of cash in a way which is consistent with the overall strategic objectives of a business unit.

**a. Electronic Fund Transfer:** With the developments which took place in the information technology, the present banking system is switching over to the computerization of banks branches to offer efficient banking services and cash management services to their customers. The network will be linked to the different branches, banks. This will help the customers in the following ways :

- Instant updation of accounts

- The quick transfer of funds.
- Instant information about foreign exchange rates.

**b. Zero Balance Account:** For efficient cash management some firms employ an extensive policy of substituting marketable securities for cash by the use of zero balance accounts. Every day the firm totals the cheques presented for payment against the account. The firm transfers the balance amount of cash in the account if any, for buying marketable securities. In case of shortage of cash the firm sells the marketable securities.

**c. Money Market Operations:** One of the tasks of 'treasury function' of larger companies is the investment of surplus funds in the money market. The chief characteristic of money market banking is one of size. Banks obtain funds by competing in the money market for the deposits by the companies, public authorities, High Networth Investors (HNI), and other banks. Deposits are made for specific periods ranging from overnight to one year, a highly competitive rates which reflect supply and demand on a daily, even hourly basis are quoted.

**d. Petty Cash Imprest System:** For better control on cash, generally the companies use petty cash imprest system wherein the day-to-day petty expenses are estimated taking into account past experience and future needs and generally a week's requirement of cash will be kept separate for making petty expenses.

**e. Management of Temporary Cash Surplus**

Temporary cash surpluses can be profitably invested in the following:

- ◆ Short-term deposits in Banks and financial institutions.
- ◆ Short-term debt market instruments.
- ◆ Long-term debt instruments.
- ◆ Shares of Blue chip listed companies

**f. Electronic Cash Management System:** Most of the cash management systems now-a-days are electronically based, since 'speed' is the essence of any cash management system. Electronically, transfer of data as well as funds play a key role in any cash management system. Various elements in the process of cash management are linked through a satellite. Various places that are interlinked may be the place where the instrument is collected, the place where cash is to be transferred in company's account, the place where the payment is to be transferred etc.

Certain networked cash management system may also provide a very limited access to third parties like parties having very regular dealings of receipts and payments

with the company etc. A finance company accepting deposits from public through sub-brokers may give a limited access to sub-brokers to verify the collections made through him for determination of his commission among other things.

*Benefits: Good cash management is a conscious process of knowing:*

- ◆ *When, where and how a company's cash needs will arise.*
- ◆ *Knowing what are the best sources of meeting at a short notice additional cash requirement.*
- ◆ *Maintaining good and cordial relations with bankers and other creditors.*

**g. Virtual Banking:** *The practice of banking has undergone a significant change in the nineties. While banks are striving to strengthen customer base and relationship and move towards relationship banking, customers are increasingly moving away from the confines of traditional branch banking and are seeking the convenience of remote electronic banking services. And even within the broad spectrum of electronic banking the virtual banking has gained prominence.*

*Broadly virtual banking denotes the provision of banking and related services through extensive use of information technology without direct recourse to the bank by the customer. The origin of virtual banking in the developed countries can be traced back to the seventies with the installation of Automated Teller Machines (ATMs). Subsequently, driven by the competitive market environment as well as various technological and customer pressures, other types of virtual banking services have grown in prominence throughout the world.*

*The Reserve Bank of India has been taking a number of initiatives, which will facilitate the active involvement of commercial banks in the sophisticated cash management system. One of the pre-requisites to ensure faster and reliable mobility of funds in a country is to have an efficient payment system.*

*Introduction of computerized settlement of clearing transactions, use of Magnetic Ink Character Recognition (MICR) technology, provision of inter-city clearing facilities and high value clearing facilities, Electronic Clearing Services Scheme (ECSS), Electronic Funds Transfer (EFT) scheme, Delivery vs. Payment (DVP) for Government securities transactions, setting up of Indian Financial Network (INFINET) are some of the significant developments. Introduction of Centralised Funds Management System (CFMS), Securities Services System (SSS), Real Time Gross Settlement System (RTGS) and Structured Financial Messaging System (SFMS) are the other top priority items on the agenda to transform the existing system into a state of the*



art payment infrastructure in India.

*The advantages of virtual banking services are as follows:*

- ◆ *Lower cost of handling a transaction*
- ◆ *The increased speed of response to customer requirements*
- ◆ *The lower cost of operating branch network along with reduced staff costs leads to cost efficiency.*
- ◆ *Virtual banking allows the possibility of improved and a range of services being made available to the customer rapidly, accurately and at his convenience.*

## **XII. PRINCIPLES INVOLVED IN SELECTION OF MARKETABLE SECURITIES**

***Marketable Securities:** Surplus cash can be invested in short-term instruments in order to earn interest. Such instruments are called marketable securities. They are next in place to cash equivalents. Some examples are Government Treasury Bills, Short-term Deposits with Banks (Certificate of Deposits and Money at Call and Short Notice), Inter-Corporate Deposits (ICD's), Commercial Papers (CP's) etc.*

*The selection of securities for short term investment purposes, is guided by three factors:*

- (a) **Safety:** The investment should be safe, i.e. guaranteed income and return of principal, when disposed off. Since short-term funds are to be parked in marketable securities, minimum risk is the criterion of selection, for ensuring liquidity*
- (b) **Maturity:** Matching maturity of investments with forecasted cash needs is essential. Prices of long term securities fluctuate more with changes in interest rates and are therefore, more risky.*
- (c) **Marketability:** It refers to the convenience, speed and cost at which a security can be converted into cash. If the security can be sold quickly without loss of time and price it is said to be highly liquid or marketable.*

## PROBLEMS

1. Make out a Cash Budget for April - June 2023 from the following information:

a. Actual and Budgeted sales

	Actual		BUDGETED
January	80,000	April	90,000
February	80,000	May	85,000
March	75,000	June	80,000

b. Actual and Budgeted purchases

	Actual		BUDGETED
January	40,000	April	50,000
February	40,000	May	45,000
March	42,000	June	35,000

c. Actual and Budgeted Wages and Expenses

	Actual Wages	Actual, Expenses		Budgeted Wages	Budgeted Expenses
January	20,000	5,000	April	24,000	7,000
February	18,000	6,000	May	20,000	6,000
March	22,000	6,000	June	18,000	5,000

d. Special - Advance Income Tax in May ₹ 4,000  
Plant in April ₹ 10,000

e. Rent ₹ 300/- payable each month not included in expenses

f. 10 % of purchase and sales are on cash terms.

g. Credit purchases are paid after one month and sales are collected after two months. Time lag in wages and expenses 1/2 month.

h. Cash and Bank Balances on April 1st ₹ 13,000.

### Cash Budget for the period from April to June 2023

Sr. No.	Particulars	April	May	June


**Working Note 1:**


2. The following particulars have been obtained in respect of the retail business of sona Ltd for the three months, ending March 2023 –

a. Working capital as on 1<sup>st</sup> January 2023 has been estimated as follows

	₹
Cash and bank balances	10,900
Debtors	51,400
Creditors	42,200
Outstanding Expenses	4,000
Dividend due	9,700
Tax due	6,400
Stock	26,000

b. Budget Profit Statement at the end of the each month

	2023		
	January ₹	February ₹	March ₹
Sales	42,000	36,000	34,000
Cost of sales	32,700	28,100	26,600
Gross Profit	9,300	7,900	7,400
Administrative, selling and distribution expenses	6,300	5,400	5,100
Net Profit before tax	3,000	2,500	2,300



**Working Note 1:**

Sr. No.	Particulars	Jan	Feb	March

**Working Note 2:**

Sr. No.	Particulars	Jan	Feb	March

**Working Note 3:**

Sr. No.	Particulars	Jan	Feb	March

3. From the following information relating to a departmental stores, you are required to prepare the cash budget for the three months ending 31<sup>st</sup> January 2023 -

a. Monthwise cash budget on receipts and payments basis and

It is anticipated that the working capital as at 1st November, will be as follows:

	₹ in 000's
Cash in hand and at bank	545
Short term investments	300
Debtors	2,570
Stock	1,300
Trade Creditors	2,110
Other Creditors	200
Dividends payable	485
Tax due	320
Plant	800

## Budget Profit Statement –

	₹ in 000's		
	November	December	January
Sales	2,100	1,800	1,700
Cost of Sales	1,635	1,405	1,330
Gross Profit	465	395	370
Administrative, selling and distribution expenses	315	270	255
Net Profit Before tax	<u>150</u>	<u>125</u>	<u>115</u>

## Budget Balances at the end of the each month –

	₹ IN ,000'S		
	November	December	January
Short term Investments	700	--	200
Debtors	2,600	2,500	2,350
Stock	1,200	1,100	1,000
Trade Creditors	2,000	1,950	1,900
Other Creditors	200	200	200
Dividend Payable	485	--	--
Tax Due	320	320	320
Plant (Depreciation ignored)	800	1,600	1,500

Depreciation amounting to ₹ 60,000 is included in the budgeted expenditure for each month.

4. Yash Ltd has annual sales of ₹ 175 Lakhs over a year of 50 weeks. All payments are by cheque and clearance takes 3 working days. Receipts are equally divided over a 5-day working week. Find the annual interest savings through banking daily rather than twice a week on Wednesdays and Fridays. The annual interest rate is 14%.

5. Hayness Associates is short on cash and is attempting to determine if it would be advantageous for them to forgo the discount on this month's purchases or to borrow funds to take advantage of the discount. The discount terms are 2/10 net 45.
6. Z Ltd currently has a centralized billing system. Payments are made by all customers to the central billing location. It requires, on the average, 4 days for customers' mailed payments to reach the central location. An additional 1.5 days are required to process payments before a deposit can be made. The firm has a daily average collection of ₹ 5,00,000/-. The company has recently investigated the possibilities of initiating a lock box system. It has estimated that with such a system, customers' mailed payments would reach the receipt location 2.5 days sooner. Further, the processing time could be reduced by 1 additional day, because each lock box would become a mailed deposit twice daily.
- Determine the reduction in cash balances that can be achieved through the use of a lock box system.
  - Determine the opportunity cost of the present system assuming a 5% return on short-term instruments.
  - If the annual cost of the lock box system will be ₹ 75,000/- should such a system be initiated.





*EXTRA PAGE.*

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