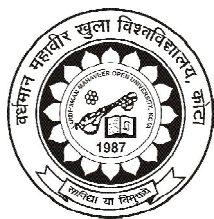
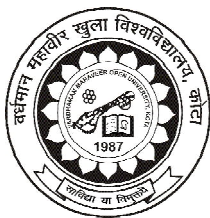


**BBA-13**



**Vardhaman Mahaveer Open University, Kota**

**Financial Management**



# Vardhaman Mahaveer Open University, Kota

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### Financial Management

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## Unit - 1 : Financial Management: An Introduction

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### Structure of Unit:

- 1.0 Objectives
- 1.1 Meaning and Definition of Financial Management
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### 1.0 Objectives

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After completing this unit, you would be able to:

- Know the meaning and nature of financial management.
- Understand the approaches of financial management.
- Know the functions of financial management.
- Understand the role of financial manager.

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### 1.1 Meaning and Definition of Financial Management

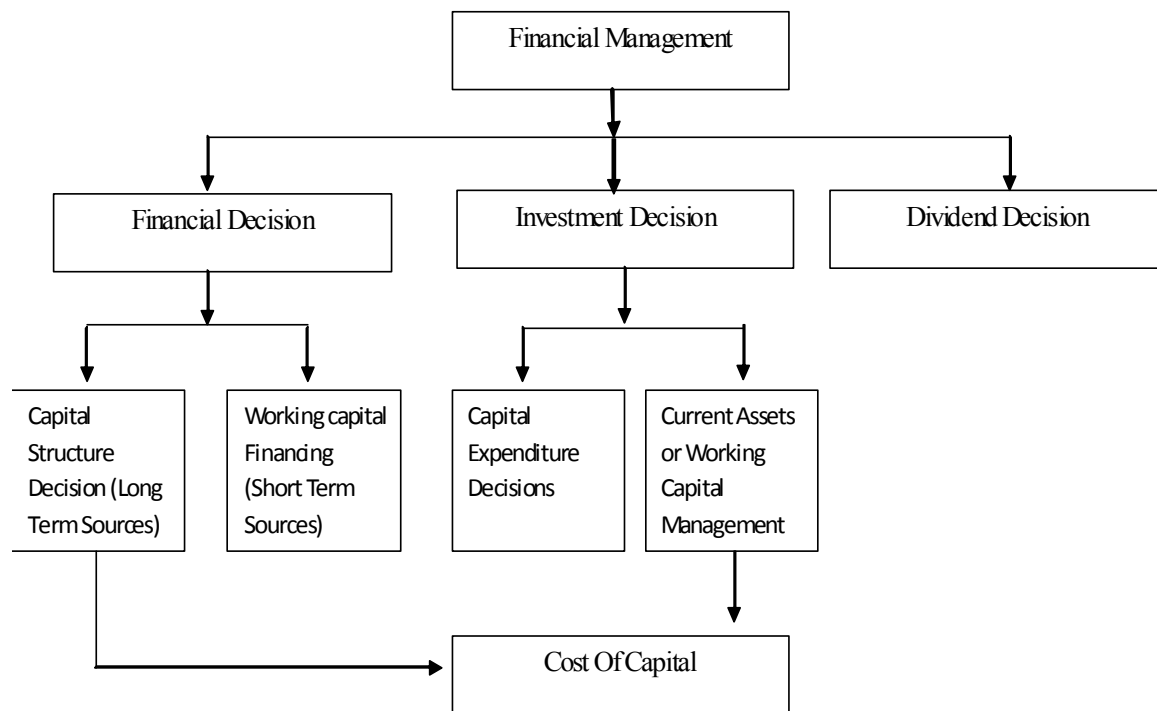
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Production, marketing and finance are three important line functions of an organisation but finance is the most important function which is treated as the life blood of any organisation. Without effective utilization of finance, no business can survive long. Meaning of Financial Management can be best described by the words '*Effective Utilization of Funds*'. Financial Management is mainly a part of general management which utilizes available financial funds in optimum way for smooth functioning of business. It starts with planning, administration and control of funds. The nature of Financial Management refers to its function, scope and objectivity. Finance is required till business is running and without proper management of funds survival becomes a difficulty. Long run business requires huge capital fund for their business and without proper discipline it becomes difficult to procure and allocate funds. Anything to do with cost, finance, money, capital are all covered under the 'financial management'. By implementing proper system of financial management business can invest in profitable avenues which yields high returns. Financial management also takes into account the future requirement of funds and keeps proper arrangements in present for the same. Hence the financial management is the study of income, expenses, capital investments, capital issues etc.

In the words of Ezra Solomon, "Financial Management is concerned with the efficient use of an important economic resource, namely capital fund".

Weston and Brigham states that "Financial Management is an area of financial decision making harmonizing individual motives and enterprise goals."

Joseph L. Massie states that “Financial Management is the operational activity of a business that is responsible for obtaining and effectively utilizing the funds necessary for efficient operations.”



**Figure - 1.1**

Source: M.R. Agarwal, “Financial Management”

## 1.2 Nature or Characteristics of Financial Management

With the help of the following points we can understand the nature of financial management

1. Financial Management is a broader concept. It is not just about accounting of finance. It starts with procurement of funds as per the requirement and their best allocation. Financial planning is required till the business survives. It is an essential part of the business.
2. It is the integral part of management. Financial planning is the part of top level Management. Financial policies are drafted by top level managers and then it is executed by other levels.
3. Effective financial management helps in maximizing profits. Financial management helps in selecting the best alternative available. Funds are raised in a perfect combination of debt and equity which bears less cost of capital and are invested in best profitable avenues for higher returns.
4. It is scientific and analytical as it starts right from the beginning of business and continues till its survival. Financial management works on certain basic principles. It helps in selecting the best method of financing with less risk and higher returns. It helps in understanding the behavior and pattern of finance.
5. Financial Management is different from accounting. In accounting only collection of financial and related data is done whereas in financial management, analysis and decision making are main functions.
6. Financial Management is useful in every organisation whether it is sole proprietorship or corporate, manufacturing or service. It is applicable in non – profit organisation also.

7. Financial Management is helpful for top management in decision making.

### 1.3 Objectives of Financial Management

Objectives may be expressed as goals, purpose, targets, aims to be attained over a period of time. They also provide the standards to be judged or evaluate the performance of a business.

The main purpose of financial management is to help the firm in achievement of its predetermined objectives.

The objectives of financial management can be explained with the help of following figure:

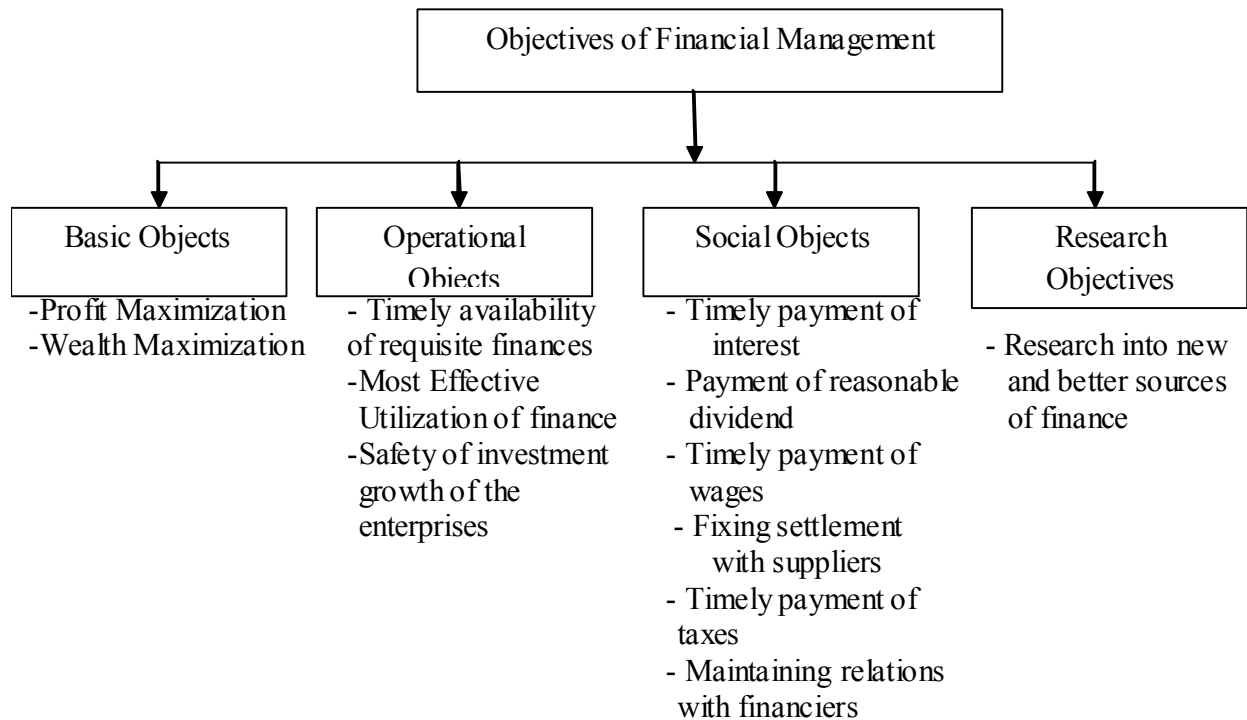


Figure - 1.2

Source: R. V. Badi and N. V. Badi, "Business Ethics"

only basic objectives are being explained as under:

**1. Profit Maximization:** Earning profit is the main objective of any business. It can be achieved by maximizing profits. Profit is the reward for risk. It also motivates for better performance. Survival of any business mainly depends upon its capacity of earning profits. Efficient and effective utilization of financial funds helps in achieving this goal. This objective was supported under the traditional approach of the financial management. Profit maximization as an objective of financial management can be justified on the following grounds:

(a) Earning more profit indicates the economic efficiency of a business whereas loss indicates economic inefficiency.

(b) Profit earning objective provides basis for strategic and tactical decisions. Profit is a premium for staying in business.

(c) Maximum social welfare activities like more wages, better quality of products at cheaper rate to customers, timely payment to creditors, more employment to society can be attained through earning more and more profits.

- (d) Profits can be said as major source of incentives in a business. If there is no profit incentives in a business, then there will be no competition and thus all the development process will be zero.
- (e) The objective of profit maximization seems rational because it is a device which stimulates mankind into channels of useful services.

But like traditional approach it has been also criticized on some grounds which are as follows:

- It is narrow concept. It gives stress only on generating higher profits. It is not clear under this concept as which profit should be focused like gross profit, net profit, profit before tax or profit after tax.
- Earning profits give benefits only to its owners. It does not add much benefit to the society. Social responsibility is not fulfilled under this concept.
- Decisions taken for earning profits sometimes endangers the stability of the long run of business.
- The biggest disadvantage of this objective is that it ignores time value of money. Profits generated today do not have the same value as it is today. Rupee earned today has more value than its value after one or two years.
- This concept registers progress in monetary terms only. It completely ignores qualitative aspect. Contribution of humans is ignored under this.
- The objective of profit maximisation ignores the time value of money. Because profit received today is not same as it received after 1 or 2 years.
- It is vague term as it do not clear that profit increase in short term or long term.
- Earning more and more profit may be immoral and leads to corrupt practices.
- Profit maximisation objective sometimes degrades human ethical values.
- The objective of profit maximisation ignores social responsibility of a business.

(f) **Wealth Maximization:** The profit maximisation objective is not only a vague term but it also ignores risk and time value of money. Therefore, the wealth maximisation objective is considered as basic objective rather than profit maximisation. According to Ezra Solomon, the ultimate objective of financial management should be maximisation of wealth. It is modern approach of Financial Management. It is also known as 'Value maximizing' or 'Net worth Maximizing'. Financial Management helps in effective utilisation of its assets which is viewed in terms of benefits it can produce. Wealth maximisation objective means maximizing the wealth of the shareholders, by increasing the value of the firm. Increasing value of the firm means increasing the market price of a company's share. The value of the firm is affected by many ways i.e. the firm's growth, risk acceptable to the investors, efficiency and effectiveness of the firm, dividend policy etc.

A firm must consider following points to increase market value of shares.

- Customer should be managed properly.
- Maintain satisfactory dividend policy.
- Increase employees satisfaction level.
- Enhance information system.
- Improve quality of the products.
- Increase the market share by launching new products.

Wealth maximizing policy advocates following objectives:-

- It ensures long run survival and growth of the business.
- It increases the value of shares as high dividends are distributed under this.
- Dividend policy is designed in such a way to satisfy shareholders.
- A perfect combination of debt and equity mix is carried out.
- It reduces risk as projects having positive net present value are selected after careful and detailed investigation.
- Stakeholders are also satisfied as they feel connected with business.

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## 1.4 Approaches of Financial Management

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1. **Traditional Approach:** Success of any business depends upon profit which is directly related with financial management. Financial Management starts with acquisition, financing and management of business assets. By investing funds in best ventures a firm can maximize its wealth by obtaining higher returns. Traditional concept shows one basic function of financial management i.e. procurement of funds. Traditional approach of financial management is limited and narrow. It limits the role of finance manager to collecting funds. According to *Hunt, William and Donaldson* "the finance function was viewed as the task of providing the funds needed by the enterprise on the terms most favorable in the light of the objective of the business." Following are the functions of financial management under traditional approach:

- (a) Making arrangements of funds keeping in mind the short term and long term requirement of the business. Appropriate financial institutions are selected which suits the capacity of the enterprise to bear the cost.
- (b) Making perfect combination of debt and equity as a source of internal finance. Funds are mobilized through equity, preference, debentures, bonds etc. in a perfect combination which bears less cost of capital.

Following are the grounds on which this approach has been criticized

- According to this approach financial management does not get involve in day to day business activities. Under this, funds are only generated. Proper attention is not given towards their appropriate use. Allocation of funds is not considered here.
- It does not form part of integral management. Once funds are generated finance managers are called up again only when additional funds are required for promotion, expansion, merging, amalgamation etc.
- It makes arrangements of funds only for long term requirement. Short term requirements are ignored. There are many day-to-day problems related with finance which are not covered under this approach

According to *Soloman* 'central issues of the financial management' are

- Should an enterprise commit capital funds to certain purposes?
- Do the expected returns met financial standards of performance?
- How should these standards be set and what is the cost of capital funds to the enterprise?
- How does the cost vary with the mixture of financing method used?

Keeping in mind, the narrow concept of traditional approach and requirement of modern competitive situation of business new concept was developed.

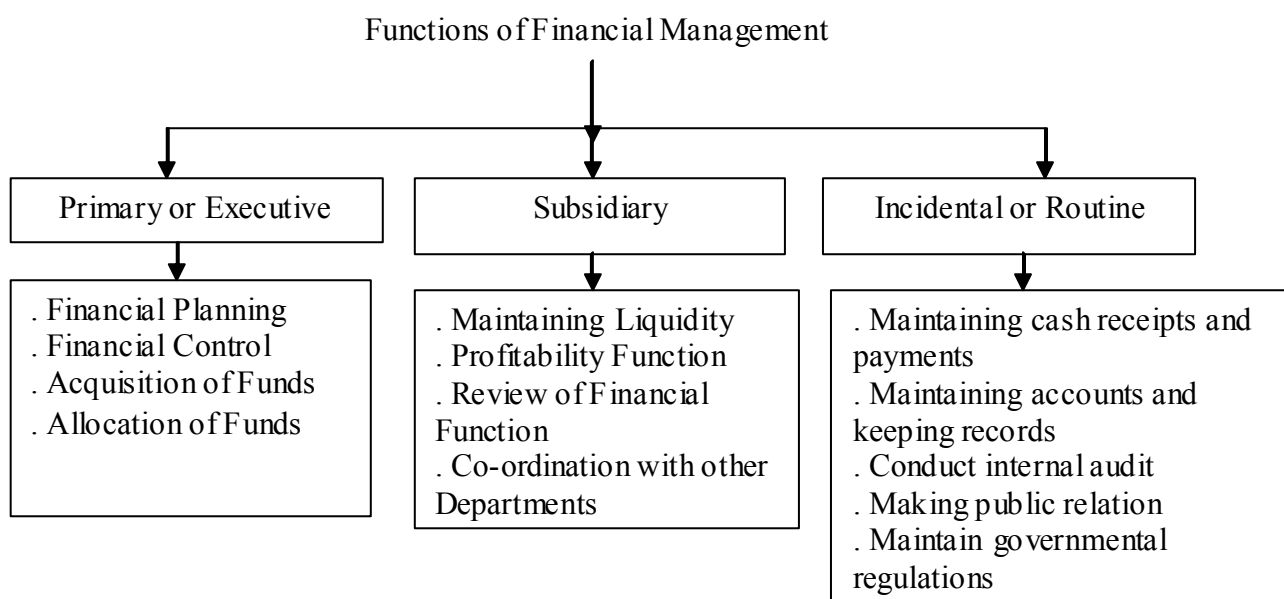
**2. Modern Approach:** Style of doing business has been changed for keeping pace with the competition. Privatization and globalization made survival and growth tough. Any business can grow only if it manages its funds in the best way possible as it the life of business. Without adequate funds business cannot survive in long run. Each and every activity in business whether small or big requires funds. Funds are needed for day-to-day requirements to expansion, promotion etc.. Traditional approach can generate only funds but modern approach emphasize on its best possible use. Here, role of finance manager is not limited to mere collection of funds but it is his duty to allocate the funds in best possible way to obtain higher returns. It is the duty of finance manager to keep in mind the long term as well as short term requirements of finance in the business. This approach ensures optimum utilization of funds. According to this approach finance function is the part of integral management and forms part of top level financial planning. Functions of financial management are as follows:

- Analyzing the need of finance required by the business.
- Searching the best available alternate of finance which suits the requirement of the business.
- Obtaining funds from best alternate and allocating it towards assets in optimum way.
- To ensure that funds generated and allocated are put to effective use and reporting to top management.

Modern approach has much broader concept than traditional approach. It covers all the financial activities starting from financial planning, generating, procuring and allocating of financial resources by ensuring optimum utilization of financial resources.

## 1.5 Scope or Functions of Financial Management

**Functions of Financial Management:** Financial management includes performance of finance function which is divided into three main functions for the sake of convenience of study (a) *Primary function*, (b) *Subsidiary function* and (c) *Incidental function*. These functions are divided on the basis, type and nature of function and duties they involve. Various activities like decision making, activities of non-recurring nature, strategic nature etc. are involved in these functions. Details of these various functions are as below:



**Figure - 1.3**

Source: M.R. Agarwal, "Financial Management"



**I. Primary Or Executive Function:** As the name itself speaks, this function is of executive nature and requires lot of skills and expert advice. It generally perform activities like preparation of financial plans, acquiring and allocation of funds, making arrangements for short term and long term requirements and controlling financial activities. Let us study each activity performed in detail.

**a) Financial Planning:** This is the basic function under this. As financial plans is of primary nature and form base for other departments. Finance manager has to draft financial plans for the enterprise. If the business is new, a sound financial plan should be formulated keeping in mind the present and future financial requirements. If the enterprise is on going old plans must be reviewed. These plans should be flexible enough to be changed according to the dynamic environment. After analyzing need for finance, finance manger plans as to which source should be opted for acquisition of funds. How much should be borrowed from outside financial institutions and how much from internal sources. Aperfect combination of debt and equity mix is carried out by financial manager which bears less cost of capital. Financial plans are to be reviewedfrom time to time according to the market situation and need of the business.

**b) Acquisition of Funds:** This is the crucial stage of financial planning. Funds are acquired from various sources which were decided in the primary function. All the formalities of acquiring funds are one under this. Every source has its own cost which is to be looked upon.

**c) Allocating Funds:** After acquiring funds, they are allocated to various assets, activities, projects etc. This is very important function because only after allocating funds project work will get started. Improper allocation may cause wastage of funds. Financial manager should ensure that none activity get more funds than they need otherwise resources will not be utilized in optimum way.

**d) Financial Control:** Financial control over various financial activities is necessary for smooth execution of activities. It is very important function of financial management. Finance manager make records, store information and make reports of various activities. This enables to make comparative statements with past performances and finance manager can take corrective functions if he feels so.

**II. Subsidiary Function:** After performing primary functions, come subsidiary functions. Details are as follows:

**a) Maintaining Liquidity:** Liquidity means firms financial position to meet its current liability. This is the subsidiary function to maintain adequate liquidity of the business. Business should be strong enough to meet its short term liabilities. Cash inflows and outflows should be balanced properly to maintain liquidity.

**b) Review of Financial Function:** Financial performance should be reviewed and presented in front of the board. This activity helps in taking corrective measures if require. Such reports made base for comparison with past performances like inter-firm comparison, trend analysis, ratio analysis, and cost-volume profit analysis.

**c) Co-Ordination with Other Departments:** Finance is required in each and every activity. Hence, finance function is related with every other department. It is the duty of the finance manager to make a balance between activities of every department. Additional finance required by other departments is also looked by finance department.

**III. Incidental or Routine Function:** Finance is also required in day to day routine business. These functions are necessary or supplementary to other primary or subsidiary functions. Commonly performed incidental functions are:

- Maintaining cash receipts, payments and checking cash balances.
- Maintaining accounts and keeping records
- Conducting internal audit
- Making public relation
- Keeping in mind the present governmental regulations.

**John J. Hampton** has written about the following functions in Handbook for financial decision makers:

- (1) Managing funds,
- (2) Managing assets,
- (3) Liquidity functions
  - (a) Forecasting cash flows
  - (b) Raising of funds
  - (c) Managing the flow of internal funds
- (4) Profitability functions
  - (a) Cost control
  - (b) Pricing
  - (c) Forecasting future profits
  - (d) Measuring cost of capital

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## 1.6 Importance of Financial Management

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Maximum utilization of financial resources to earn maximum profit is the main aim of financial management. The success of every business depends upon sufficient finance as per its requirement. The study of financial management is indispensable for both profit earning and non – profit earning organisations. Even the industrial progress of the country depends upon effective financial management.

In the words of Ezra Solomon, “Financial Management is properly viewed as an integral part of overall management rather than as a staff specially concerned with fund raising operations. In addition to raising funds, financial management is directly concerned with production, marketing and other functions within an enterprise whether decisions are made about the acquisitions or distribution of assets.” The same views have also been expressed by Irwin Friend who said, “a firm’s success and even survival, its ability and willingness to maintain production and to invest in the fixed or working capital are to a very considerable extent, determined by its financial policies, both past and present.”

Not only finance officers are related with financial management but every activity of business planning and control has become very significant. As Husband and Dockery have said, “something must direct the flow of economic activity that facilitates its smooth operations. Finance is the agent that produces this results.

Significance of financial management is being discussed under the following points:

- a) Reduces Chances of Failure:** Implementation of proper system of financial management brings financial discipline in the organization. Every project is overlooked and carried out by detailed investigation which reduces chances of failure. Strong financial position ensures smooth functioning of the business.

- b) **Maximization of Returns:** Good financial planning maximizes returns on investment as financial management is of scientific and analytical nature. Under modern approach of financial management, main objective is of wealth maximization. These keep shareholders and other stakeholders satisfy.
- c) **Broader Concept:** Study of financial management has its applicability to each type of business from sole proprietorship to large business enterprises. It covers each and every financial activity in the business.
- d) **Makes Base for Planning and Control:** Financial planning forms base for planning of other departments. As it is noted that each departments depends upon financial department to starts their functioning. Various budget plans are drafted on the basis of financial availability.
- e) **Optimum and Effective Utilization of Resources:** Financial planning ensures optimum utilization of financial resources. Each and every stage is carefully planned under this beginning from generating funds to allocation and disposal of profits. Higher returns are expected for smooth functioning and survival of the business which can be only achieved by properly managing funds.
- f) **Useful for Stakeholders:** Various stakeholders like business managers, investors, financial institutions, economist, politicians etc. are always interested in knownig financial position of the company as they maintain financial relation with business in some way.

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## 1.7 Limitations of Financial Management

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Besides its above importance, it has some limitations which are as follows

- a) Sometimes it becomes difficult to compute the effect of financial decisions on various other departments. It is very complex procedure which requires careful analysis.
- b) It requires deep knowledge of finance to perform various finance functions. No professional can be expert in each and every aspect of finance behavior which limits its skills.
- c) In India, financial management is still in its developing stage. We lack in expertise knowledge which limits the full use of the subject.
- d) Sometimes financial decisions may get affected by the personal point of view of the finance officer. It is human nature which sometimes gets biased which may sometimes adversely affect the financial decision.
- e) Proper implementation of financial management is of expensive nature. It is not possible for the small enterprise to appoint and get services of experts nor they implement proper system of financial management

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## 1.8 Functions of Chief Financial Officer

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Every organization has finance head as '*Chief Financial Officer*'. Division of responsibility has created post for this officer. This is also called '*Director of Finance*'. Chief Financial Officer (CFO) has different functions depending upon the size, nature and type of business. Basic function of CFO is as follows:

- **Formation of Financial Policies and Forecasting:** This is the main function of CFO to make sound financial policies keeping in mind the nature and size of the business, long term financial goals and objectives of the business. Policies must be dynamic enough to face dynamic business environment. It also includes analyzing the need of fund and its source from where it is to be raised.

- **Managing Fund:** Funds are needed to be managed for fulfilling business objective. It starts with *acquisition of funds* which involve generating or mobilizing funds from various sources. Before this, a detailed study is carried out of available alternatives and a best combination is selected having minimum cost. After this *allocation of funds* is done which means effective distribution of acquired funds to various projects. This stage is very important because if allocation or distribution is not done properly than desired objectives will not be achieved. *Utilization of funds* comes after the above which means having proper control over cash flows and inflows.
- **Appropriate Disposal of Profits** is very important stage under financial management as it decides the future of the company. After generating profits, it becomes very important to invest and distribute it in optimum way. Appropriate profits should be retained in the business for future requirements and satisfactory amount should be distributed among shareholders to keep share price up and shareholders happy.
- It is the primary duty of CFO to **report to the top management** about the financial position of the company. Current year progress report compare with past performances must be drafted and submitted so that an evaluation can be made and necessary steps should be taken for future course of action.
- **Keeping an Eye on Market** is another important function of done by CFO. Keeping updates of dynamic environment helps in surviving competition. Global market makes it tough in long run business to stand without support. A CFO makes financial plans in such a way to handle competition.
- **Making Relations with Financial resources** enables CFO to raise require funds easily from financial institutions and other sources. Good relations with outside parties enhance credibility of the business and also ensures steadily arrangement of funds required in future.
- CFO is not only accountable to parties from which it generates funds but he **Discharge his Duty Towards Various Parties** like creditors, suppliers, debtors in many ways.
- Modern approach of financial management has objective of **maximization of shareholders' wealth**. CFO formulates policies in such a way to enhance shareholders wealth and thus achieving its objective. This is also important for the image of the business in the market as it appreciates market price and goodwill.

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## 1.9 Changing Role of Financial Manager

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In this fast changing market, role of finance manager becomes very challenging. It is in the hands of finance manager to keep financial health of the company in good position. Future is uncertain. Unforeseen situation demands to keep proper arrangements in case of their occurrence. Role of CFO has been changed by the times. Earlier it was limited to accounting, auditing, budgeting, mobilizing etc. But today his role and power has gone far beyond. Today's world is of information technology, rapid computing and tele communication. Globalization makes it easy to approach to latest upgrades. In the past few years role of CFO has been criticized because of their doubtful role in scandals like Enron, Global Crossing, Tyco, WorldCom etc. Following are the main challenges faced by CFO in present context.

1. **Evaluating Financial Statements:** Company's financial statements is its face. Financial statements shows perfect picture about financial position, mission and vision, future project etc. CFO must ensure that financial statements are prepared in such a way that other departments and other interested parties can avail information easily by reading them. Meaningful statements are also helpful in performance measurement with past results.

2. **Maintaining Cash Flows:** A CFO should strike a balance between cash inflows and outflows for maintaining liquidity. CFO must ensure that liquidity is maintained adequately. Proper relations should be maintained with financial resources like banks, investors, vendors etc. so that they can also be called at the time of emergencies.
3. **Risk Management:** A CFO should be aware of external and internal risks that can cause threat to the organization. It becomes necessary to make financial plans risk proof in dynamic market situation. A CFO must keep himself aware about the market situation and should have knowledge of risk management tools so that he can use them when time comes.

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## 1.10 Summary

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Financial Management is the most important functional area of business management. It is mainly related with the acquisition and profitable use of funds. Now a days it is an indispensable and in continuous process.

In the changing business scenario, wealth maximisation is considered as the basic objective of financial management, rather than profit maximisation. Sound financial management is the index of the success of an enterprise. Financial management includes mainly three types of function viz: primary function, subsidiary function and incidental function. Primary functions includes acquisition, allocation of funds and financial planning and controlling. Subsidiary functions are related with review of financial function and co-ordination with other department. Supplementary functions include maintaining accounts and keeping records. In the field of business, functions of financial management are becoming very complex because of increasing competition, entry of foreign institutes, globalization of business, corporate governance, corporate scandals etc. As a result the chief financial officer has to face many challenges. He has to ensure that company is staying financially healthy and good governance.

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## 1.11 Key Words

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- **Financial Management:** -financial management is the planning, organising, directing and controlling of the procurement and utilization of funds and safe disposal of profit to the end that individual, organizational and social objectives are accomplished.
- **Profit Maximisation:** - A firm should take financial decision for maximisation of profits.
- **Wealth Maximization:** - Wealth maximisation means to maximize the net present value of a course of action.
- **Financing Decisions:** - Decide about the amount of capital required; proportion of debt and equity and selection of the sources of funds.
- **Investment Decisions:** -investment decisions mean the allocation of funds with a view to acquire assets.
- **Dividend Decisions:** - allocation of income between its owners.

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## 1.12 Self Assessment Questions

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1. What do you mean by financial management? Explain functions and importance of financial management.
2. Discuss the scope and limitations of financial management.

3. What do you understand by financial function? Describe various finance functions.
4. Explain as to how the Wealth Maximisation objective is superior to Profit Maximisation objective.
5. “Sound Financial Management is a key to the progress for corporations”. Explain.
6. “The importance of financial management has increased in modern time”. Elucidate.
7. Discuss the objectives and goals of financial management.
8. It has traditionally been argued that the objective of financial management is to earn profit hence the objective of Financial Management is also profit maximisation? Comment.
9. What is financial management? How does a modern financial management differs from traditional financial management?

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### **1.13 Reference Books**

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- Financial Management: I.M.Pandey
- Financial Management: M.R. Agarwal
- Financial Management: M.D. Agarwal and N.P. Agarwal
- Financial Management: S.N. Maheshwari

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## Unit - 2 : Financial Statements

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### Structure of Unit:

- 2.0 Objectives
- 2.1 Introduction
- 2.2 Objectives of Financial Statements
- 2.3 Nature of Financial Statements
- 2.4 Importance of Financial Statements
- 2.5 Limitations of Financial Statements
- 2.6 Characteristics of Ideal Financial Statements
- 2.7 Main Financial Statements
  - Balance Sheet
  - Profit and Loss Account/Income Statement
- 2.8 Summary
- 2.9 Key words
- 2.10 Self Assessment Questions
- 2.11 Reference Books

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### 2.0 Objectives

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After studying this unit, you will be able to:

- Understand the meaning of financial statements;
- Prepare Income Statement and Balance Sheet;
- Identify various types of assets and liabilities;
- Explain the importance of financial statements.

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### 2.1 Introduction

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Manager of every firm is engaged in the process of planning and decision making. In order to take right decision at right time, he should have sufficient informations of past and future. Information that is mostly used by a manager is known as financial information and this is taken from financial statements.

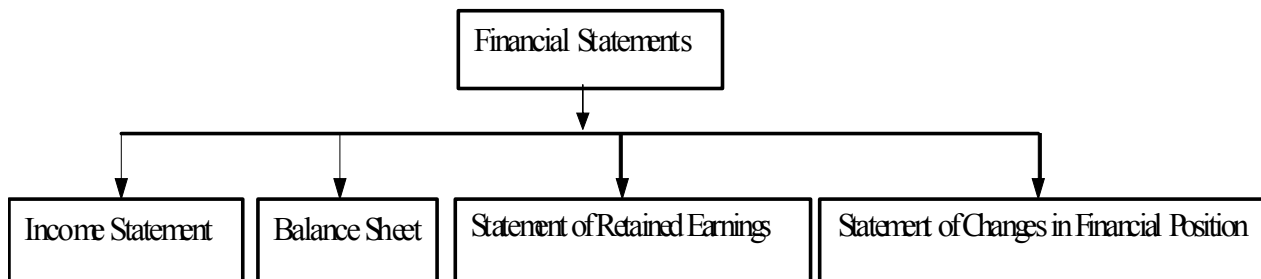
Financial statements contain summarised information about the firm's financial affairs. It's main purpose is to present the firm's financial situation to the users. The financial statements are the end-product of the financial accounting process. These statements present financial information in concise and capsule form. Financial statements are prepared by top management and these should be prepared in a very careful manner.

According to Hampton John J., "A financial statement is an organised collection of data according to logical and consistent accounting procedures. It's purpose is to convey an understanding of some financial aspects of business firm. It may show a position at a moment of time as in the case of a balance sheet, or may reveal a series of activities over a given period of time, as in the case of an Income Statement".

Thus, the term 'financial statements' generally refer to basic statements prepared for the purpose of external reporting to owners, investors and creditors are (i) profit and loss or income statement (ii) balance sheet or statement of financial position.

Two other key financial statements which are usually prepared by corporate firms are:-

- (a) Statement of retained earnings
- (b) Statement of changes in financial position



**Figure - 2.1**

The meaning, nature, and characteristics of these financial statements are being explained as under:-

1. **Income Statement:** According to S.N. Maheshwari “The income statement (also termed as profit and loss account) is normally recognized to be the most useful of all financial statements. The income statement gives a report of operations over a specified period of time, summarises the revenue or income and the expenses or costs attributed to that period and indicates the net profit or loss for a specified period of time. The income statement explains what has happened to a business as a result of operations between two balance sheet dates. For this purpose it matches the revenue and costs incurred in the process of earning revenues and shows the net profit earned or loss suffered during a particular period.

The nature of “Income” which is the focus of the income statement can be well understood if a business is taken as an organization that uses ‘inputs’ to ‘produce’ output. The outputs are the goods and services that the business provides to its customers. The values of these outputs are the amounts paid by the customers for them. These amounts are called ‘revenues’ in accounting. The inputs are the economic resources used by the business in providing these goods and services. These are termed as ‘expenses’ in accounting.”

2. **Balance Sheet:** Balance sheet is the most significant and basic financial statement of any firm. A firm prepares Balance sheet to present a summary of financial position at a particular moment of time. In the language of accounting, balance sheet communicates information about assets of the firm (i.e. the resources of the firm) and the liabilities (i.e. obligations of the firm towards outsiders) and owner’s equity of the firm as on a specific date. It may be noted that it depicts snapshot of the financial position of the firm at the close of the firm’s accounting period.
3. **Statement of Retained Earnings:** It is also known as the Profit and Loss Appropriation A/C. According to the provisions of the companies Act, 1956 it is not mandatory to prepare this statement but most of the companies prepare income statement into two parts i.e. first part is income statement and second part is P.&L. Appropriation A/C. The net profit amount depicted by Profit and Loss account is transferred to P.&L. Appropriation A/C wherein it will be divided in two parts i.e. dividend to the shareholders and profit retained in the firm. The Proforma of P.&L. Appropriation A/C is as follows:-



Dr.

Cr.

Particulars	Amount	Particulars	Amount
To Gen. Reserve	.....	By Bal. b/d	.....
To Interim Dividend	.....	By Net Profit	.....
To Proposed Dividend	.....	By Transfer from General Reserve	.....
To Corporate Dividend Tax	.....		
To Balance c/d (Balancing Figure)	.....		

- 4. Statement of Changes in Financial Position:** Traditionally balance sheet and income statement are two common financial statements. As it has been explained earlier that the Balance sheet shows financial position at a particular moment of time and the income statement discloses the net result of operations of business over a period of time. But, both these statements do not depict the information related to the changes in financial position and cash position over the period. For better understanding of the financial position of the business, it is necessary to know the movement of working capital/ cash of the business. For this purpose, statement of changes in financial position may be prepared. This statement shows how the firm generated different sources of funds and how these funds were used during the period. The statement of changes in financial position can be prepared on two bases which are:-

- (i) Working capital basis-Funds Flow Statement
- (ii) Cash basis- Cash Flow Statement

## 2.2 Objectives of Financial Statements

The financial statements are prepared to present an accurate picture of firm's financial position and operating results in a summarized manner. The financial statements are prepared by the firm to fulfil the following objectives:-

1. To communicate with different parties regarding the financial position of the business (These parties include the shareholders, creditors, investors, management, government, financial institutions, financial analysts, labour etc.)
2. To analyse the operations and performance of the firm for planning.
3. To give necessary information for optimum utilisation of resources of the companies.
4. To provide necessary information for taking actions relating to public and social welfare.

## 2.3 Nature of Financial Statements

American Institute of Certified Public Accountants described the nature of financial statements as follows: "Financial Statements are prepared for the purpose of presenting a periodical review or report on progress by the management and deal with the status of the investment in the business and results achieved during the period under review. They reflect a combination of recorded facts, accounting conventions, postulates and personal judgements, and the judgements and conventions applied them materially. The soundness of

judgements necessarily depends on the competence and integrity of those who make them and on their adherence to generally accepted accounting principles and conventions”.

Important terms used in the above statements are being described as follows:-

- **Recorded Facts:** Recorded facts means the data contained in statement which have been drawn from the accounting records. Such data may be the amount of cash in hand and in bank, the amount due from customers, the cost of fixed assets, the amount payable to creditors, amount of sales etc. Some data or facts which are not recorded in financial books, might be material will not be depicted in the financial statements. For example, fixed assets are recorded at acquiring cost not at replacement cost. Therefore, the balance sheet does not present the financial position of a business in terms of current economic conditions.
- **Accounting Conventions:** Accounting conventions imply certain assumptions and procedures which have been sanctioned by long usage. Some of the important situations to use the conventions are assets valuation, distribution of expenditure between capital and revenue, method to be followed for calculation of depreciation, valuation of stock etc. For example, according to convention of conservatism, provision is made for expected losses but expected profits are ignored.
- **Personal Judgement:** According to May George O., “the accounts of a modern business are not entirely statement of fact, but are to a large extent expression of opinion based partly on accounting conventions, partly on assumptions explicit or implicit and partly on Judgement .” Personal Judgement are taken in deciding to use one of the several methods for the determination of the depreciation, evaluation to inventory at cost or at the cost or market price whichever is less etc.
- **Postulates:** Accountant depends upon some postulates at the time of preparing financial statements. For example: - an accountant assumes that the value of money will remain constant during whole the year, so there will be no difference on transactions of different dates.

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## 2.4 Importance of Financial Statements

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Financial statements are useful for different related parties as given below:

1. **Importance to Management:** In the words of Gerstenberg Charles W., ‘Management can measure the effectiveness of its own policies and decisions, determine the advisability of adopting new policies and procedures and document to owners the result of their managerial efforts’. For effective and controlling the company’s activities, management can get necessary data from financial statements.
2. **Importance to Investors:** Investors are mainly interested with the safety of their investment and to earn profit from these investments with the help of financial statements. Investors create their opinion about the company before investing. For example, some factors they considered are price earning ratio, earning per share, future earning potential, trend of sales of past years, financial strength of the company etc.
3. **Importance to Creditors:** Creditors lent their money for short period and they are keen interested in the company’s ability to repay the loan amount on time. A creditor can compute various ratios like current ratio, quick ratio etc. to know the company’s ability to repay. If a company earns less than paid amount of interest, it is not safe to lend money to this company.
4. **Importance to Government:** Various ratios like turnover ratios, earning ratios indicate the health of the company. To regulate various economic activities, government analyse the various ratios of companies in one industry.

- 5. Importance to Others:** Other related parties like labour, stock exchanges, economists, news agencies, trade unions etc. are interested in analysis of financial statements to know the detail position about the company and industry.

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## 2.5 Limitations of Financial Statements

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Financial statements are prepared to present a report on:

- (i) Status of the investments in the business and
- (ii) Results achieved during the review period.

The above objectives suffer from the following limitations:-

- 1. Financial Statements are Only Interim Reports:** According to this, it can be said that financial statements can not be final because exact amount of profit or loss of a business can be determined after closing down the business. So profit depicted by Profit and Loss account and financial position shown by Balance Sheet is not exact. So, it is necessary to prepare financial statement at relatively short accounting period.

But this cutting off the balance sheet dates gives the problem of allocation of cost and income. Financial statement data can not afford to remain exact under such conditions.

- 2. Depend Upon Accounting Concepts and Conventions:** Financial statements are prepared on the basis of certain accounting concepts and conventions. Financial position presented by these statements may not be real. For example, the value of an asset represents the amount of asset which is valued on the basis on “going concern concept”. This means value of fixed assets may not be same which can be realised after the sale of asset.
- 3. Based on Historical Cost:** The financial statements are based upon historical cost. They do not give present value of business and any information regarding the future.
- 4. Disclose Only Monetary Items:** Financial statements do not give true picture of the business because they do not show those items which can not be expressed in monetary terms. For example, goodwill of the firm, health of workers, efficiency of management etc.
- 5. Affected by Personal Judgement and Knowledge:** Many items of financial statements are affected by personal judgement and knowledge of accountant. Some of items e.g. stock valuation methods, method of depreciation, capital and revenue expenditure are decided by personal decision.

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## 2.6 Characteristics of Ideal Financial Statements

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- 1. Financial statements must be in simple and attractive manner to understand and draw conclusion easily from them.
- 2. The figures related with previous year must be given for comparison of financial statements
- 3. Financial statements must give perfect information to present true picture of the concern.
- 4. Irrelevant informations should be ignored.
- 5. Various required tables, footnotes, appendices must be given in financial statements
- 6. The financial statements must be in brief and summarised manner.

## 2.7 Main Financial Statements

The financial statement of a business consists of two statements:-

1. **Balance Sheet:** The balance sheet is prepared by a firm to present financial position at a given point of time. Balance sheet can be titled as statement of financial position, statement of assets and liabilities, position statement etc.

Balance sheet can be defined as:-

- (i) According to Francis R. Stead, "Balance sheet is a screen picture of the financial position of a going business at a certain moment.
- (ii) According to John N. Myer, "The balance sheet is thus a detailed form of the fundamental or structural equation, it sets forth the nature and amount of each of the various assets of each of liabilities, and of the proprietary interest of the owners."

Balance sheet presents the assets and liabilities of a firm at a point of time which may be shown in either of the following order:

- (i) **Permanency order:** In this method, the assets which are more permanent come first and which are less permanent appear later. Similarly permanent liabilities come first and then less permanent liabilities.
- (ii) **Liquidity order:** In this method, the assets which are more liquid appear first, followed by other assets which are less liquid or take long time to convert into cash. Similarly liabilities which are immediately are payable comes first followed by liabilities which are payable later.

### Characteristics of Balance Sheet

1. It is a statement not an account hence the words 'To' and 'By' are not used here.
2. The balance sheet is prepared on a particular point of time so, it presents the value of assets and liabilities of a firm on that point of time.
3. Balance sheet presents the financial value of the business on going concern value.
4. Both sides of balance sheet must be same i.e. Assets = Liabilities
5. Balance sheet is prepared by using accounting concepts, conventions, postulates and personal judgements etc.

### Proforma of Balance Sheet

Balance sheet of a company as per Performa contained in schedule VI annexed to the companies Act, 1956. is as follows.

**Table - 2.1 : Proforma of Balance sheet as per the companies Act, 1956**

Balance Sheet of .....

As on .....

Liabilities	Amount	Assets	Amount
Share Capital		Fixed Assets .....	
Reserves & Surplus		Less: Dep. ....	
Secured Loans		Investments	
Unsecured Loans		Current Assets, Loans and Advances	
Current Liabilities		Miscellaneous Exp.	
Provisions		Pro fit and Loss A/C	

In table 2.1 the balance sheet has been presented in horizontal form. Table 2.2 presents the balance sheet in vertical form.

**Table: 2.2**

**Proforma of Balance Sheet**

Balance Sheet of .....

as on .....

	Amount	Amount
1. Sources of Funds		
(i) Shareholders fund		
(a) Share Capital		
(b) Reserves and Surplus		
(ii) Loan funds		
(a) Secured Loans		
(b) Unsecured Loans		
2. Application of funds		
(i) Fixed Assets		
Less: Dep		
(ii) Investments		
(iii) Current Assets, Loans & Advances		
Less: Current Liabilities		
(iv) Miscellaneous Expenditure		
(v) Profit & Loss Account		

The balance sheet can be grouped into two parts: - Assets side and liabilities side.

**Main items of Assets side**

1. Fixed Assets
2. Investments
3. Current Assets, Loans and Advances
4. Miscellaneous Expenditure
5. Debit balance of Profit and Loss Account

**Main items of Liabilities side**

1. Share Capital
2. Reserves and Surplus
3. Secured Loans
4. Unsecured Loans
5. Current Liabilities and Provisions

Above terms are being explained here under:

**Fixed Assets:** Fixed assets include those assets which are purchased for long term. These assets are of permanent nature and are not usually converted into cash in short period. Fixed assets are shown at historical cost less depreciation till date. Thus these assets not present their market value or replacement cost.

Fixed assets should be presented in balance sheet in the following (permanence) order:-

1. Goodwill

2. Land
3. Buildings
4. Lease hold property
5. Plant and Machinery
6. Furniture and fittings
7. Development Property
8. Patents and Trademarks
9. Live Stock
10. Vehicle

**Investments:** In balance sheet, investment means Government securities, shares, debentures, bonds etc. investments are shown at cost price in balance sheet. In words of Kohler, 'Investment is an expenditure to acquire property real or personal, tangible or intangible which yields income or services.'

**Current assets, Loans and Advances:** Current assets are those liquid assets which are convertible into cash within a period of one year. Current assets include cash and bank balance, sundry debtors, receivables (debtors and bills), stock (raw material, work-in progress and finished goods), marketable securities, prepaid expenses. Loans and advances include bill of exchange, advances recoverable in cash or kind or value to be received.

**Miscellaneous Expenditure:** Expenses which are not included in manufacturing, administrative and selling expenses are known as miscellaneous expenditure. Preliminary expenses, discount allowed on issue of shares and debentures, development expenses, commission or brokerage paid on undertaking or subscription of shares and debentures etc. are included in miscellaneous expenditure.

**Share Capital:** In liabilities side of balance sheet, share capital is shown as first item. Under the head of share capital-authorized capital, issued capital, subscribed capital, paid up- capital are shown. Both type of shares preference and equity shares are also given under this head.

**Reserves and Surplus:** Under the head of reserves and surplus, various reserves are shown e.g. capital reserves, capital redemption reserves, proposed addition to reserves, share premium account, sinking fund, surplus etc.

**Secured Loan:** Secured Loans are such type of loan against which collateral or other security is held. Debentures, loans and advances from bank etc. are included in this.

**Unsecured Loan:** According to Kohler, "Unsecured liability is a liability for which the creditor holds no security."

Short term loans, advances from banks, public loans etc. are included in this head.

**Current Liabilities and Provisions:** Current liabilities are such liabilities which the firm expects to pay within a period of one year. Sundry creditors, bank overdraft, advance payments, unclaimed dividend, acceptance, outstanding expenses etc. are current liabilities. Current liabilities are paid out of the realisations of current assets. These liabilities are expected to be discharged within an operating cycle of the firm. Provisions include provision for taxation, dividend etc. Provisions for contingencies are shown as foot note in the balance sheet.

Activity A:

1. What are the fixed and current assets? Give examples.

**2. Profit and Loss Account/Income Statement:** The income statement is also known as profit and loss account, statement of earnings, statement of income and expenditure, statement of profit and loss etc. Income statement provides the summary of the operating results of the firm of a accounting period. In this statement revenues are match with the costs and shows the difference between the two as the net profit/loss for a specific period. In America, the profit or loss is calculated in a statement form, so it is known as income statement. While in India, the profit or loss calculated in account form, so, it is known here as profit and loss account. With the help of income statement we can understand the performance of the firm for a specific period. Income statement is prepared a particular period, no standard format for income statement is provided by Companies Act, 1956.

Some definitions of income statement are given below;

Accounting to Howard and Upton, “The summary of changes in owners’ claim or equity resulting from operations of period of time, properly arranged, is called the profit and loss statement.”

According to Robert N. Anthony, “The accounting report which summarises the revenue items, the expense items and the difference between them (net income) for an accounting period is called the income statement (or the profit and loss statement, statement of earnings or statement of operations).”

The debit side of profit and loss account includes all business expenses and losses where as credit side includes all incomes and gains. Difference of both sides is called profit or loss as the case may be.

As the companies Act, 1956, does not state any standard format of profit and loss account. Different business firms prepare this account according to the nature and requirement of the business. The profit and loss account is divided into these four parts:

1. Manufacturing account
2. Trading account
3. Profit and loss account
4. Profit and loss appropriation account

**Format of Income Statement:** These days, instead of preparing the account form of profit and loss, the statement form is prepared by the companies. Statement is may be of two types-

- I. Single-step Income Statement
- II. Multi step Income Statement

Revenue	Rs	Rs
Sales less returns	.....	
Other income	.....	
Total Revenue		
Cost and Expenses		.....
Cost of sales *		
Administration and General Expenses	.....	
Depreciation	.....	
Interest	.....	
Non-operating Expenses	.....	
Provision for tax	.....	
Total Cost and Expenses	.....	
Net Profit (after tax)		.....
Proposed Dividend		
Income Retained in Business		.....
		.....

\*Cost of Sales = opening Stock + Purchases - closing stock

### Multi-step Income Statement

..... Company Ltd.  
 Profit and Loss Account  
 For the year ended .....

	Rs	Rs
Sales Revenue:		
Gross Sales	.....	
Less: Sales Returns and Allowances	.....	
Net Sales		.....
Cost of Goods Sold:		
Beginning inventory	.....	
Purchases less Returns	.....	
Goods Available for sales	<u>.....</u>	
Less: closing inventory	.....	.....
Gross Profit on Sales:	<u>.....</u>	
Operating Expenses:		
Administrative and General Expenses	.....	
Provision for Depreciation	.....	
Selling Expenses	.....	.....
Operating Profit:		
Add: other Revenue:		
Interest, Rent etc.		.....
Dividends		
Less: other Expenses	.....	
Interest etc.	.....	
Profit before Interest and Tax		
Less: Income Tax	.....	.....
Net Profit after Tax	.....	
Disposition of Income		.....
Preference Dividend		
Equity Dividend		.....
Retained Profit	.....	
	.....	
	<u>.....</u>	.....
		.....

#### Activity B:

Give a specimen of multistep income statement using imagining figures.

**Illustration 1.** The following figures are related to Mauli Ltd. For the year ending 31<sup>st</sup> Dec. 2012



Rs.

Rs.

Cash	24300	Equity Share Capital (Rs. 10.00 each)	50 0000
Buildings	400000	Proposed equity dividend for 2012 (Net)	
General Reserve	50000	Advance payment of tax	4 3125
Plant and Machinery	272000	P&L A/C balance	
Payment in advance	31000	Trade Investment	5 0000
B/R	11300	Net Sales	10 8500
Stock	136400	B/P	1 0000
Secured Debentures	125000	Provision for taxation	109 1200
Trade Creditors	202875	Net Profit for the year 2012 before dividend and tax	9000
Bank overdraft	26000		13 2000
Debtors	261500		16 3915

You are required to prepare balance sheet in statement form.

Solution :

Mauli Ltd.

Balance Sheet

(as on 31<sup>st</sup> Dec., 2012)

Fixed Assets			
Buildings		4 00000	
Plant and Machinery		2 72000	6 72 000
Trade investments			10 000
Total Fixed Assets			6 82 000
Net current Assets			
Current Assets:			
B/R	1 1300		
Stock	1 36400		
Sundry Debtors	2 61500		
Cash	2 4300		
Payment in Advance	31 000		
Advance Payment of Tax	500 00	5 14500	
Less: current Liabilities:			
Bank overdraft	2 6000		
Creditors	2 02 875		
B/P	900		
Pro v. for taxation	1 32000		
Proposed Dividend	431 25	4 13000	101 500
Total capital Employed			7 83 500
Shareholders Funds			
Equity Share Capital		5 00000	
General Reserve		50000	
P&L A/C		1 08500	6 58 500
Loan funds			
Secured Debentures			1 25 000
Total			7 83 500

**Illustration 2.** The following data are related to Anshuman Ltd. for the year ending 31<sup>st</sup> March 2012

Rs.		Rs.	
Opening stock	220000	Selling and Dist. Exp.	
Purchases	1400000	Salaries	36000
Closing stock	280000	Travelling	10000
Sales	2000000	Advertising	14000
Sales Returns	80000		
Administrative Exp:		Dividend receive	36000
Salaries	60000	Loss on sale of shares	6000
Rent	12000		
Stationery	4000		
Depreciation	20000		
Other charges	40000		
Prov. for taxation	140000		

Solution:

**Profit and Loss Account**  
for the year ending 31<sup>st</sup> March 2012

		Rs.	Rs.
Sales Revenue			
Gross Sales		2000000	
Less: Returns		<u>80000</u>	1920000
Cost of Sales			
Opening stock		220000	
Add: Purchases		<u>1400000</u>	
Less: closing stock		<u>1620000</u>	
Gross Profit on Sales		<u>280000</u>	<u>1340000</u>
Operating Expenses			<u>580000</u>
Administrative Expenses:			
Salaries	60000		
Rent	12000		
Stationery	4000		
Depreciation	<u>20000</u>	96000	
Selling & Dist. Exp:			
Salaries	36000		
Advertising	14000		
Travelling	<u>10000</u>	60000	
Other charges		<u>40000</u>	
Total operating Exp.			<u>196000</u>
Operating Profit			<u>384000</u>
Other Revenues:			
Non-operating income			
Dividend Received		36000	
Less: Loss on sale of shares		<u>6000</u>	<u>30000</u>
Profit before tax			414000
Provision for tax			<u>140000</u>
Net income after tax			<u>274000</u>

## 2.8 Summary

A manager obtains financial information from financial statements to take right decision at right time. Financial statements are prepared by the top management and present financial information in concise and capsule form. The term financial statements refer to Profit and Loss Account or Income Statement, Balance sheet, and sometimes statement of Retained Earning and statement of changes in financial position. The Income

statement gives a report of operations over a specified period of time, summarises the revenue or income and the expenses or cost attributed to that period and indicates the net profit or loss for a specified period of time. The Balance sheet presents a summary of financial position at a particular moment of time. The net profit depicted by Profit and Loss account is transferred to Profit and Loss Appropriation account wherein it will be divided in two parts i.e. dividends to shareholders and profit retained in the firm. Statement of changes in Financial Position depicts how the firm generated different sources of funds and how these funds were used during the period. It comprises Fund Flow Statement and Cash Flow Statement.

The financial statements are prepared to communicate with different parties regarding the financial position of the business and to analyse the operations and performance of the firm for planning. Financial Statements reflect a combination of recorded facts, accounting conventions, postulates and personal judgements. Financial statements are important to management, investors, creditors, government and other stakeholders. Financial statements are only interim reports, depend upon accounting concepts and conventions based on historical cost. Financial statements disclose only monetary items and affected by personal judgement and knowledge. Financial statements must be in simple and attractive manner. Irrelevant informations should be ignored. Various required tables, footnotes, appendices must be given in financial statement.

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## 2.9 Key Words

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- **Balance Sheet:** It is a statement of financial position of a business at a specified point of time. It represents all assets owned and the claims of the owners and outsiders against those assets at that time.
- **Current Assets:** Current assets are the liquid assets of the firm and are convertible into cash within a period of one year.
- **Current Liabilities:** The current liabilities are those liabilities which the firm expect to pay within a period of 1 year.
- **Fixed Assets:** Fixed assets are those assets which are of permanent nature relatively less liquid and are not usually converted into cash in the short run.
- **Profit and Loss Account:** Profit and loss account summarizes the revenues and expenses of the firm for an accounting period.

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## 2.10 Self Assessment Questions

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1. Explain the meaning of the term “Financial Statements”. State their nature and limitations.
2. What are financial statements. Why are these prepared?
3. Discuss the utility and importance of financial statements for the various parties interested in a business concern.
4. Explain the essential qualities financial statements.
5. Explain the statement “Financial Statements reflect a combination of recorded facts, accounting conventions and personal judgement.”
6. Following is the Profit and Loss account of ABC Ltd. You are required to redraft it in statement (vertical) form.

## Profit and Loss Account

for the year ending 31<sup>st</sup> March 2012

		Rs. in 000	
To stock:		By Sales	4000
Material	180	By Stock:	
WIP	80	Materials	180
Finished Goods	240	Finished Goods	320
	500	WIP	120
To Purchase of Material	1700		620
To fire and Power	80	By Dividend	60
To wages	560	By Sale of Scrp.	16
To Misc. Factory Exp.	220		
To office salaries	160		
To Mis. Exp.	180		
To Advertisements	160		
To Selling Exp.	240		
To Preliminary Exp.	10		
To Interest	30		
To Depreciation:			
Building	24		
Machinery	120		
	144		
To Prov. for Taxation	340		
To Proposed Dividend	140		
To Balance of Profit	256		
	<u>4696</u>		<u>4696</u>

7. Balance sheet of XYZ Ltd. is given below. You are required to prepare balance sheet in statement form.

### Balance Sheet of XYZ Ltd. as on 31<sup>st</sup> March 2012

(Rs. in 000)

Liabilities	Amount	Assets	Amount
Equity share capital	1000	Trade Investments	400
Div. Equalisation Res.	140	Patents	60
Gen. Res.	220	Buildings (at cost)	640
P&L A/C	380	Machinery	1300
6% Debentures	500	Bank bal.	176
Bank overdraft	300	Stock:	
Staff Prov. fund	160	Materials	180
Creditors	420	WIP	120
Unpaid Dividend	20	Fin. Goods	320
Proposed Dividend	120		620
Prov. for Tax	340	Debtors	460
Prov. for Dep.	500	Less: Provision	16
			<u>444</u>
		B/R	60
		Staff Prov. fund investment	160
		Deposit with custom Auth.	60
		Advance for purchase of Machine	120
		Preliminary Exp.	60
	<u>4100</u>		<u>4100</u>

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## 2.11 Reference Books

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- |                         |                                 |
|-------------------------|---------------------------------|
| - Financial Management  | - S.N. Mahaeshwari              |
| - Management Accounting | - R.P. Rustagi                  |
| - Financial Management  | - M.R. Agrawal                  |
| - Financial Management  | - M.R. Agrawal and N.P. Agrawal |
| - Financial Management  | - I.M. Pandey                   |

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## Unit - 3 : Techniques of Financial Statement Analysis

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### Structure of Unit

- 3.0 Objectives
- 3.1 Introduction
- 3.2 Objective of Financial Statement Analysis and Interpretation
- 3.3 Types of Financial Statement Analysis
- 3.4 Procedure of Financial Statement Analysis
- 3.5 Importance of Financial Statement Analysis
- 3.6 Techniques of Financial Statement Analysis
- 3.7 Summary
- 3.8 Key words
- 3.9 Self Assessment Questions
- 3.10 Reference Books

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### 3.0 Objectives

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After completing this unit, you would be able to:

- Understand financial statement analysis
- Know the procedure of financial statement analysis
- Prepare comparative balance sheet and profit and loss account
- Prepare common size financial statements

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### 3.1 Introduction

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Financial statements comprising the balance sheet and the profit and loss account do not provide all the information in relation to the financial operation of a business enterprise. The balance sheet depicts the financial position on a particular date and the profit and loss account reveals the results of financial activities during a certain period of time. Merely figures shown in financial statements do not serve the purpose of decision making for all stakeholders. Analysis and interpretation of financial statements help to diagnose the profitability and financial soundness of the business. Analysis and interpretation are two different terms. S.N. Maheshwari states "the term analysis means methodical classification of data given in the financial statements. The figures given in the financial statements will not help one unless they are put in a simplified form. For example, all items relating to current assets are put at one place while all items relating to current liabilities are put at another place. The term 'Interpretation' means explaining the meaning and significance of the data so simplified. According to Metcalf and Titard "The analysis of financial statements as a process of evaluating the relationship between component parts of financial statements to obtain a better understanding of the firm's position and performance." The financial analyst selects the information related to the decision under consideration from total information available in financial statements. Thereafter he arranges the information in a way to establish significant relationships. The last step is to interpret and to draw inferences and conclusions. According to Spicer and Pegel "Interpretation of accounts may be defined as the art and science of translating the figures in such a way as to reveal the financial strength and weakness of a business and the causes which have contributed therein."

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### 3.2 Objective of Financial Statement Analysis and Interpretation

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The objectives of financial statements analysis and interpretation may differ from the point of view of different stakeholders. Shareholders are generally interested in earning per share while debentureholders have focus on capital structure and projected earnings. According to Anthony, Robert N. “The overall objective of a business is to earn a satisfactory return on the funds invested in it, consistent with maintaining a sound financial position. Hence the purpose of analysis of financial statement is a detailed cause and effect study of profitability and financial position. Although analysis of financial statement is not an automatic and authentic process but it helps in answering the questions of financial analyst. The main objectives of analysis and interpretation of financial statements are being explained hereunder:

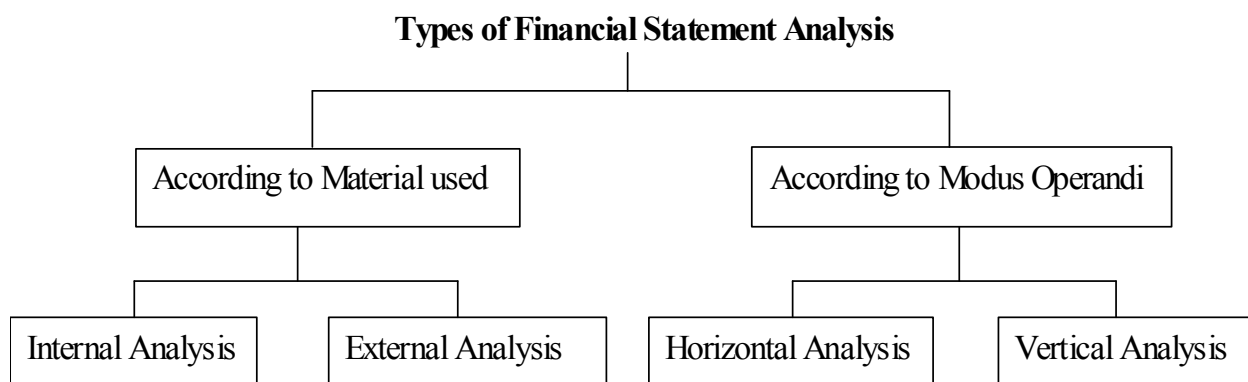
1. To measure profitability and to find out responsible factors in case of declining and improving profitability ratios.
2. To measure financial soundness with the help of various ratios for corrective actions in case of adverse position.
3. To measure operating efficiency through comparison of current year’s production, sales, expenses with last year’s figures of these items.
4. To assess short term as well as long term solvency for creditors, debenture holders etc.
5. To show trend of various items of financial statements e.g. sales, purchases, profits, expenses and to make strategies for future. This information will also help in budgeting and planning.
6. To conduct inter-firm and intra-firm comparison for self evaluation and for operating efficiency to take corrective actions.

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### 3.3 Types of Financial Statement Analysis

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Financial statement analysis can be undertaken in different ways. The purpose of which the financial statement analysis to be undertaken and the person doing financial statement analysis are two main deciding factors of types of financial statement analysis. Financial statement analysis may be categorised on the two main basis which are being presented here:-



**Figure - 3.1**

1. **According to Material Used:-** Financial analysis according to this type can be of two type:

- (i) **Internal Analysis:** Executives and employees of the enterprise conduct internal analysis because they have access to the books of accounts and all other information related to business. Therefore, such analysis becomes more reliable and useful to management.

- (ii) **External Analysis:** - An external analysis is done by those who are outsiders for the business and do not have access to the detailed records of the company. Shareholders, prospective investors, creditors, bankers, governmental agencies, researchers are outsiders who conduct such analysis on the basis of published financial statements. Increased governmental control over companies and governmental regulations have directed companies to disclose more detailed informations in order to improve analysis.

2. **According to Modus Operandi:** This type of analysis can be classified in two categories:-

- (i) **Horizontal Analysis:** - when financial statements for a number of years are reviewed and analysed, it is termed as 'Horizontal Analysis'. Under this method, figures of two or more years regarding each items are shown with changes from the base year. Generally, the first year is assumed as base or standard year. Increase or decrease in each item as compared to base year is shown in percentage form. For example, creditors shown in the balance sheet have increased or decreased as compared to the year 2011, and 2012. Horizontal analysis is used in comparative balance sheet and profit and loss account and in trend analysis. Area of strength and weakness from considerable insight are given to the management by this analysis. It is also known as 'Dynamic Analysis'.
- (ii) **Vertical Analysis:-** It is a study of quantitative relationship of the various items in the financial statements on a particular date. It is related to one date or one accounting period. Therefore, it is termed as 'Static Analysis'. Common size balance sheet and profit and loss account are examples of vertical analysis. Totals of financial statements of a particular accounting period are taken as 100 and then all items related to that statement are converted into percentage. For example, each item of Balance sheet is stated as a percentage of the total of the Balance sheet.

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### 3.4 Procedure of Financial Statement Analysis

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The analysis process of financial statements involves the compilation and study of financial and operating data. Analytical representation and promptness are attributes of ideal financial analysis. The following procedure has to be adopted for financial statement analysis:-

- (1) **Re-arrangement of Financial statements:** First of all a financial statement analyst must know the object of financial statements analysis. Profit and loss account reveals trend of progress and Balance sheet depicts financial position. Director's report and chairman speech are useful to know future plans. Financial data should be presented in a condensed form according to the object.
- (2) **Study of Financial Statements:** Detailed study of Balance sheet and Profit and loss account of current year and past years should be made to create a comprehensive vision and to guess about future.
- (3) **Approximation of Figures And Classification of Items:** The figures should be approximated to the nearest thousand or lakh of rupees to remove complexity of process. The items related to particular heading should be put at one place. Such classification of items will help in analysis.
- (4) **Comparison by Establishing Relationship Between Items:** Absolute figure is useless until it is compared with another figure. Various items are taken and a relationship with other item is established according to the object. An item of current year may be compared with its past year figures or may be compared with an other item. For example sales of current year may be compared with last



year's sales or may be compared with gross profit, net profit or with different assets. Figures of a particular company may be compared with the figures of other company. All these depend on the object of analysis.

- (5) **Analysis and Interpretation:** On the basis of a comparative study, the analyst puts trend and changes. It presents important facts to take corrective action and to help in decision making according to object.
- (6) **Presentation:** After analysis and interpretation financial analysis draws inferences. These inferences may be presented either through report or diagrams.

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### 3.5 Importance of Financial Statement Analysis

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Financial statement analysis is useful for stakeholders because it helps in decision making from their point of view. The importance of financial statement analysis may be understood from the points given below:-

- 1. **Disclosure of Facts:** -Financial statements presents only figure of related various items. They do not provide information regarding solvency, requirement of working capital, liquidity position, debtor's collection policy etc. Analysis of financial statements helps to answer of such questions and provides explanation about all required informations.
- 2. **Comparative Study of Efficiency:-** various items are compared with past data of the firm and also with other firms engaged in the same business. It measures efficiency of business itself and in comparison to others.
- 3. **Help in Planning and Decision Making:-**After analysis of financial statements, a firm may know increasing or decreasing trend of various items. It will provide a base for future planning and remedial measures can be planned for solution of future problems. There is no room for personal biasness in decision making because data are scientifically analysed.
- 4. **Effective Control:** - Control can be exercised effectively in case of variations. Analysis of financial statement provides information regarding day to day activity of business. If there is any negative sign, corrective actions may be taken.
- 5. **Importance to Various Stakeholders.** Investor, debenture holders, employees, management, government and researchers are various stakeholders who want to know different informations related to them. Analysis of financial statement provides informations to various stakeholders.

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### 3.6 Techniques of Financial Statement Analysis

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Different persons undertake analysis of financial statement for different purposes. The methodology for analysis may vary from one situation to other. Horizontal or vertical analysis of items given in financial statements shows profitability and financial position of firm. The techniques which help to study the relationship of horizontal and vertical analysis are termed as Techniques of Financial Statement Analysis. The main techniques are being explained here :-

- 1. Comparative Financial Statements
- 2. Common-size Financial Statements
- 3. Trend Percentages
- 4. Ratio Analysis

5. Fund Flow Analysis
6. Cash Flow Analysis
7. Break-Even Analysis

A technique useful for one analyst may be useless for another to their different objects. It is not necessary to use all above techniques. The analyst should adopt only these techniques which are helpful in their object of investigation. The above techniques are being explained here in detail with suitable examples:

#### **Activity A:**

1. Prepare a list of techniques of financial statement analysis

**Comparative Financial Statements:** Now-a-days companies have started to provide important statistical information in condensed form for the last so many years. Financial statements of a single period represent only one phase of the long and continuous history of the firm, therefore data related to a period of a number of years will be more significant and meaningful for comparative study. Comparative financial statements are presented in a way so as to provide time perspective to the consideration of various elements of financial position embodied in such statement. The financial data are placed in columnar form. Comparative statements are made to show-

- (i) Absolute data (money value)
- (ii) Decrease or increase in absolute data in terms of money values.
- (iii) Decrease or increase in absolute data in terms of percentage.
- (iv) Comparison expressed in ratios
- (v) Percentage of totals.

It should be kept in mind while preparing comparative financial statements that the methods of collection of data, presentation of date, accounting policies and principles followed are same otherwise these will give misleading results. If there is any change, it should be indicated in the footnotes. Classification of elements of assets and liabilities in Balance sheet and elements of income and expenditure in Profit and Loss account should be same during the period of comparison.

Generally comparative Balance sheet and comparative Profit and Loss account are prepared. The both comparative statements are being explained here:-

- (i) **Comparative Balance Sheet:** Comparative Balance Sheet depicts decrease and increase in various items of assets and liabilities. Data at the beginning and at the end of the period are taken for comparison. A single balance sheet shows only the balance of accounts but the comparative balance sheet shows increase or decrease in each item. The comparative Balance sheet has two columns for the data of the original balance sheet and a third column for increase or decrease in various items. The fourth column contains the percentage of increase or decrease.
- (ii) **Comparative Profit and Loss Account:** A comparative profit and loss account shows the absolute figures for two or more periods of different items, the absolute changes from one period to another and if desired, the changes in terms of percentages form. A financial analyst can quickly ascertain whether sales, cost of goods sold and other different items have increased or decreased and by how much percentage.

According to The American Institute of Certified Public Accountants “The presentation of comparative financial statements in annual or other reports enhance the usefulness of such reports and brings out more clearly the nature and trend of current changes affecting the enterprises. Such presentation emphasizes the fact that statements for a series of periods are for more significant than those of a single period and that the accounts of one period are but an instalment of what is essentially a continuous history. In any one year, it is ordinarily desired that the Balance sheet, the Income Statement and the Surplus statement be given for one or more preceding years as well as for the current year.”

The following illustration will help to understand the preparation of comparative financial statements.

**Illustration 1:** Following are the Profit and Loss account and Balance Sheet of Ashu & Co. for the years 2011 and 2012. Prepare the comparative Profit and Loss Account and comparative Balance sheet for these two years

**Profit and Loss Accounts for the years 2011 and 2012**

Particulars	2011 (Rs.)	2012 (Rs.)	Particulars	2011 (Rs.)	2012 (Rs.)
To cost of Good Sold	30,000	37,500	By Net Sales	40,000	50,000
To General Expenses	1000	1000			
To Selling Expenses	1,500	2000			
To Net Profit	7500	9500			
	40,000	50,000		40,000	50,000

**Balance Sheets As on Dec. 31**

Liabilities	2011 (Rs.)	2012 (Rs.)	Assets	2011 (Rs.)	2012 (Rs.)
Capital	35000	35000	Land	5000	5000
Reserves	10000	12250	Building	15000	13500
Secured Loans	5000	7500	Plant	15000	13500
Creditors	10000	13750	Furniture	5000	7000
Outstanding Expenses	5000	7500	Cash	5000	7000
			Debtors	10000	15000
			Stock	10000	15000
	65000	76000		65000	76000

**Solution:-**

**Comparative Profit and Loss Account  
For the year ending 2011 and 2012**

Particulars	2011 (Rs.)	2012 (Rs.)	Change in 2012 (Rs.)	% Change 2012
Net Sales	40000	50000	10000	+25
Less:- Cost of Goods Sold	30000	37500	7500	+25
Gross Profit (A)	10000	12500	2500	+25
Less: General Expenses	1000	1000	-	-
Selling Expenses	1500	2000	500	+33.3
Total Expenses (B)	2500	3000	500	+20
Net Profit (A-B)	7500	9500	2000	+26.7

**Comparative Balance Sheet as on Dec.31**

	2011 (Rs.)	2012 (Rs.)	Change in 2012 (Rs.)	% Change 2012
Land	5000	5000	-	-
Building	15000	13500	-1500	-10
Plant	15000	13500	-1500	-10
Furniture	5000	7000	2000	+40
Total Fixed Assets (A)	40000	39000	-1000	-2.5
Cash	5000	7000	2000	+40
Debtors	10000	15000	5000	+50
Stock	10000	15000	5000	+50
Total Current Assets (B)	25000	37000	12000	+48
Creditors	10000	13750	3750	37.5
Outstanding Expenses	5000	7500	2500	50
Total Current Liabilities (C)	15000	21250	6250	41.7
Net working Capital (B-C)	10000	15750	5750	57.5
Total Assets (A+B)	65000	76000	11000	16.9

**Interpretation:** The net sales has increased by 25% which was coupled with increase in the cost of good sold which also increased by same 25%. It can be observed that gross profit for the year 2012 has increased by 25% over the profit of the year 2011. The increase in Net Profit by 26.7% is due to less increase in total expenses. The comparative balance sheet shows a decrease of 2.5% in fixed assets which is result of depreciation.

The current assets have increased by 48% and current liabilities have increased by 41.7%. increase in net working capital by 57.5% shows that the working capital has not been managed properly. Change in shareholders' fund by 5% is the result of change in retained profit only because the firm has not raised capital during the study period. The secured loans have increased by 50%.

The comparative financial statements do not depict the variation in different liabilities or different assets in relation to total liabilities or total assets for a particular period.

### Activity B:

1. Prepare Comparative Balance Sheet and Profit and Loss account with Imaginary figures

**Common size Financial Statements:** According to S.N. Maheshwari "Common size Financial Statements are those in which figures reported are converted into percentages to some common base". The common size statements are generally called "component percentage" or "100 percent" statements. In common size balance sheet, the total of assets and liabilities is taken as 100 and other items are expressed as its percentage. Similarly in common size profit and loss account, sales figure is taken as 100 and each item is stated as percentage of sales. The common size financial statement is useful for intra-firm comparison as well inter firm comparison. The following example will help in understanding the procedure of preparation of common size financial statements.

**Illustration 2:** Prepare the common size Balance Sheet and common size Profit and Loss account using data given in Illustration 1-

### Solution:

**Common Size Balance Sheet**

	2011		2012	
	Amount	Common size %	Amount	Common size %
Land	5000	7.70	5000	6.59
Building	15000	23.07	13500	17.76
Plant	15000	23.07	13500	17.76
Furniture	5000	7.70	7000	9.21
Total Fixed Assets (A)	40000	61.54	39000	51.32
Cash	5000	7.70	7000	9.20
Debtors	10000	15.38	15000	19.74
Stock	10000	15.38	15000	19.74
Total Current Assets (B)	25000	38.46	37000	48.68
Total Assets (A+B)	65000	100	76000	100
Capital	35000	53.85	35000	46.05
Reserves	10000	15.38	12250	16.12
Shareholders' Fund (C)	45000	69.23	47250	62.17
Secured Loan	5000	7.70	7500	9.87
Creditors	10000	15.37	13750	18.09
Outstanding Expenses	5000	7.70	7500	9.87
Total Liabilities (D)	20000	30.77	28750	37.83
Total Capital+Liabilities (C+D)	65000	100	76000	100

### Common Size Profit and Loss Account

	2011		2012	
	Amount	Common size %	Amount	Common size %
Net Sales	40000	100	50000	100
Less:- Cost of Goods sold	30000	75	37500	75
Gross Profit (A)	10000	25	12500	25
Less:- General Expenses	1000	2.5	1000	2.0
Selling Expenses	1500	3.75	2000	4.0
Total operating Expenses(B)	2500	6.25	3000	6.0
Net Profit (A-B)	7500	18.75	9500	19.0

**Interpretation:** The common size balance sheet shows that proportion of fixed assets has decreased from 61.54% to 51.32% while current assets portion out of total assets has increased from 38.46% to 48.68%. It indicates that position of current assets is far better than fixed assets. The proportion of shareholders' fund has reduced from 69.23% to 62.17% whereas external liabilities proportion has increased from 30.77% to 37.83%.

The common size Profit and Loss account reveals that there is no change in cost of goods sold and gross profit percentage of sales. The operating expenses has reduced from 6.25% to 6%. It has affected net profit which has increased from 18.75% to 19%.

The common size Financial Statements are useful to compare financial results and financial position between two firms for the same period or for two different periods of a firm. It becomes difficult when the period to be covered is more than two years. The common size Financial Statement is useful in only vertical analysis.

**Trend Percentages:** Examination of any one year's account is not sufficient to predict the financial health of a business. Therefore, it is necessary to study of data of two or more years. The trend percentage is useful to conduct a comparative study of financial statement for several years. The study of trend will indicate the direction of movement over a long time. It makes possible a horizontal study of the data. The method of calculating trend percentage involves the calculation of percentage relationship that each item bears to the same items in the base year. Any year may be taken as base year but it should generally be the earliest year.

Each item of the base year is taken as 100 and on that basis the percentage for each of the items of each of the years are calculated. Trend percentages are generally not computed for all the items given in the financial statements as the fundamental objective is to make comparison between items having some logical relationship to one another. The computation of trend percentage is useful to know favourable or unfavourable position of the business.

The following points should be kept in mind while calculating trend percentages:

1. The consistency regarding accounting policies and practices should be followed for comparability.
2. The care is necessary in selection of base year. The base year must be normal and representative year. Normally, the initial year is taken as base year but in case representative year may be considered as base year.
3. Trend percentages should be computed for only those items which have logical relationship with each other.

4. The figures for different years must be adjusted for variation in price level changes. For example, increase in sales may be result of increase in selling price not of sales volume. The trend percentages may give misleading results if price level changes are not adjusted.

**Illustration 3:** Calculate the trend percentages from the following figures of Manish Ltd., taking 2009 as base year:

	2009	2010	2011	2012
Net Sales	50000	47500	60000	65000
Less:- cost of Good sold	30000	29450	34800	36400
Gross Profit	20000	18050	25200	28600
Less: Expenses	5000	4850	5500	6000
Net Profit	15000	13200	19700	22600

**Solution:-**

#### Trend Percentage

	2009	2010	2011	2012
Net Sales	100	95.0	120.0	130.0
Less:- Cost of Good sold	100	98.2	115.8	121.3
Gross Profit	100	90.3	126.0	143.0
Less: Expenses	100	97.0	110.0	120.0
Net Profit	100	88.0	131.3	150.6

**Interpretation:** It can be observed that the sales have reduced by 5% but cost of goods sold and expenses have declined by 1.8% and 3% respectively. Net profit has decreased by 12% which shows that the overall position in 2010 is bad. The position was recovered in 2011 and 2012. Although there was 20% and 30% increase in sales of 2011 and 2012 but increase in net profit by 31.3% and 50.6% in 2011 and 2012 shows good position of the business.

**Note:** The remaining techniques of financial Statement analysis have been explained in detail in the following units.

### 3.7 Summary

The balance sheet depicts the financial position on a particular date and profit and loss account reveals the results of financial activities during a certain period of time. Merely figures shown in financial statements do not serve the purpose of decision making for all stakeholders. Analysis and interpretation of financial statements help to diagnosis the profitability and soundness of the business. The Financial statement analysis helps to measure operating efficiency and to assess short term as well as long term solvency of the business. Financial statement analysis may be categorised on the two main basis viz., Material used and Modus operandi. Financial analysis according to material used can be of two type (i) internal analysis and (ii) external analysis. Internal analysis is conducted by executives and employees of the organisation while external analysis is done by those who are outsiders for the business. According to modus operandi, the analysis can be horizontal analysis or vertical analysis. Under horizontal analysis method, figures of two or more years regarding each items are shown with changes from the base year. Vertical analysis is related to one date or one accounting period. Total of financial statements of a particular accounting period are taken as 100 and then all items related to that statement are converted into percentage. The analysis process of financial statements involves re-arrangement of financial statements, study of financial statements, approximation of figures and classification

of items, comparison by establishing relationship between items, analysis and interpretation and presentation through report or diagrams. Financial statements analysis helps in comparative study of efficiency and planning and decision making. It is important to various stakeholders. Comparative Financial Statements, Common Size Financial Statements, Trend percentages, Ratio Analysis, Fund Flow Analysis, Cash Flow Analysis, Break Even Analysis are the main financial statement analysis techniques.

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### 3.8 Key words

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- **Internal Analysis:** the analysis which is conducted by executives and employees of the enterprise.
- **External Analysis:** An external analysis is done by those who are outsider for the business and do not have access to the detailed records of the company.
- **Horizontal Analysis:** When financial statements for a number of years are reviewed and analysis, it is termed as 'Horizontal Analysis'. Under this method. Figures of two or more years regarding each items are shown with changes from the base year.
- **Vertical Analysis:** It is a study of quantitative relationship of the various items in the financial statements on a particular date. It is related to one date or one accounting period.

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### 3.9 Self Assessment Questions

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1. Define 'Analysis of Financial Statement'. Explain its objectives.
2. Explain the difference between internal and external analysis and explain its significance.
3. What are common size Financial Statements? Discuss its utility for management.
4. What do you understand by analysis and interpretation of financial statements. Explain briefly various techniques used for financial analysis and interpretation.
5. Write short notes on the following:-
  - (i) Comparative financial statement analysis
  - (ii) Trend percentages
  - (iii) Horizontal analysis
  - (iv) Vertical analysis
6. The income statements of cheenu ltd. Are given for the years during 31st March 2011 and 2012. Prepare a comparative income statement after re-arranging the figures.

1.

	2011 ('000)	2012 ('000)
Net Sales	1570	1800
Cost of Goods sold	900	1000
<u>Operating expenses:-</u>		
General and administrative expenses	140	144
Selling Expenses	160	180
<u>Non operating expenses :-</u>		
Interest paid	50	60
Income Tax	140	160

7. Prepare a statement of comparative balance sheet from the details given below:-

**Balance Sheet of Gaurav Ltd.**  
**as on 31 March, 2011 and 2012**  
**(Rs. in Lakh)**

Liabilities	Amount		Assets	Amount	
	2011	2012		2011	2012
Share Capital			Fixed Assets	10400	11000
1. Equity Share Capital	1600	1600	Less:- Depreciation	3000	4000
2. Preference Share Capital	1000	1100	Net Fixed Assets	7400	7000
Reserve and Surplus			Capital work in-Progress	200	300
Long-Term Borrowings	3300	5000	Investments	800	800
Current Liabilities & Provisions:	4000	3400	Current Assets:		
(i) Current Liabilities			(i) Stock	1290	2000
(ii) Provision	900	1000	(ii) Receivable	600	700
	240	400	(iii) Cash and Bank Balances	750	1700
	<b>11040</b>	<b>12500</b>		<b>11040</b>	<b>12500</b>

8. Prepare a common size Income Statement using figures given in above question no. 6.
9. Prepare a common size balance sheet using figures given in question no. 7.
10. Compute the Trend Percentages from the following data taking 2006 as the base year

Year	Sales (Rs.)	Stock(Rs.)
2006	400000	40000
2007	520000	50000
2008	640000	60000
2009	620000	56000
2010	640000	54000
2011	600000	58000
2012	480000	52000

### 3.10 Reference Books

- Financial Management :I.M. Pandey
- Financial Management : M.R. Agrawal
- Financial Management : M.D. Agrawal and N.P. Agrawal
- Management Accountin : R.P. Rustagi
- Financial Management : S.N. Maheshwari



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## Unit - 4 : Ratio Analysis

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### Structure of Unit:

- 4.0 Objectives
- 4.1 Introduction
- 4.2 Meaning and Nature
- 4.3 Different Approaches of Interpretation
- 4.4 Advantages of Ratio Analysis
- 4.5 Limitations of Ratio Analysis
- 4.6 Classification of Ratios
- 4.7 Analysis of liquidity
- 4.8 Analysis of Activity
- 4.9 Analysis of Profitability (Based on Sales, Capital)
- 4.10 Analysis of Longterm Solvency
- 4.11 Analysis of Investment
- 4.12 Preparation of Financial Statements from Ratios
- 4.13 Summary
- 4.14 Self Assessment Questions
- 4.15 Reference Books

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### 4.0 Objectives

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After completing this unit, you would be able to:

- Understand nature & importance of Ratio Analysis
- Know about different approaches of interpretation
- Point out the limitations and classifications.
- Analyse and interpret liquidity of the firm
- Analyse and interpret activity of the firm
- Analyse and interpret longterm solvency of the firm
- To learn how ratios are useful in decision for investment

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### 4.1 Introduction

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A basic limitation of the traditional financial statement comprising the balance sheet and the profit and loss account, provides a summarised view of the financial position and operations of a firm. Different parties are interested in the financial statement for different purposes and look at them from different angles. For example, the debentureholders analyse the statements in order to ascertain the ability to pay

interest and maturity amount. The prospective shareholders would like to know whether the business is profitable and is progressing on sound lines. The management is interested in the operational efficiency as well as financial position of the business. Hence, the main objective of financial analysis is to make detail study about the cause and effect of the profitability and financial condition of the firm. Hence, ratio analysis is a tool to predict operational as well as financial efficiency of business through analysis & interpretation of financial data.

So analysis of financial statement is a process of selection, relation and evaluation. The first task of the financial analyst is to select the information relevant to the decision under consideration. The second step is

to arrange the information in a way to highlight significant relationships. The final step is interpretation and drawing of inferences and conclusions.

The present chapter involves an in-depth analysis of financial statements and its use for decision making by various parties interested in them.

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## 4.2 Meaning and Nature

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The term “Ratio” simply means one number expressed in terms of another. It describes in mathematical terms the quantitative relationship that exists between two numbers. The term “Accounting Ratio” is used to describe significant relationship between figures shown on a Balance Sheet, in a Profit and Loss Account. Ratio analysis refers to the analysis and interpretation of financial statements through ratios.

Ratios are customarily presented either in the form of a coefficient or a percentage or as a proportion. Absolute figures may be misleading unless compared, one with another. Ratios provide the means of showing the relationship that exists between figures. However, the numerical relationships of the kind expressed by ratio analysis are not an end in themselves but are a means for understanding the financial position of a business. Ratios, by themselves, are meaningless, simple ratios compiled from a single year's financial statements of an enterprise may not serve the real purpose. Besides, in order to reach valid conclusions, ratios are to be worked out from the financial statement of a number of years and have to be compared with some standards that are established after a systematic review of past experiences. A single ideal standard cannot be applied for all types of business. Each business has its own limitations, hence ideal ratio will differ between industries and also differ with size, capital and other factors.

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## 4.3 Different Approaches of Interpretation

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Generally, there are four different approaches available for interpreting ratios.

- (A) **Interpretation of Individual Ratios:** A single ratio fails to reveal the true position. If it relates to preceding years or compared with same type of other business or studied with reference to some standards, may be useful. Hence this approach is to be combined with others.
- (B) **Interpretation by Referring to a Group of Ratios:** The analysis could be made more meaningful by computing some of the additional related ratios. A Change in one ratio may have significance only when viewed in relation to other ratios.
- (C) **Interpretation of Ratios by Trend:** It involves a comparison of ratios of a firm over time. The trend ratios indicate the direction of change over the years.
- (D) **Interpretation by Inter-firm Comparisons:** It involves comparison of the ratios of a firm with those of others in the same line of business or for the industry as a whole reflects its performance in relation to its competitors.

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## 4.4 Advantages of Ratio Analysis

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1. It is an invaluable aid to management for planning, forecasting, control and decision making.
2. Ratios enable the mass of accounting data to be summarized and simplified.
3. It facilitates better co-ordination and control of performance as well as control of costs.
4. It is a tool to assess important characteristics of business like liquidity, solvency, profitability etc.

5. It is an effective tool of analysis for intra-firm and inter-firm comparisons.
6. It enables a firm to take time dimension into account by using trend analysis of ratios.
7. It enables the easy understandability for accounting figures, for those who do not know the language of accounting.
8. It is an effective means of communication to the owners and other parties interested therein.

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## 4.5 Limitations of Ratio Analysis

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Ratio analysis is a widely used tool of financial analysis yet it suffers from various limitations such as:

1. There are no ideal standards for comparison.
2. Ratios are calculated on the basis of financial statements, but financial statements themselves suffer from a number of limitations. Hence ratio analysis may fail to serve its purpose.
3. Impact of inflation reflects misleading results, because ratios are calculated on the basis of historical data. Hence inflationary conditions are ignored.
4. Ratios are based on historical data and it is used for future prediction. Hence, forecast for future may be wrong.
5. Ratio is just an aid and cannot replace thinking and personal judgement employed in the decision making process.
6. There are no standard formulae for working out ratios and it makes comparison very difficult.
7. Ratios are tools of quantitative analysis only and normal qualitative factors that may generally influence conclusions derived are ignored while computing ratios.
8. Ratio alone is not adequate. It will be useful when it is used in a group of ratios or compared with over a period of time.

The reliability and significance attached to ratios will largely depend upon the quality of data on which they are based. They are as good as data itself.

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## 4.6 Classification of Ratios

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Ratios may be classified in a number of ways to suit any particular purpose. Different kinds of ratios are selected for different types of situation. In general, the following bases of classification are in vogue.

- (A) **Classification According to Accounting Statement:** This classification is based on the nature of accounting statement such as Balance sheet ratios. Profit and loss Account Ratios, combined ratios etc.
- (B) **Classification According to Importance:** It's like primary ratios and secondary ratios. Some of the ratios are termed as primary and others are termed as subsidiary or supporting ratios.
- (C) **Classification According to Functions:** ratios are grouped as liquidity, Activity, Profitability, longterm solvency and Market analysis ratios.

From the above discussion, it may be observed that one basis of classification blends to another. We are taking classification according to functions for description.

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## 4.7 Analysis of liquidity

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These ratios play a key role in assessing the short term financial position of a business. This type of ratios normally indicates the ability of the business to meet current debts, the efficiency of the management in utilizing the working capital, and the progress attained in the current financial position. The following are liquidity ratios:

**(i) Current Ratio:** It may be defined as the ratio of current assets to current liabilities. It is expressed as :

$$\text{Current Ratio} = \frac{\text{Current Asset}}{\text{Current Liabilities}}$$

Current assets normally includes cash in hand and at bank, marketable securities, bills receivable, Book debts excluding provision, inventories, prepaid expenses, current liabilities include items such as outstanding expenses, sundry creditors, bills payable, bank overdraft, provision for taxation, proposed dividend, income tax payable, unclaimed dividend etc. Current assets means cash or those assets convertible or expected to be converted into cash within the accounting year and current liabilities are those liabilities to be paid within same time.

Interpretation: It specifies that how much current assets are available to meet current liabilities. Hence these ratios depicts the payment capacity of the concern. Thus, it is a measure of margin of safety for creditors. A very high ratio may be indicative of lack management practices, as it may be excessive inventories poor credit management etc. There should be reasonable current ratio, conventionally, a current ratio of 2:1 is considered satisfactory in general condition.

### Activity A:

1. A very high current ratio indicates that

**(ii) Liquidity Ratio, Quick Ratio or Acid-Test Ratio:** It indicates whether the firm is in a position to pay its current liabilities in short period. It is a measure of liquidity of firm, how speedy it is able to repay its current liabilities.

$$\text{Current Ratio or Liquidity Ratio} = \frac{\text{Current Asset}}{\text{Current Liabilities}}$$

Quick assets includes all current assets excluding inventories, prepaid expenses, advance tax and advance payments, current liabilities means as it defined in current ratio. It is a more rigorous test of liquidity than the current ratio and, used together with current ratio, it gives a better picture of the short term financial position of the firm.

**(iii) Super Quick Ratio or Absolute Liquidity Ratio:** This ratio is calculated to assess the quick ability to pay liquid liabilities. It is the ratio between absolute liquid assets and liquid liabilities.

$$\text{Super Quick Ratio} = \frac{\text{Cash, Book and Marketable Securities}}{\text{Current Liabilities} - \text{Book Overdraft}}$$

This ratio is the most rigorous and conservative test of a firm's liquidity position.

### Activity B:

1. Current Liabilities Rs. 2,00,000, Bank overdraft Rs. 20,000, Stock Rs. 55,000, Debtors Rs. 50,000, Cash and Bank Rs. 60,000, Marketable securities, 30,000, Calculate Quick Ratio and super quick Ratio.

**Illustration 1:** Calculate liquid ratio, current ratio and super quick ratio from the following data:

Current Assets	Rs. 50000
Stock	Rs. 10000
Prepaid Expenses	Rs. 5000
Working Capital	Rs. 30000
Bank overdraft	Rs. 5000
Cash balance	Rs. 10000
Marketable securities	Rs. 5000

$$\text{Current Ratio} = \frac{\text{Current Assest}}{\text{Current Liabilities}} = \frac{50000}{20000} = 2.5 : 1$$

$$\text{Current Ratio or Liquidity Ratio} = \frac{\text{Current Assest}}{\text{Current Liabilities}} = \frac{35000}{20000} = 1.75 : 1$$

$$\text{Super Quick Ratio} = \frac{\text{Cash, Book and Marketable Securities}}{\text{Current Liabilities} - \text{Book Overdraft}} = \frac{15000}{15000} = 1 : 1$$

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## 4.8 Analysis of Activity

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A firm invest its fund into various assets if utilisation of assets are effective it reflect the sales. Hence, whether the funds are effectively utilised, it can be determined by calculating turnover ratio. Activity of utilisation of funds. or effeciency can be calculated by following ratios :

**(i) Stock (inventory) Turnover Ratio:** It is computed dividing cost of goods sold by average inventory. Thus:

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Average Stock}}$$

Cost of goods sold: opening stock + purchases + direct expenses - closing stock

(or) Cost of production + opening stock of finished goods - closing stock of finished goods

(or) Sales - gross profit

$$\text{Average Stock} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2}$$

The ratio indicates how fast inventory is sold. A high ratio is good from the view point of liquidity and vice-versa. Low stock turnover ratio signify that excessive investment in stock, slow moving stock is higher and market is in slack position. Whereas, higher turnover ratio specify that firm is able to earn higher profit at lower profit margin.

$$\text{Stock Velocity} = \frac{\text{No. of days / month in a year}}{\text{Stock turnover ratio}}$$

**(ii) Debtors Turnover Ratio:** It is determined dividing the net credit sales by average debtors, thus:

$$\text{Debtors Turnover Ratio} = \frac{\text{Net credit sales}}{\text{Average receieable}}$$

Net credit sales = Credit Sales - Sales Return

$$\text{Average Receivables} = \frac{\text{Opening Debtors \& B / R} + \text{Closing Debtor \& B / R}}{2}$$

The ratio measures how rapidly receivables are collected. A high ratio is indicative of shorter time lag between credit sales and cash collection. A low ratio shows that debts are not being collected rapidly.

**(iii) Average Collection Period:** This ratio specifies that in how much days collection is made from debtors. thus:

$$\begin{aligned} \text{Average collection period} &= \frac{\text{Average receivable}}{\text{Net credit sales}} \times \text{No. of months or days in a year} \\ \text{or} \\ &= \frac{\text{Month (or days) in a year}}{\text{Debtors Turnover}} \end{aligned}$$

This ratio is measurement of efficiency of debt collection department of a firm. It refers to quality measurement of debtors, because this ratio depicts the collection efficiency of the firm.

**(iv) Creditors Turnover Ratio:**

$$\text{Creditors Turnover} = \frac{\text{Net credit purchases}}{\text{Average payables}}$$

$$\text{Average Payables} = \frac{\text{Opening and closing \& B / P}}{2}$$

Net credit Purchases = Total credit purchases - Purchases Return

A low ratio reflects liberal credit terms granted by suppliers, while a high ratio shows that accounts are to be settled rapidly. A firm can reduce its requirement of current assets by relying on suppliers credit.

**(v) Creditors Payment Period:**

$$\text{Creditors payment Period} = \frac{\text{Average Payables}}{\text{Net credit Purchases}} \times \text{No. of months / Days in a year}$$

This ratio shows that in how much days amount is paid to suppliers.

**(vi) Total Assets Turnover Ratio:**

$$\text{Total Assets Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Total Assets}}$$

Total Assets = Net fixed Assets + Current Assets + Intangible Assets (if there is any realisable value) but excluding fictitious assets.

**(vii) Fixed Assets Turnover Ratio:**

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Net Fixed Assets}}$$

This ratio specifies the efficiency and profit earning capacity of the firm.

**(viii) Current Assets Turnover Ratio:**

$$\text{Current Assets Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Current Assets}}$$

It reflects the efficiency & capacity of working capital.

**(ix) Capital Turnover Ratio:**

$$\text{Capital Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Capital employed}}$$

Capital employed = Fixed Assets + Current Assets - Current Liabilities (excluding fictitious assets and non-trading assets)

Efficiency and effectiveness of business operations are judged by this ratio. It is a better measurement of use of capital employed.

**(x) Working Capital Turnover Ratio:**

$$\text{Working Capital Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Net working Capital}}$$

It is used to assess the efficient use of working capital in making sales. A high ratio indicates over trading and a low ratio indicates under trading.

Note: In above ratios always cost of goods sold is taken but if it is not available then “sales” may be used. If opening balance are not given then only closing balance will be taken for calculation. In the absence of specific information all sales/purchases is treated as credit, purchase return and sales returns are also treated as return from credit.)

**Activity C:**

1. A low stock turnover ratio indicates:

**Illustration 2 :** From the following balance sheet, calculate turnover ratios :

Liabilities	Rs.	Assets	Rs.
Share Capital	80000	Fixed Assets	150000
Profit and Loss Account	80000	Debtors	60000
15% Mortgage loan	70000	Bills receivables	20000
Creditors	50000	Stock	40000
Bills Payable	20000	Cash at Bank	20000
		Preliminary expenses	10000
	<u>300000</u>		<u>300000</u>

Sales during the year amounted to Rs. 60000 which yielded a gross profit of 20%. Receivables at the beginning Rs. 70000 and payables at the end Rs. 60000, Opening stock Rs. 30000.

**Solution :**

Cost of goods sold = Rs. 160000 - 32000 = 128000

Capital employed = Rs. 150000 + 60000 + 20000 + 40000 + 20000 - (50000 + 20000) = 220000

Average stock = (30000 + 40000) / 2 = Rs. 35000

$$(i) \text{ Stock Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Average stock}} = \frac{128000}{35000} = 3.66 \text{ times}$$

$$(ii) \text{ Debtors Turnover Ratio} = \frac{\text{Net credit sales}}{\text{Average Receivables}} = \frac{160000}{75000} = 2.133 \text{ times}$$

$$\text{Average Receivable} = \frac{\text{Opening Debtors \& B/R} + \text{Closing Debtors \& B/R}}{2}$$

$$\text{Average Receivable} = \frac{(60000 + 20000) + 70000}{2} = \text{Rs. } 75000$$

$$(iii) \text{ Creditors Turnover Ratio} = \frac{\text{Net credit purchases}}{\text{Average payables}} = \frac{138000}{65000} = 2.12 \text{ times}$$

$$\text{Average Payables} = \frac{(50000 + 20000) + 60000}{2} = 65000$$

Cost of goods sold = Opening stock + Purchases – Closing stock

128000 = 30000 + Purchases - 40000

Purchases = Rs. 138000

$$(iv) \text{ Total Assets Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Total Assets}} = \frac{128000}{290000} = 0.4413 : 1$$

$$(v) \text{ Capital Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Capital employed}} = \frac{128000}{220000} = 0.58 : 1$$

$$(vi) \text{ Working Capital Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Working Capital}} = \frac{128000}{70000} = 1.82 : 1$$

Working Capital = Current Assets – Current Liabilities = (60000 + 20000 + 40000 + 20000) – (50000 + 20000) = Rs. 70000

$$(vi) \text{ Fixed Assets Turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Fixed Assets}} = \frac{128000}{150000} = 0.853 : 1$$

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## 4.9 Analysis of Profitability (Based on Sales, Capital)

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Profitability refers to the ability to earn profit. Profitability depends on quantum of sales and use of financial resources. It can be calculated on these two bases :



**(a) Profitability Ratios Based on Sales:**

(i) 
$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100$$

The higher the ratio, the greater will be the margin and lower the ratio the profit is declining in comparison to sales,

(ii) 
$$\text{Operating Ratio} = \frac{\text{Operating Cost}}{\text{Net Sales}} \times 100$$

Operating costs = Cost of goods sold + operating expenses

It indicates the operational efficiency and profit earning capacity of the firm.

(iii) 
$$\text{Operating Profit Ratio} = \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100$$

Operating Profit = Gross Profit - Operating expenses or 100-operating ratio

It indicates operating efficiency of the firm.

(iv) Expenses Ratios:

(a) 
$$\text{Material consumed Ratio} = \frac{\text{Material consumed}}{\text{Net Sales}} \times 100$$

(b) 
$$\text{Finance expenses Ratio} = \frac{\text{Finance expenses}}{\text{Net Sales}} \times 100$$

(c) 
$$\text{Manufacturing / Administration / Selling expenses Ratio} = \frac{\text{Manufacturing / Administration / Selling expenses Ratio}}{\text{Net Sales}} \times 100$$

It reveals the managerial efficiency by comparing these ratios over a period of time.

(v) 
$$\text{Net Profit Ratio} = \frac{\text{Net Profit (After tax) or (before tax)}}{\text{Net Sales}} \times 100$$

It reveals overall profitability and efficiency of the business. A high ratio means adequate return to the owners and firm's capacity to stand in a competitive market. If the ratio is calculated on before tax profit it measures the managerial efficiency and if it is calculated by taking after tax then it is used for comparing two firms or for the owner's purpose.

**(B) Profitability Ratio Based on Capital:** Efficiency of an enterprise can be judged by capital employed also because sometimes conclusions drawn on the basis of net profit to sales may be misleading. Such important ratios are:

**(a) Return on capital Employed (ROCE) (Return on Investment)**

$$\text{ROCE} = \frac{\text{Net Profit before tax}}{\text{Capital employed}} \times 100$$

(or) Assets Turnover  $\times$  Profit Margin

$$\text{(or)} \frac{\text{Sales}}{\text{Total Assets}} \times \frac{\text{Net Profit}}{\text{Sales}} \times 100$$

(or) Assets Turnover X Profit Margin

Capital Employed means :

Gross Capital Employed = Fixed and current Assets (excluding fictitious Assets and intangible assets if it has no realisable value)

Net Capital Employed = Total Assets (excluding fictitious assets and intangible assets which has no value) - current liabilities.

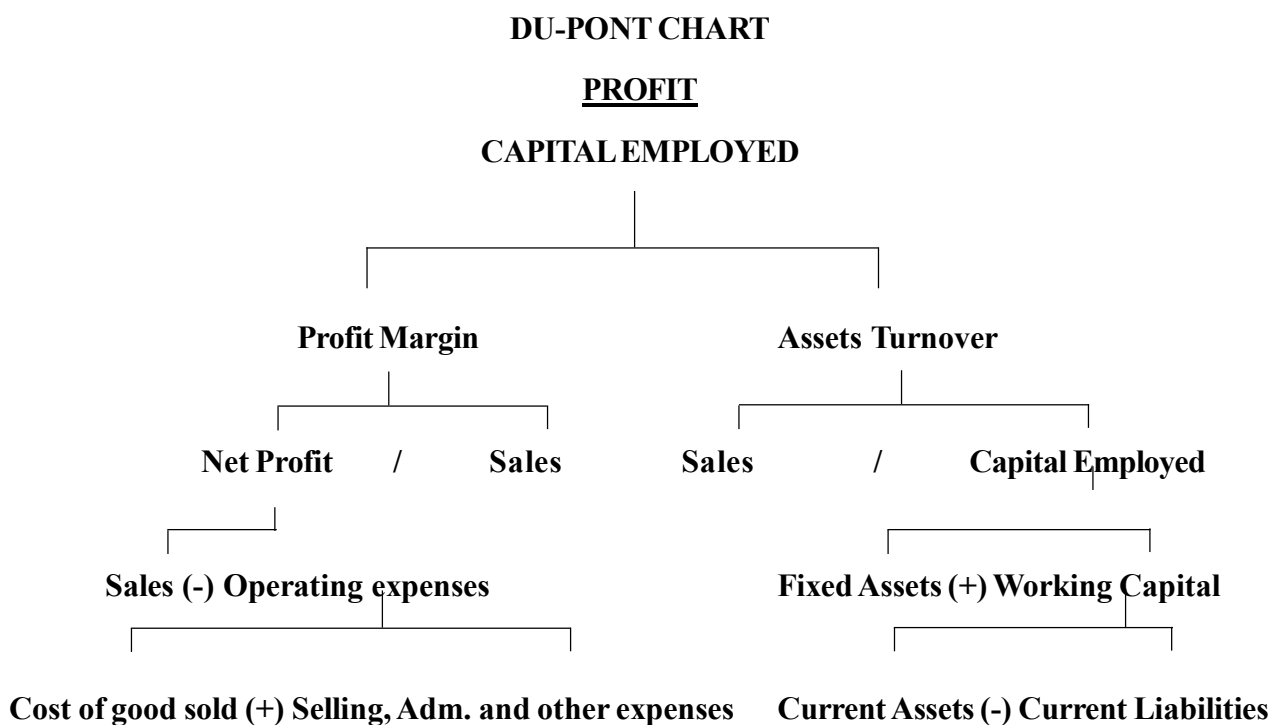
Average Capital Employed = Opening and Closing Capital employed

$$\text{Average Capital Employed} = \frac{\text{Opening and Closing Capital employed}}{2}$$

(or) Capital employed at the end - 1/2 of Current years profit

It is barometer of the overall performance of the enterprise. It is a measure of the earning power of the net assets of the business. It is beneficial for inter firm and intra-firm comparison.

This ratio is expressed in detail by du-pont analysis as follows.



By this management can identify the areas which affect the profit.

(b) Return on Net Worth =  $\frac{\text{Net Profit tax and interest}}{\text{Net worth}} \times 100$

Net worth or shareholders fund or owners equity or Proprietors funds =

E. S Capital + P.S. Capital + Securities Premium + reserves and surplus (after adjusting fictitious assets and losses)

This ratio reveals that amount of earnings for each rupee that the shareholders have invested in the company. It is useful for inter-firm and intra-firm comparison.

$$(c) \text{ Return on Equity Shareholders funds} = \frac{\text{Net Profit tax} - \text{Preference Dividend}}{\text{Equity shareholders funds}} \times 100$$

The ratio provides adequate test to evaluate whether a company has earned satisfactory return for its equity holders or not. Investor can compare the normal rate of return in market with this rate to reach on investment decision.

$$(d) \text{ Return on total Assets} = \frac{\text{Net Profit after tax}}{\text{Total Assets excluding fictitious assets}} \times 10$$

**Illustration: 3** From the following balance sheet calculate N.P. Ratio, ROCE, Return on equity shareholders fund.

Liabilities	Rs.	Assets	Rs.
4000 Equity share Capital of Rs. 100 each	400000	Net Fixed Assets	700000
10% P.S. Capital	100000	Current Assets	230000
Reserves	50000	Preliminary Expenses	20000
Current years profit (tax rate 50%)	150000		
12% Debentures	100000		
Current Liabilities	150000		
	950000		950000

Sales 15,00,000

**Solution:**

$$\text{Net Profit Ratio} = \frac{\text{Net Profit}}{\text{Sales}} \times 100 = \frac{150000}{1500000} \times 100 = 10\%$$

$$\text{ROCE} = \frac{\text{Net Profit Ratio}}{\text{Capital employed}} \times 100 = \frac{300000}{9300000} \times 100 = 32.26\%$$

Net Profit tax = Net Profit after tax + Tax = 150000 + 150000 = Rs. 300000

Capital employed (Total) = Fixed Assets + Current Assets = 700000 + 230000 = Rs. 930000

$$\text{Return on Equity Shareholders Funds} = \frac{\text{Net Profit after tax} - \text{Preference Dividend}}{\text{Equity shareholder funds}} \times 100$$

$$\frac{150000 - 100000}{60000} \times 100 = 23.33\%$$

#### 4.10 Analysis of Longterm Solvency

These ratios are called as leverage or capital structure or debt management ratios. All these are expressed as follows:

$$(1) \text{ Debt Equity Ratio} = \frac{\text{External Equities or Total Debts}}{\text{Internal equities or Net worth or total Equity}}$$

External equities = short terms and longterm loans

Internal Equities = Shareholders funds

A high ratio shows that the claims of creditors are greater than those of owners hence lesser safety. Whereas, a low ratio provides sufficient margin to creditors due to higher stake of owners. This ratio should be balanced.

$$(2) \text{ Proprietary Ratio} = \frac{\text{Proprietary funds}}{\text{Total Assets}}$$

It reveals the general financial strength of the business. A higher ratio indicates sound financial position.

$$(3) \text{ Solvency Ratio} = \frac{\text{Total Debt}}{\text{Total Assets excluding fictitious assets}}$$

If total assets are more than external liabilities, the firm is treated as solvent.

$$(4) \text{ Fixed Assets Ratio} = \frac{\text{Net Fixed Assets}}{\text{Capital Employed}}$$

It indicates whether there is proper adjustment between longterm funds and fixed use of capital.

$$(5) \text{ Capital Gearing Ratio} = \frac{\text{Variable cost bearing capital}}{\text{Fixed cost bearing capital}}$$

Variable cost bearing capital = Equity holders funds

Fixed cost bearing capital = Debentures + long term loans + Preference Shares

A higher ratio reveals that lesser fixed financial charges thus more surplus available to shareholders. Whereas, lower ratio indicate over burden of financial charges, and it is the situation of high gearing.

$$(6) \text{ Interest Coverage Ratio or Service Ratio} = \frac{\text{Net Profit before interest and tax}}{\text{Fixed Interest charge}}$$

It is very significant for loan providers. A high ratio indicates sufficient interest paying capacity of the firm to the long term loan providers. Low ratio indicates that the firm is using excessive debt. By this ratio investor can forecast the financial risk through comparing this ratio from standard ratio of the same business.

**Illustration : 4** From the following balance sheet calculate :

Debt-Equity Ratio, Proprietary Ratio, Solvency Ratio, Capital Gearing Ratio and Interest Coverage Ratio.

<b>Liabilities</b>	<b>Rs.</b>	<b>Assets</b>	<b>Rs.</b>
7000 Equity Shares of Rs. 10 each	70000	Net Fixed Assets	200000
2000 Preference Shares of Rs. 10 each	20000	Stock	30000
Reserves and surplus	80000	Debtors	30000
8% Debentures	100000	Cash at Bank	30000
Current Liabilities	20000		
	290000		290000

Reserves and surplus includes current year net profit after tax (50%) and interest Rs. 40000.

**Solution:**

$$\text{Debt Equity Ratio} = \frac{\text{Total Debts}}{\text{Total Equity}} = \frac{100000 + 20000}{170000} = 0.706 : 1$$

$$\text{Proprietary Ratio} = \frac{\text{Proprietary funds}}{\text{Total Assets}} = \frac{170000}{290000} = 0.586 : 1$$

$$\text{Solvency Ratio} = \frac{\text{Total Debts}}{\text{Total Assets}} = \frac{120000}{290000} = 0.414 : 1$$

$$\text{Capital Gearing Ratio} = \frac{\text{Variable cost bearing capital}}{\text{Fixed cost bearing capital}} = \frac{70000 + 80000}{20000 + 100000} = 1.25 : 1$$

$$\begin{aligned} \text{Interest Coverage Ratio} &= \frac{\text{Net Profit before interest and tax}}{\text{Fixed interest Charges}} \\ &= \frac{40000 + 40000}{8000} = \frac{80000}{8000} = 11 \text{ times} \end{aligned}$$

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## 4.11 Analysis of Investment

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These ratios are known as “Market value Ratio” which are the following :

$$(1) \text{ Earning Per Share (EPS)} = \frac{\text{Profit after tax} - \text{Preference dividend}}{\text{Number of Equity Shares}}$$

Through this ratio profitability of the firm can be measured from the shareholders point of view. The higher ratio indicate better performance and greater would be the market price of a company's share. It is beneficial for inter-firm and intra - firm comparison for the investors point of view.

$$(2) \text{ Price - Earning Ratio - (P / E Ratio)} = \frac{\text{Market Price Per Share (MPS)}}{\text{Earning Per Share (EPS)}}$$

It indicates the market opinion of the earning capacity. The comparison of P/E Ratio with another similar firms can specify whether the share is overvalued or under valued.

### Activity D:

1. EPS of X Ltd. is Rs. 20 and MPS Rs. 200. EPS of Similar firm Y Ltd. Rs. 30 and MPS Rs. 240. The shares of X Ltd. are under valued or overvalued and Why?

$$(3) \text{ Dividend Per Share (DPS)} = \frac{\text{Dividend Paid to Equity Shareholders}}{\text{No. of Equity Shares outstanding}}$$

It represents to what extent the profit has been received by the shareholders.

$$(4) \text{ Dividend yield Ratio} = \frac{\text{DPS}}{\text{MPS}} \times 100$$

It represents to what extent the profits has been received by the shareholders.

**Activity F:**

1. Face value of a share Rs. 10, whereas market value per share Rs. 200. Dividend distributed @ 100% what is dividend yield ratio.

$$(5) \text{ Dividend Payout Ratio (D / P Ratio)} = \frac{\text{Dividend Per Share}}{\text{Earning Per Share}} \times 100$$

Or

$$\text{Dividend Payout Ratio (D / P Ratio)} = \frac{\text{Equity Dividend}}{\text{Pr ofit after tax} - \text{PS dividend}} \times 100$$

It shows that how much earning is distributed and how much is retained as ploughing back of profits. This ratio is also useful for inter as-well-as intra firm comparison.

$$(6) \text{ Book Value per Share} = \frac{\text{Equity Share Capital} + \text{Reserves \& Surplus}}{\text{Total number of equity shares}}$$

It is a reflection of past profits and dividend policy of the company.

**Illustration 5 :** 10% 1000 Preference shares of Rs. 100 each, 100000 Equity shares of Rs. 10 each

Additional informations : Profit after tax (50%) Rs. 250000

DPS Rs. 2 per share, MPS Rs. 40.

Calculate EPS, P/E ratio, Dividend yield ratio and Dividend Payout ratio.

**Solution :**

$$(1) \text{ EPS} = \frac{\text{Net Pr ofit after tax} - \text{P.S. Dividend}}{\text{No. of Equity Shares}} \quad \text{EPS} = \frac{250000 - 10000}{10000} = \text{Rs. 2.4}$$

$$(2) \text{ P / E Ratio} = \frac{\text{MPS}}{\text{EPS}} = \frac{40}{2.4} = 16.67 : 1$$

$$(3) \text{ Dividend yield Ratio} = \frac{\text{DPS}}{\text{MPS}} \times 100 = \frac{2}{40} \times 100 = 5\%$$

$$(4) \text{ Dividend payment Ratio} = \frac{\text{DPS}}{\text{EPS}} \times 100 = \frac{2}{2.4} \times 100 = 83.33$$

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## 4.12 Preparation of Financial Statements from Ratios

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Calculated ratios and some absolute figures are given while remaining figures are absent for preparing Trading and Profit and Loss Account. In such cases unknown item are calculated and Trading and Profit and Loss Account may be prepared. Some of the examples are here:

**Illustration 6 :** Complete the Balance Sheet in the form given below, using following information:

**Solution:**

	Rs.
Sales	7200000
Total Assets Turnover	3
Fixed Assets Turnover	5
Current Assets Turnover	7.5
Debtors Turnover	15
Total Assets/Net Worth	2.5
Debt-Equity	1.00
Inventory Turnover	20

$$(1) \text{ Total Assets Turnover} = \frac{\text{Sales}}{\text{Total Assets}} = 3 = \frac{7200000}{\text{Total Assets}} = \text{Rs. 24 Lakh.}$$

$$(2) \text{ Fixed Assets Turnover} = \frac{\text{Sales}}{\text{Fixed Assets}} = 5 = \frac{7200000}{\text{Fixed Assets}} = \text{Rs. 14.40 Lakh.}$$

$$(3) \text{ Current Assets Turnover} = \frac{\text{Sales}}{\text{Current Assets}} = 7.5 = \frac{7200000}{\text{Current Assets}} = \text{Rs. 9.60 Lakh.}$$

$$(4) \text{ Inventories Turnover} = \frac{\text{Sales}}{\text{Inventories}} = 20 = \frac{7200000}{\text{Inventories}} = \text{Rs. 48 Lakh.}$$

$$(5) \text{ Debtors Turnover} = \frac{\text{Sales}}{\text{Debtors}} = 15 = \frac{7200000}{\text{Debtors}} = \text{Rs. 4.8 Lakh.}$$

$$(6) \text{ Total Assets / Net Worth} = \frac{\text{Total Assets}}{\text{Net Worth}} = 2.5 = \frac{2.5}{\text{Net Worth}} = \text{Rs. 9.6 Lakh.}$$

$$(7) \text{ Debt Equity} = \frac{\text{Debt}}{\text{Equity}} = 1 = \frac{\text{Debt}}{9.6} = \text{Rs. 9.6 Lakh.}$$

$$(8) \text{ Cash at Bank} = \text{Current Assets} - \text{Inventories} - \text{Debtors.}$$

$$9.60 - 3.60 = 4.8 = \text{Rs. 1.2 Lakh.}$$

$$(9) \text{ Current Liabilities} = \text{Total Assets} - \text{Net Worth} - \text{Debt}$$

$$\text{Rs. 24 Lakh} - 9.6 \text{ Lakh} = \text{Rs. 4.80 Lakh}$$

Liabilities	Rs.	Assets	Rs.
Net Worth		Fixed Assets	
Debt		Current Assets	
Current Liabilities		Inventories	
		Debtors	
		Cash and Bank	

<b>Liabilities</b>	<b>Rs.</b>	<b>Assets</b>	<b>Rs.</b>
Net Worth	9.6	Fixed Assets	14.90
Debt	9.6	Current Assets	
Current Liabilities	4.8	Inventories	3.60
		Debtors	4.80
		Cash and Bank	1.20
	24		24

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### 4.13 Summary

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- Ratio analysis is a systematic use of ratio to interpret the financial statement so that the strengths and weaknesses of a firm can judge.
- Ratio make the related infomation comparable. A single figure itself has no meaning.
- Liquidity ratio measure the ability of a firm to meat its short terms obligations and reflects its short term financial strength
- Longterm solvency is reflected in its ability to assure the long term creditors with regerd to periodic payment of interest and the repayment of loan on maturity. Such ratios reflects the safety margin to the long term creditors.
- Activity ratios enable the firm to know how effeciently these assets are employed by it. These ratios indicate the speed with which assets are being converted or turned over into sales.
- Profitability ratios enable the firm to know overall managerial efficiency of the firm. It is calculated on the basis of sales and on the basis of capital.
- Du-pont analysis is a barometer of the overall performance of the enterprise. It is a measure of the earning power of net assets of the business.
- Ratio analysis in view of its several limitations should be considered only as a tool for analysis rather than as an end in itself. The reliability is based on quality of data used. Though ratio analysis is an important tool for analysis and intpretation of financial statements.

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### 4.14 Self Assessment Questions

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1. What are the advantages of ratio analysis ?
2. What procedure would you adopt to study the liquidity of a business firm.
3. As an investor how would you analysis the financial position of a company.
4. Explain the limitations of financial ratios.
5. “A single ratio has no meaning but group of ratios or comparision over a period or comparison or between similar firm has an utility.” Explain this statement.
6. Calculate Current and Quick ratio from the following :



(Ans: C.R. 3.22 : 1 Quick Ratio = 3 : 1)

7. Calculate inventory turnover ratio, receivables collection period and average payment period from the following:

	Rs.		Rs.
Net Debtors	12000	Creditors	12000
Inventory	8000	G.P. on Sales	20%
Bills Payable	4000	No. of days in a year	360
Purchases	30000		
Sales	60000		

8. Calculate EPS, P/E ratio, DPS, Dividend payout ratio and Dividend yield ratio.

Profit after tax	Rs. 14.40 Lakh
Tax rate	50%
Proposed Dividend	20%
10% P.S. Capital	50000 shares of Rs. 10 each
E.S. Capital	17500 shares of Rs. 100 each
Reserve at the beginning of the year	: Rs. 14 Lakh
Current market price of Equity Shares	: Rs. 125

(Ans. EPS = Rs. 79.42, P/E Ratio = ( Rs. 15.74 DPS = Rs. 20)

9. From the following information, complete the balance sheet given below :

Total Debt to net worth	0.5 to 1
Turnover of total Assets (based on sales)	2
Gross Profit	30%
Average collection period (based on 360 days in a year)	40 Days
Inventory Turnover Ratio (based on cost of goods sold)	3 times
Acid-Test ratio	0.75 to 1

Liabilities	Rs.	Assets	Rs.
Capital		200000	Fixed Assets
Reserve and surplus	300000		Stock
Creditors			Debtors
			Cash

(Ans. Creditors Rs. 250000, Debtors Rs. 166667, Stock Rs. 350000, Cash Rs. 20833, Fixed Assets Rs. 212500)

10. A Ltd. has a current ratio 4.5 : 1 and liquid ratio 3 : 1 If its stock is Rs. 72000. Calculate its total current assets and current liabilities.

(Ans. Current Assets Rs. 216000, Current Liabilities Rs. 48000)

11. Rs. 200000 is net sales of a firm. If stock turnover ratio is 4 times. calculate the stock at the end of the year. If stock at the end is 1.5 times of that in the beginning  
(Ans : Stock at the end Rs. 60000)

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## Unit - 5 : Funds Flow Statement

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### Structure of Unit:

- 5.0 Objectives
- 5.1 Introduction
- 5.2 Meaning of Fund Funds Flow Statement
- 5.3 Objectives of Fund Flow Statement
- 5.4 Sources and Uses of Fund
- 5.5 Difference Between Fund Flow Statement and Other Financial Statements
- 5.6 Techniques of Preparing Fund Flow Statement
- 5.7 Importance of Fund Flow Statement
- 5.8 Limitation of Fund Flow Statement
- 5.9 Summary
- 5.10 Self Assessment Questions
- 5.11 Reference Books

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### 5.0 Objectives

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After completing this lesson, you will be able to:

- Understand the meaning of Fund Flow Statement
- Know the difference between fund flow statement and other financial statement
- Know the purpose of preparing fund flow statement
- Prepare fund flow statement
- Identified the sources and uses of fund
- Describe the importance and limitation of fund flow statement

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### 5.1 Introduction

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The main financial statements of business are Balance Sheet and Profit and Loss Account. These financial statements show the financial positions as on a particular date and the profit or loss of the particular period. But these statements do not provide the information about the availability of fund, the sources of fund and where the funds were utilized during the particular period. It is necessary to management to know about the availability of fund, sources of fund and uses of fund for the future planning and decision making. Therefore, a fund flow statement is prepared. Fund flow statement provides the information about availability, sources and uses of fund.

In India, the institute of Chartered Accounts has issued Accounting Standard-3 for preparing the statement on the basis of working capital called 'Statement of Change in Financial Position'. But in March, 1997, the institute of Chartered Accounts has issued Accounting Standard-3 (Revised), which is on cash basis and discard the working capital definition of fund. Now, in India it is not compulsory to prepare fund flow statement by Indian companies.

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### 5.2 Meaning of Fund Funds Flow Statement

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The fund flow statement reveals the information about the sources and uses of fund during the particular financial period. But here the question arises, what is the meaning of fund and flow of fund?

### 5.2.1 Meaning of Fund

The concept of fund is used in different sense. In border sense the term fund refers to economic value expressed in money measurement. While in a narrow sense fund means only cash and is equivalent. But the most acceptable means of fund is taken net working capital. Net working capital means difference between current assets and current liabilities. In other words, if current assets of company are more than current liability of business, it is called net working capital.

### 5.2.2 Meaning of Flow of Fund

Flow of fund means movement of fund. I take the example of air; we can feel its movement or flow of air. Same thing is happen with fund, due to the activity of business fund is transfer from one asset to another assets. If fixed assets are converted into current asset or fixed liability is converted into current liabilities, these are the flow of fund. But if current assets are changed with current assets or current assets are changed into current liabilities, then, there is no flow of fund because there is no change working capital. Suppose, we get tJhe money from debtor, this is not flow of fund because, working capital is not changed. Both items of current assets and when current assets change into current assets, there will not be change in working capital.

The list of current and non-current items is as follows:

<b>Non-Current Liabilities</b>	<b>Non-Current Assets</b>
Share Capital Reserve and surplus Debentures Long term loans Provisions for depreciation *Provision for Taxation *Proposed Dividend	Fixed Assets Intangible Assets Investments Fictitious Assets Profit & Loss Account
<b>Current Liabilities</b>	<b>Current Assets</b>
Creditors Bills Payables Bank Overdraft Outstanding Expenses Unearned Income	Stock Debtors Bills Receivables Cash & Bank Prepaid Expenses Accrued Income

\* Provision for Taxation and Proposed Dividend are also treated as current liabilities.

Flow of Fund = Fixed asset changes into current asset or current asset changes into fixed assets; or

Fixed liability changes into current liability or current liability changes into fixed liability.

### 5.2.3 Definition / Meaning of Fund Flow Statement

Fund flow statement is a statement which shows the inflow and out flow of funds between two dates of balance sheet. So, it is known as the statement of changes in financial position. We all know that balance sheet shows our financial position and inflow and outflow of fund affects it. So, in company level business, it is very necessary to prepare fund flow statement to know what the sources are and what are applications of fund between two dates of balance sheet? Generally, it is prepare after getting two year balance sheet.

**According to Accounting Standard Board of ICAI**, “A statement which summaries for the period covered by it, the changes in financial position including the sources from which the funds were obtained by the enterprised and the specific use to which the fund were applied.”

**According to Robert N. Anthony,** “The fund flow statement describes the sources from which additional funds were derived and the uses to which these funds were put.”

**According to Foulke R. A.,** “A statement of sources and application of funds is a technical device designed to analyse the changes in the financial conditions of business enterprise between two dates.”

Thus fund flow statement is a statement which shows where funds come from and in what way they were used and the causes of changes in working capital. In other words it is a statement which shows the changes, inflow or outflow or the movement of fund.

Fund flow statements are known with different names

- Statement of source and uses of funds
- summary of financial operations
- Movement of working capital statement
- Fund received and distributed statement
- Fund generated and expended statement.

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### **5.3 Objectives of Fund Flow Statement**

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Generally the fund flow statement provides the information about the different sources and application of fund during the particular period. The main objectives of fund flow statement are:

- a) The basic object of preparing the statement is to have a rich into the financial operations of the concern. It analyses how the funds were obtained and used in the past.
- b) One important object of the statement is that it evaluates the firm's financing capacity. The analysis of sources of funds reveals how the firm's financed its development projects in the past i.e., from internal sources or from external sources. It also reveals the rate of growth of the firm.
- c) To provide the information about the important items like fixed assets, long term loans, capital etc., relating to sources and applications of fund.
- d) To provide the information about the difference sources of fund, i.e., how much fund is being collected from the issuing shares or debenture, how much from long term or short term loans, how much from disposal of fixed assets and how much from operational activities?
- e) To help to understand the changes in assets and asset sources which are not readily evident in the income statement or financial statement.
- f) To inform as to how the loans to the business have been used.
- g) To point out the financial strengths and weaknesses of the business.

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### **5.4 Sources and Uses of Fund**

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#### **5.4.1 Sources of Fund**

Sources of fund are indicated by increase in liability and decrease in assets. The main sources of funds are:

1. Fund from operation activities
2. Issue of shares capital
3. Issue of debentures
4. Raising of long term loans
5. Receipts from partly paid shares , called up
6. Amount received from sales of non current or fixed assets
7. Non trading receipts such as dividend received

8. Sale of investments ( Long term )
9. Decrease in working capital (as per schedule of changes in working capital)

#### **5.4.2 Applications or Uses of Funds**

Applications of fund are indicated by decrease in liability and increase in assets. The main uses of funds are:

1. Funds lost in operations ( Balance negative in second step )
2. Redemption of preference share capital
3. Redemption of debentures
4. Repayment of long term loans
5. Purchase of long term loans
6. Purchase of long term investments
7. Non trading payments
8. Payment of tax
9. Payment of dividends
10. Increase in working capital (as per schedule of changes in working capital)

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### **5.5 Difference Between Fund Flow Statement and Other Financial Statements**

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#### **5.5.1 Difference Between Fund Flow Statement and Profit & Loss Account**

1. Fund Flow Statement shows the change in sources and applications of fund between two dates while Profit & loss account shows the results of operations of one organization during the related period.
2. In Fund Flow Statement funds raised are matched with funds applied disregarding the distinction of capital and revenue concept while in Profit & Loss Account expenses are matched against income and capital & revenue concept are predominant.
3. Profit & Loss Account facilitates preparation of the fund flow statement while fund flow statement does not help in preparation of the Profit & Loss Account.

#### **5.5.2 Difference Between Fund Flow Statement and Balance Sheet**

1. Fund Flow Statement shows the changes in working capital between two dates while Balance Sheet shows the financial position of a business on a particular date.
2. Fund Flow Statement incorporates items causing change in working capital while Balance Sheet incorporates the balance of real and personal accounts.
3. Fund Flow Statement is basically an analytical tool and therefore, it is very good for decision making while Balance Sheet is not an analytical tool and it is simply a summary of assets and liabilities on a particular date.
4. Fund Flow Statement is prepared for the use of internal management; hence its publication is obligatory while Balance Sheet is prepared for the use of external parties of the business, hence its publication is mandatory.

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### **5.6 Techniques of Preparing Fund Flow Statement**

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The fund flow statement is prepared on the basis of treating net working capital as fund. Such statement shows the causes of changes in working capital during two accounting periods. For preparing fund flow

statement on the basis of working capital mainly following two statements are prepared:

#### a) Statement or Schedule of Changes in Working Capital

For making of fund flow statement, it is necessary to make statement of changes of working capital. Because net increase in working capital is use of fund and net decrease in working capital is source of fund. Making of statement of changes working capital is very easy and simple. We take two balance sheets, one is current year balance sheet and other is previous year balance sheet. Then we separate current assets and current liabilities. While ascertaining the increasing or decreasing in individual item of current assets and current liabilities and its effect on working capital, the following rules should be taken into account:

- If current year current assets are more than previous year current assets, it means increase in working capital.
- If current year current assets are less than previous year current assets, it means decrease in working capital.
- If current year current liabilities are more than previous year current liabilities, it means decrease in working capital.
- If current year current liabilities are less than previous year current liabilities, it means increase in working capital.

Statement or schedule of changes in working capital is prepared as follows:

Statement or schedule of changes in working capital				
Particular	Previous Year	Current Year	Working Capital	
			Increase	Decrease
<b>A. CURRENT ASSETS:</b>				
Stock	---	---		
Debtors	---	---		
Bills Receivables	---	---		
Cash & Bank	---	---		
Prepaid Expenses	---	---		
Accrued Income	---	---		
Other Current Assets	---	---		
<b>TOTAL (A)</b>	<b>===</b>	<b>===</b>		
<b>B. CURRENT LIABILITIES:</b>				
Creditors	---	---		
Bills Payables	---	---		
Bank Overdraft	---	---		
Outstanding Expenses	---	---		
Unearned Income	---	---		
Provision for Tax*	---	---		
Proposed Dividend*	---	---		
Other Current Liabilities	---	---		
<b>TOTAL (B)</b>	<b>===</b>	<b>===</b>		
<b>Working Capital (A-B)</b>				
<b>Increase / Decrease in Working Capital</b>				

#### Explanation:

- Any addition information given about current assets of current account will not be considered, while preparing such statement.

- (b) \*If provision for taxation or proposed dividend are treated as current assets than they should be included in this statement.

**Illustration 1:** Following are summarized Balance Sheets of A Ltd. as on 31st December, 2010 and 2011. You are required to prepare a statement showing changes in working capital for the year ended 31st December, 2011:

Liabilities	2010	2011	Assets	2010	2011
Share Capital	4,00,000	5,00,000	Cash	60,000	94,000
Creditors	1,40,000	90,000	Debtors	2,40,000	2,30,000
Retained earnings	20,000	46,000	Stock	1,60,000	1,80,000
			Land	1,00,000	1,32,000
	<b>5,60,000</b>	<b>6,36,000</b>		<b>5,60,000</b>	<b>6,36,000</b>

**Solution:**

**Statement showing changes in working capital  
for the year ended 31<sup>st</sup> December, 2011**

Particulars	2010	2011	Increase in W.C.	Decrease in W.C.
<b>A. Current Assets</b>				
Cash	60,000	94,000	34,000	
Debtors	2,40,000	2,30,000		10,000
Stock	1,60,000	1,80,000	20,000	
	<b>4,60,000</b>	<b>5,04,000</b>		
<b>B. Current Liabilities</b>				
Creditors	<b>1,40,000</b>	<b>90,000</b>	50,000	
Working Capital (A-B)	3,20,000	4,14,000		
Net increase in Working Capital	94,000			94,000
	<b>4,14,000</b>	<b>4,14,000</b>	<b>1,04,000</b>	<b>1,04,000</b>

### 5.6.2 Fund Flow Statement

Fund flow statement focuses on the reasons of changes in working capital. When fund flow statement is preparing, only non-current assets and non-current liabilities are considered. Fund flow statement shows the various sources and uses of fund. Such statement is prepared in the following two formats:

- (i) Statement form
- (ii) Accounting form

**(i) Statement form:** Under this statement application of funds are deducted from the sources of funds. Difference between sources of fund and uses of fund shows increase or decrease in working capital. This statement is prepared as follows:



**Fund Flow Statement**  
**For the year ending 31<sup>st</sup> March, ....**

Particular	Amount
<b>A. Sources of Fund:</b>	
Fund from operation (if any)	
Issue of Shares	
Issue of Debenture	
Rising of long term loans	
Sale of fixed assets	
Sale of investment	
Non-trading receipts (divided or interest on investment etc.)	
<b>Total (A)</b>	
<b>B. Application / Uses of Fund:</b>	
Loss from operation (if any)	
Redemption of Preference Shares	
Redemption of Debenture	
Repayment of long term loans	
Purchase of fixed assets	
Purchase of investment	
Tax Paid	
Dividend Paid	
Non-trading payment (If any)	
<b>Total (B)</b>	
<b>Increase / (Decrease) of Working Capital</b>	

(ii) **Accounting form:**

**Fund Flow Statement**  
**For the year ending 31<sup>st</sup> March, ....**

Sources of Fund		Application / Uses of Fund	
Fund from operation (if any)		Loss from operation (if any)	
Issue of Shares		Redemption of Pref. Shares	
Issue of Debenture		Redemption of Debenture	
Rising of long term loans		Repayment of long term loans	
Sale of fixed assets		Purchase of fixed assets	
Sale of investment		Purchase of investment	
Non-trading receipts (divided or interest on investment etc.)		Tax Paid	
		Dividend Paid	
<b>Decrease in Working Capital</b>		Non-trading payment ( If any)	
<i>(Bal. figure if any)</i>		<b>Increase in Working Capital</b>	
		<i>(Bal. figure if any)</i>	

### 5.6.2.3 Calculation of Fund / Loss from Operation

The main source of fund is profitable operation. Fund from operation is not necessarily equal to net profit. Hence, the items of income statement which do not involve working capital should be adjusted to the net profit. The fund from operation is calculated as follows:

Net income (Loss) of the year	X X X X
<b>Add: Non-fund and Non-operating Expenses/Losses:</b>	
Depreciation on fixed assets	+ + + +
Goodwill (or patents) written off	+ + + +
Preliminary expenses written off	+ + + +
Discount on issue of shares/debentures written off	+ + + +
Loss on sale of fixed assets or long term investments	+ + + +
Transfer to reserves	+ + + +
Provision for taxation	+ + + +
Proposed dividend	+ + + +
<b>Less: Non-fund and Non-operating Incomes/Gains:</b>	
Profit on sale of fixed assets/long-term investments	- - - -
Interest or dividend received	- - - -
Retransfer of excess provision	- - - -
<b>Fund (Loss) from operation</b>	<b>= = =</b>

Fund (Loss) from operation can also be calculated by preparing adjusted Profit & Loss Account:

**Adjusted Profit & Loss A/c**

Particulars	Rs.	Particulars	Rs.
To <i>Non-fund and Non-operating items already debited to P&amp;L a/c:</i>		By Balance b/d (Opening Balance)	
-Depreciation on fixed assets		By <i>Non-fund and Non-operating Incomes/Gains:</i>	
-Goodwill (or patents) written off		-Profit on sale of fixed assets / long-term investments	
-Preliminary expenses written off		-Interest or dividend received	
-Discount on issue of shares/debentures written off		-Retransfer of excess provision	
-Loss on sale of fixed assets or long term investments		By Funds from operations (Balancing Figure if any)	
-Transfer to reserves			
-Provision for taxation			
-Proposed dividend			
To Balance c/d (Closing Balance)			
To Loss from operations (Balancing Figure if any)			
<b>Illustration 4.</b>			

Following are the Balance Sheets of X Ltd. as on 31<sup>st</sup> December, 2010 and 2011. You are required to prepare a Funds Statement for the year ended 31<sup>st</sup> December, 2001.

Liabilities	2010	2011	Assets	2010	2011
Share Capital	1,00,000	1,25,000	Goodwill	-	2,500
General Reserve	25,000	30,000	Buildings	1,00,000	95,000
P&L A/c	15,250	15,300	Plant	75,000	84,500
Bank Loan (Long-term)	35,000	67,600	Stock	50,000	37,000
Creditors	75,000	-	Debtors	40,000	32,100
Provision for Tax	15,000	17,500	Bank	-	4,000
<b>Additional Information:</b>	<b>2,65,250</b>	<b>2,55,400</b>	Cash	250	300
				<b>2,65,250</b>	<b>2,55,400</b>

- (i) Dividend of Rs. 11,500 was paid.
- (ii) Depreciation written off on plant Rs. 7,000 and on buildings Rs. 5,000.
- (iii) Provision for tax was made during the year Rs. 16,500.

**Solution:**

**Funds Flow Statement**  
*For the year ending 31<sup>st</sup> December, 2011*

Sources	Rs.	Application	Rs.
Funds from operations	45,050	Purchase of Plant	16,500
Issue of Shares	25,000	Income tax paid	14,000
Hank Loan	32,600	Dividend paid	11,500
		Goodwill paid	2,500
		<i>Net increase in Working Capital (Bal. figure)</i>	58,150
	<b>1,02,650</b>		<b>1,02,650</b>

**Working Notes:**

**Calculation of Funds from Operations:**

Particular	Detail	Amount
Balance of P&L a/c (2010)		15,300
Add: Non-fund and non-operating items which have already debited to P&L a/c:		
-General reserve	5,000	
-Provision for tax	16,500	
-Dividends paid	11,500	
-Depreciation:		
On Buildings	5,000	
On Plant	7,000	45,000
		60,300
Less: Balance of P&L a/c (2011)		15,250
<b>Funds from Operations</b>		<b>45,050</b>

**Share Capital A/c**

Particulars	Rs.	Particulars	Rs.
To Balance c/d	1,25,000	By Balance b/d	1,00,000
		By Bank a/c	25,000
	<b>1,25,000</b>		<b>1,25,000</b>

**General Reserve A/c**

Particulars	Rs.	Particulars	Rs.
To Balance c/d	30,000	By Balance b/d	25,000
		By P&L a/c	5,000
	<b>30,000</b>		<b>30,000</b>

**Provision for Taxation A/c**

<i>Particulars</i>	<i>Rs.</i>	<i>Particulars</i>	<i>Rs.</i>
To Bank a/c	14,000	By Balance b/d	15,000
To Balance c/d	17,500	By P&L a/c	16,500
	<b>31,500</b>		<b>31,500</b>

**Bank Loan A/c**

<i>Particulars</i>	<i>Rs.</i>	<i>Particulars</i>	<i>Rs.</i>
To Balance c/d	67,600	By Balance b/d	35,000
		By Bank a/c	2,600
	<b>67,600</b>		<b>67,600</b>

**Land and Building A/c**

<i>Particulars</i>	<i>Rs.</i>	<i>Particulars</i>	<i>Rs.</i>
To Balance c/d	1,00,000	By Depreciation a/c	5,000
		By Balance c/d	95,000
	<b>1,00,000</b>		<b>1,00,000</b>

**Plant A/c**

<i>Particulars</i>	<i>Rs.</i>	<i>Particulars</i>	<i>Rs.</i>
To Balance c/d	75,000	By Depreciation a/c	7,000
To Bank	16,500	By Balance c/d	84,500
	<b>91,500</b>		<b>91,500</b>

**Goodwill A/c**

<i>Particulars</i>	<i>Rs.</i>	<i>Particulars</i>	<i>Rs.</i>
To Bank	2,500	By Balance c/d	2,500
	<b>2,500</b>		<b>2,500</b>

**Illustration 3:** From the following Balance Sheets of ABC Ltd. on 31<sup>st</sup> Dec. 2010 and 2011, you are required to prepare:

- (i) A Schedule of changes in working capital,
- (ii) A Funds Flow Statement.

<b>Liabilities</b>	<b>2000</b>	<b>2001</b>	<b>Assets</b>	<b>2000</b>	<b>2001</b>
Share Capital	2,00,000	2,00,000	Goodwill	24,000	24,000
General Reserve	28,000	36,000	Buildings	80,000	72,000
P&L A/c	32,000	26,000	Plant	74,000	72,000
Creditors	16,000	10,800	Investments	20,000	22,000
Bills payable	2,400	1,600	Stock	60,000	46,800
Provision for Tax	32,000	36,000	Bills Receivable	4,000	6,400
Prov. for doubt. debts	800	1,200	Cash & Bank	13,200	30,400
			Debtors	36,000	38,000
	<b>3,11,200</b>	<b>3,11,600</b>		<b>3,11,200</b>	<b>3,11,600</b>

**Additional Information:**

- (i) Depreciation provided on plant was Rs.8,000 and on Buildings Rs.8,000
- (ii) Provision for taxation made during the year Rs.38,000
- (iii) Interim dividend paid during the year Rs. 16,000.

**Solution:****Statement showing Changes in Working Capital**

Particulars	2000	2001	Increase in W.C.	Decrease in W.C.
<b>Current Assets</b>				
Cash & Bank Balances	13,200	30,400	17,200	
Debtors	36,000	38,000	2,000	
Bills Receivable	4,000	6,400	2,400	
Stock	60,000	46,800		13,200
	<b>1,13,200</b>	<b>1,21,600</b>		
<b>Current Liabilities</b>				
Provision for doubtful debts	800	1,200		400
Bills Payable	2,400	1,600	800	
Creditors	16,000	10,800	5,200	
	<b>19,200</b>	<b>13,600</b>		
Working Capital (CA - CL)	94,000	1,08,000		
Increase in Working Capital	14,000			14,000
	<b>1,08,000</b>	<b>1,08,000</b>	<b>27,600</b>	<b>27,600</b>

**Funds Flow Statement**

Sources	Rs.	Application	Rs.
Funds from operations	72,000	Purchase of Plant	6,000
		Tax paid	34,000
		Purchase of investments	2,000
		Interim dividend paid	16,000
		<b>Increase in Working Capital</b>	<b>14,000</b>
	<b>72,000</b>		<b>72,000</b>

**Working Notes:****Provision for Taxation A/c**

Particulars	Rs.	Particulars	Rs.
To Bank a/c (Bal. Fig.)	34,000	By Balance b/d	32,000
To Balance c/d	36,000	By P&L a/c	38,000
	<b>70,000</b>		<b>70,000</b>

**Plant A/c**

Particulars	Rs.	Particulars	Rs.
To Balance b/d	74,000	By Depreciation	8,000
To Bank a/c (Purchase)	6,000	By Balance c/d	72,000
(Bal. Fig.)			
	<b>80,000</b>		<b>80,000</b>

**Buildings A/c**

Particulars	Rs.	Particulars	Rs.
To Balance b/d	80,000	By Depreciation a/c	8,000
		By Balance c/d	72,000
	<b>80,000</b>		<b>80,000</b>

**Investments A/c**

Particulars	Rs.	Particulars	Rs.
To Balance b/d	20,000	By Balance c/d	22,000
To Bank a/c (Purchase) (Bal. Fig.)	2,000		
	<b>22,000</b>		<b>22,000</b>

**Adjusted Profit & Loss A/c**

Particulars	Rs.	Particulars	Rs.
To Non-fund and Non-operating items already debited to P&L a/c:		By Balance b/d	32,000
-Transfer to General Reserve	8,000	By Funds from operations (Balancing Figure)	72,000
-Provision for Tax	38,000		
-Depreciation on Plant	8,000		
-Depreciation on Buildings	8,000		
-Interim dividend	16,000		
To Balance c/d	26,000		
	<b>1,04,000</b>		<b>1,04,000</b>

**General Reserve A/c**

Particulars	Rs.	Particulars	Rs.
To Balance c/d	36,000	By Balance b/d	28,000
		By P&L a/c (Bal. Fig.)	8,000
	<b>36,000</b>		<b>36,000</b>

**Illustration 4:** From the following Balance Sheet of X Ltd., as on 31<sup>st</sup> December, 2000 and 31<sup>st</sup> December 2001, you are required to prepare a funds | flow statement.

(Rs.)

Liabilities	2010	2011	Assets	2010	2011
Share Capital	4,00,000	5,00,000	Land and Buildings	4,00,000	4,80,000
General Reserve	80,000	1,40,000	Machinery	3,60,000	2,60,000
P&L A/c	64,000	78,000	Stock	2,00,000	2,52,000
Bank Loan	3,20,000	80,000	Debtors	1,60,000	1,28,000
Creditors	3,00,000	2,60,000	Cash at Bank	1,04,000	18,000
Provision for Taxation	60,000	80,000			
	<b>12,24,000</b>	<b>11,38,000</b>		<b>12,24,000</b>	<b>11,38,000</b>

Additional Information :

- During the year ended 31<sup>st</sup> December 2011 dividend of Rs.84,000 was paid.
- Assets of another company were purchased for a consideration of Rs. 1,00,000 payable by the issue of shares. The assets included Land and Buildings of Rs.50,000 and stock of Rs.50,000.
- Depreciation written off on machinery is Rs.24,000 and on Land and Buildings is Rs.45,000.

(iv) Income-tax paid during the year was Rs. 70,000.

(v) Additions to Buildings were for Rs. 75,000.

**Solution:**

**Statement showing Changes in Working Capital**

Particulars	2010	2011	Increase in W.C.	Decrease in W.C.
Current Assets				
Cash at Bank	1,04,000	18,000		86,000
Debtors	1,60,000	1,28,000		32,000
Stock	2,00,000	2,52,000	52,000	
	4,64,000	3,98,000		
Current Liabilities				
Creditors	3,00,000	2,60,000	40,000	
Working Capital	1,64,000	1,38,000		
Decrease in working capital		26,000	26,000	
	1,64,000	1,64,000	1,18,000	1,18,000

**Funds Flow Statement for the year ending 31<sup>st</sup> Dec. 2011**

Sources	Rs.	Application	Rs.
Issue of Shares	50,000	Purchase Land & Buildings	75,000
Sale of Machinery	76,000	Bank Loan paid	2,40,000
Funds from operations	3,17,000	Dividend paid	84,000
Decrease in Working Capital	26,000	Income-tax paid	70,000
	4,69,000		4,69,000

**Working Notes:**

**Adjusted Profit & Loss A/c**

Particulars	Rs.	Particulars	Rs.
To Machinery	24,000	By Opening Balance	64,000
To Land & Buildings	45,000	By Funds from Operations	3,17,000
To Provision for tax	90,000		
To General Reserve	60,000		
To Dividends paid	84,000		
To Closing balance	78,000		
	3,81,000		3,81,000

**Provision for Taxation A/c**

Particulars	Rs.	Particulars	Rs.
To Cash	70,000	By Balance b/d	60,000
To Balance b/d	80,000	By Adj. P&L a/c	90,000
	1,50,000		1,50,000

**Machinery A/c**

Particulars	Rs.	Particulars	Rs.
To Balance b/d	3,60,000	By Adj. P&L a/c	24,000
		By Sale of Machinery	76,000
		By Balance c/d	2,60,000
	3,60,000		3,60,000

#### **Land and Buildings A/c**

<b>Particulars</b>	<b>Rs.</b>	<b>Particulars</b>	<b>Rs.</b>
To Balance b/d	4,00,000	By Adj. P&L a/c	45,000
To Share Capital	50,000	By Balance c/d	4,80,000
To Cash	75,000		
	<b>5,25,000</b>		<b>5,25,000</b>

#### **General Reserve A/c**

<b>Particulars</b>	<b>Rs.</b>	<b>Particulars</b>	<b>Rs.</b>
To Balance c/d	1,40,000	By Balance b/d	80,000
		By Adj. P&L a/c	60,000
	<b>1,40,000</b>		<b>1,40,000</b>

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### **5.7 Importance of Fund Flow Statement**

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The fund flow statement provides the information regarding changes in working capital of an organization for a particular period. Therefore, we say that the importances of fund flow are as follows:

- a) Funds flow statement reveals the net result of operations done by the company during the year.
- b) In addition to the balance sheet, it serves as an additional reference for many interested parties like creditors, suppliers, government etc. to look into financial position of the company.
- c) It shows how the funds were raised from various sources and also how those funds were put to use in the business, therefore it is a great tool for management when it wants to know about where and from funds were raised and also how those funds got utilized into the business.
- d) It reveals the causes for the changes in liabilities and assets between the two balance sheet dates therefore providing a detailed analysis of the balance sheet of the company.
- e) Funds flow statement helps the management in deciding its future course of plans and also it acts as a control tool for the management.
- f) Helps in the evaluation of alternative finance and investments plan;
- g) Investors are able to measure as to how the company has utilized the funds supplied by them and its financial strengths with the aid of funds statements.
- h) Helps the management of companies to forecast in advance the requirements of additional capital and plan its capital issue accordingly.
- i) Help in the planning process of a company
- j) Helps in analysis of financial operations.
- k) Helps in formulation of realistic dividend policy.
- l) Helps in proper allocation of resources.
- m) Helps in appraising the use of working capital.
- n) It helps knowing the overall creditworthiness of a firm.



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## 5.8 Limitation of Fund Flow Statement

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The funds flow statement has a number of uses, however it has certain limitations also which are as follows:

- a) It should be remembered that a funds flow statement is not a substitute of an income statement or a balance sheet. It provides only some additional information as regards changes in working capital.
- b) It can not reveal continuous changes.
- c) It is not an original statement but simply, arrangement of data given in the financial statements.
- d) It is essential historic in nature and projected funds flow statement cannot be prepared
- e) Changes in cash are more important and relevant for financial management than the working capital.
- f) It does not include non-fund transitions.
- g) It does not disclose changes in management policy regarding investment in current assets and shorter financing.

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## 5.9 Summary

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In this unit we have tried to develop the idea of flow of funds within the organization. Starting with the funds requirement for an organisation, we have tried to trace the sources and uses of funds. We tried to study the important sources of funds, namely, the operations, sale of fixed assets, long-term borrowings and issue of new capital. Similarly, important uses of funds were traced to acquisition of fixed assets, payment of dividends, repayment of loans and capital. The whole exercise reveals the areas in which funds are deployed and the sources from which they are obtained. Finally, we have learned how to go about doing the funds flow analysis with the help of published accounting information.

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## 5.10 Self Assessment Questions

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- 1. What is a Fund Flow Statement? Explain the importance and limitations of fund flow statement.
- 2. Explain the term 'Fund' and 'Flow' in respect of fund flow statement. Describe the various sources and uses of funds.
- 3. How fund flow statement is prepared? Explain the various methods of preparing it.
- 4. Explain the meaning of fund flow statement. What are its main objectives?
- 5. Explain the difference between:
  - a) Fund flow statement and Profit & Loss Account
  - b) Fund flow statement and Balance Sheet
  - c) Fund flow statement and Schedule change in working capital
- 6. From the following Balance Sheets of ABC Ltd. as on 31st December, 2010 and 2011. You are required to prepare a statement showing changes in working capital:

<b>Liabilities</b>	<b>2010</b>	<b>2011</b>	<b>Assets</b>	<b>2010</b>	<b>2011</b>
Share Capital	5,00,000	6,00,000	Fixed Assets	7,50,000	10,00,000
Reserve & Surplus	2,00,000	4,00,000	Investment	1,00,000	3,00,000
Loans	3,00,000	5,00,000	Stock	2,00,000	2,20,000
Creditors	1,50,000	2,00,000	Debtors	1,00,000	80,000
Bills Payable	1,00,000	70,000	Cash	30,000	70,000
			Bills Receivable	70,000	1,00,000
	<b>12,50,000</b>	<b>17,70,000</b>		<b>12,50,000</b>	<b>17,70,000</b>

7. From the following Balance Sheet, you are required to prepare a schedule of changes in working capital and a Fund Flow Statement:

**Balance Sheet As on 31<sup>st</sup> March**

<b>Liabilities</b>	<b>2011</b>	<b>2012</b>	<b>Assets</b>	<b>2011</b>	<b>2012</b>
Share Capital	10,000	15,000	Machinery	7,000	15,000
P & L a/c	4,000	6,000	Furniture	3,000	5,000
Provision for Tax	2,000	3,000	Debtors	3,000	3,500
Proposed Dividend	1,000	2,500	Stock	8,000	6,000
Creditors	4,000	6,000	cash	2,000	5,000
Outstanding Exp.	2,000	2,000			
	<b>23,000</b>	<b>34,500</b>		<b>23,000</b>	<b>34,500</b>

8. From the following Balance Sheet and other information of M/s. Ridhi & Sidhi Limited as at March 2011 and 2012, you are required to prepare:
- A statement showing changes in working capital
  - A Fund Flow Statement

**Balance Sheet of M/s. Ridhi & Sidhi Limited  
As on 31<sup>st</sup> March**

<b>Liabilities</b>	<b>2011</b>	<b>2012</b>	<b>Assets</b>	<b>2011</b>	<b>2012</b>
Share Capital	2,00,000	2,40,000	Machineries	2,00,000	2,50,000
Retained Earnings	1,25,000	1,60,000	Less: Accumulated Depreciation	(60,000)	(80,000)
Debenture	1,50,000	90,000		1,40,000	1,70,000
Trade Creditors	30,000	40,000	Land	1,00,000	80,000
			Trade Debtors	75,000	1,00,000
			Inventory	1,40,000	1,20,000
			Cash Balances	50,000	60,000
	<b>5,05,000</b>	<b>5,30,000</b>		<b>5,05,000</b>	<b>5,30,000</b>

Additional Information:

- Cash dividends of Rs.25,000 has been paid during the year.
  - An old machine costing Rs. 10,000 has been sold for Rs. 7,000. The written down value of the machine was Rs. 5,500
9. From the following information, prepare a fund flow statement and a schedule of changes in working capital:

### Balance Sheet as on 31<sup>st</sup> December

Liabilities	2010	2011	Assets	2010	2011
Equity Share Capital	10,00,000	11,00,000	Goodwill	50,000	40,000
General Reserve	2,00,000	2,00,000	Land & Building	4,20,000	6,60,000
Profit & Loss a/c	1,10,000	1,90,000	Plant & Machinery	6,00,000	8,00,000
Debenture	5,00,000	3,00,000	Closing Stock	2,50,000	2,10,000
Creditors	50,000	40,000	Debtors	3,00,000	2,40,000
Bills Payable	30,000	24,000	Cash	3,00,000	24,000
Provision for doubtful debts	20,000	30,000	Preliminary Expenses	30,000	20,000
Provision for tax	40,000	1,10,000			
	<b>19,50,000</b>	<b>19,94,000</b>		<b>19,50,000</b>	<b>19,94,000</b>

#### Additional information:

- a) During the year 2011 a part of machinery costing Rs. 7,500 (accumulated depreciation thereon being Rs. 2,500) was sold for Rs. 3,000.
- b) Dividend of Rs. 1,00,000 was paid during the year ended 31<sup>st</sup> December, 2011.
- c) Income tax of Rs. 50,000 was paid during the year 2008.
- d) Depreciation for the year 2011 was provided as follows:  
Land & Building Rs. 10,000 and Plant & Machinery Rs. 50,000

10. From the following Balance Sheet and additional information, prepare fund flow statement:

Liabilities	2010	2011	Assets	2010	2011
Share capital	60,000	67,500	Fixed assets	30,000	42,000
Creditors	15,000	22,500	Stock	15,000	10,500
P & L a/c	22,500	34,500	Debtors	45,000	67,500
Outstanding exp.	4,500	7,500	Cash	7,500	9,000
Bills Payable	3,000	1,500	Prepaid expenses	4,500	3,000
			Deferred expenses	3,000	1,500
	<b>1,05,000</b>	<b>1,33,500</b>		<b>1,05,000</b>	<b>1,33,500</b>

An old machine has been sold for Rs. 6,000. The written down value of the machine was Rs. 4,500. Dividend Rs. 6,000 has been paid during the year and Rs. 3,000 depreciation has been charged.

### 5.11 Reference Books

- Khan, Jain (2009), Management Accounting, Tata McGraw Hill, 2009, New Delhi
- Gupta K. Shasho, Sharma R.K., (2009), Kalyaani Publication, 2009, Hyderabad
- Rustagi R.P., (2011), Taxmann Publication (P) Ltd., 2011, New Delhi
- Agarwal, Shah, Mendhirtta, Sharma and Tailor (2009), Cost and Management Accounting, Malik & Company, 2009, Jaipur
- Agarwal M. R. (2011), Management Accounting, Garima Publication, 2011, Jaipur
- Agarwal & Agarwal (2010), Management Accounting, RBD Publication, 2010, Jaipur

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## Unit - 6 : Cash Flow Statement

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### Structure of Unit:

- 6.0 Objectives
- 6.1 Introduction
- 6.2 Meaning of Cash Flow Statement
- 6.3 Objectives of Cash Flow Statement
- 6.4 Importance of Cash Flow Statement
- 6.5 Limitation of Cash Flow Statement
- 6.6 Difference Between Funds Flow Statement Vs. Cash Flow Statement
- 6.7 Classification of Cash Flow
- 6.8 Techniques of Preparing Cash Flow Statement
- 6.9 Summary
- 6.10 Self Assessment Questions
- 6.11 Reference Books

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### 6.0 Objectives

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After completing this lesson, you will able to:

- Recall the meaning of Cash Flow Statement
- Know the purpose of preparing Cash flow statement
- Prepare Cash flow statement
- Identified the various activities which generate cash
- Describe the importance and limitation of Cash flow statement
- Know the difference between fund flow statement and other financial statement

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### 6.1 Introduction

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Company final accounts include Profit and loss account and balance sheet. Profit and loss account present net profit or loss of specified period and Balance sheet show financial possession of the company. But they are not present cash inflow or outflow, which effect by the decision based on final account. Cash flow statement provides information about the cash receipt and payment of the company for specified period.

Cash flow statement is required by Accounting Standard 3 (revised) issued by the Institute of Chartered Accounts of India in March 1997. Accounting Standard 3 is mandatory in nature in respect of accounting periods commencing on or after 1.04.2001 for an enterprises whose equity or debt securities are listed on a recognised stock exchange in India and enterprises that are in the process of issuing equity or debt securities that will be listed on a recognised stock exchange in India as evidence by the board of director's resolution in this regard. And all other commercial, industrial and business reporting enterprises, whose turnover for the accounting period exceed Rs. 50 corer.

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### 6.2 Meaning of Cash Flow Statement

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Cash flow statement is a statement of inflow or outflow of cash or cash equivalent of the company in the specified period. In other words, cash flow statement present the reason of changes in cash passion in two Balance Sheet date.

Cash flow includes inflow or outflow of cash or cash equivalent. It means, the movement of cash into the company and out of the company. Here 'cash' includes cash in hand and cash at bank and 'cash equivalent' includes short term investment that are quickly converted into cash. Information about inflow of cash or sources of cash and outflow of cash or application of cash are required for cash flow statement. According to Accounting Standard 3, cash flow statement is classified into the following three categories of cash inflow or outflow:

- Cash flow from operating activities.
- Cash flow from investing activities.
- Cash flow from financial activities.

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### **6.3 Objectives of Cash Flow Statement**

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Information about the cash flows of an enterprise is useful in providing users of financial statements with a basis to assess the ability of the enterprise to generate cash and cash equivalents and the needs of the enterprise to utilise those cash flows. The economic decisions that are taken by users require an evaluation of the ability of an enterprise to generate cash and cash equivalents and the timing and certainty of their generation. The Statement deals with the provision of information about the historical changes in cash and cash equivalents of an enterprise by means of a cash flow statement which classifies cash flows during the period from operating, Investing and financing activities. The cash flow statement reflects a firm's liquidity or solvency. The main objects of cash flow statement are:

- a) To provide information on a firm's liquidity and solvency to change cash flow in future circumstances
- b) To provide additional information for evaluating changes in assets, liabilities and equity
- c) To improve the comparability of different firms' operating performance by eliminating the effects of different accounting methods
- d) To indicate the amount, timing and probability of future cash flows

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### **6.4 Importance of Cash Flow Statement**

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The cash flow statement provides information regarding inflows and outflows of cash of an organization for a particular period. Therefore, we say that the following are the importance of cash flow statement:

- a) Cash flow statement helps to identify the sources from where cash inflows have arisen and where in the cash was utilized within a particular period.
- b) Cash flow statement is significant to management for proper cash planning and maintaining a proper matching between cash inflows and outflows
- c) Cash flow statement shows efficiency of a firm in generating cash inflows from its regular operations
- d) Cash flow statement reports the amount of cash used during the period in various long-term investing activities, such as purchase of fixed assets
- e) Cash flow statement reports the amount of cash received during the period through various financing activities, such as issue of shares, debentures and raising long-term loan
- f) Cash flow statement helps for appraisal of various capital investment programmes to determine their profitability and viability
- g) Cash flow statement helps the investors to judge whether the company is financially sound or not.

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## 6.5 Limitation of Cash Flow Statement

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Despite a number of uses, Cash Flow Statement suffers from the following limitations:

- a) Ignore Accounting Concept of Accrual Basis: As CFS is based on cash basis of accounting, it ignores the basic accounting concept of accrual basis
- b) Ignores Non-cash Transactions: CFS ignores the non-cash transactions. In other words, it does not consider those transactions which do not affect the cash e.g., issue of shares against the purchase of fixed assets, conversion of debentures into equity shares, etc
- c) Not Suitable for Judging the profitability: CFS is not suitable for judging the profitability of a firm as non-cash charges are ignored while calculating cash flows from operating activities
- d) Based on Secondary Data: CFS is based on secondary data. It merely rearranges the primary data already appearing in other statements i.e., Balance Sheet and Income Statement
- e) Short-term analysis: CFS is a technique of short-term financial analysis. It does not help much in knowing the long-term financial position
- f) Not based on full information: CFS does not present true picture of the liquidity of a firm. Liquidity does not depend upon 'cash' alone. Liquidity, also affected by the assets which can be easily converted into cash. Exclusion of these assets obstruct the true reporting of the ability of the firm to meet its liabilities
- g) By itself, it cannot provide a complete analysis of the financial position of the firm.
- h) It can be interpreted only when it is in confirmation with other financial statements and other analytical tools like ratio analysis.

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## 6.6 Difference Between Funds Flow Statement Vs. Cash Flow Statement

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Funds flow and cash flow statements both are used in analysis of business transactions particular period. But there are some differences between these two statements which are given below:

- a) Funds flow statements is based on the accrual accounting system but in case of cash flow statements only those transactions are taken into consideration which affecting the cash or cash equivalents only.
- b) Funds flow statement analysis the sources and application of funds of long-term nature and the net increase or decrease in long-term funds will be reflected on the working capital of the firm. The cash flow statement will only consider the increase or decrease in current assets and current' liabilities in calculating the cash flow of funds from operations.
- c) Funds Flow analysis is more useful for long range financial planning while cash flow analysis is more useful for identifying and correcting die current liquidity problems of the firm.
- d) Funds flow statement analysis is a broader concept, it takes into account both long-term and short-term funds into account in analysis. But cash flow statement deals with the one of the current assets on balance sheet assets side only.
- e) Funds flow statement tallies the funds generated from various sources with various uses to which they are put. Cash flow statements start with the opening balance of cash and reach to the closing balance of cash by proceeding through sources and uses.

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## 6.7 Classification of Cash Flow

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Cash flow includes inflow or outflow of cash or cash equivalent. It means the movement of cash into the company and out of the company. Cash flows can be classified into the following three categories:

• **Cash Flow from Operating Activities:** Operation activities include those activities from which business income are generated and these are not investing or financing activities. Operation activities are result of the net profit or loss of the organisation. For example cash receipts from sales of goods and rendering of services, royalties, fees, commission and other receiving. And cash payment to supplier of goods and provider of services, to employees and to other in behalf of employees and for revenue expenses.

Operating activities include the production, sales and delivery of the company's product as well as collecting payment from its customers. This could include purchasing raw materials, building inventory, advertising and shipping the product etc.

Cash flows from operating activities generally result from the transactions and other events that enter into the determination of net profit or loss. Examples of cash flows from operating activities are:

- a) Cash receipts from the sale of goods and the rendering of services;
- b) Cash receipts from royalties, fees, commissions and other revenue;
- c) Cash payments to suppliers for goods and services;
- d) Cash payments to and on behalf of employees;
- e) Cash receipts and cash payments of an insurance enterprise for premiums and claims, annuities and other policy benefits;
- f) Cash payments or refunds of income taxes unless they can be specifically identified with financing and investing activities; and
- g) Cash receipts and payments relating to futures contracts, forward contracts, option contracts and swap contracts when the contracts are held for dealing or trading purposes.

• **Cash Flow from Investing Activities:** The separate disclosure of cash flows arising from investing activities is important because the cash flows represent the extent to which expenditures have been made for resources intended to generate future income and cash flows. Examples of cash flows arising from investing activities are:

- a) Cash payments to acquire fixed assets (including intangibles);
- b) Cash receipts from disposal of fixed assets (including intangibles);
- c) Cash payments to acquire investments in shares, warrants or debt instruments of other enterprises;
- d) Cash payments to disposal of investments in shares, warrants or debt instruments of other enterprises;
- e) Cash advances and loans made to third parties;
- f) Cash receipts from the repayment of advances and loans made to third parties;

• **Cash Flow from Financial Activities:** The separate disclosure of cash flows arising from financing activities is important because it is useful in predicting claims on future cash flows by providers of funds (both capital and borrowings) to the enterprise. Examples of cash flows arising from financing activities are:

- a) Cash receipts from issuing shares;
- b) Cash proceeds from issuing debentures, loans, notes, bonds, and other short or long-term borrowings; and
- c) Cash payment on redemption of preference shares or debentures;
- d) Cash repayments of amounts borrowed.

## 6.8 Techniques of Preparing Cash Flow Statement

The financial statements of the business are prepared on accrual basis of accounting, therefore in order to calculate the cash flow, some adjustment are made for non cash expenses and incomes. There are two methods for determine the cash flow: (i) direct method and (ii) indirect method.

The direct method of preparing a cash flow statement results in a more easily understood report. The indirect method is almost universally used, because AS requires a supplementary report similar to the indirect method if a company chooses to use the direct method.

### 6.8.1 Direct Method

The direct method for creating a cash flow statement reports major classes of gross cash receipts and payments. Under Accounting Standard dividends received may be reported under operating activities or under investing activities. If taxes paid are directly linked to operating activities, they are reported under operating activities; if the taxes are directly linked to investing activities or financing activities, they are reported under investing or financing activities.

#### Cash Flow Statement (Direct Method)

Particular	Detail (Rs.)	Amount (Rs.)
<b>Cash flows from operating activities</b>		
Cash receipts from customers	++++	
Other operating receipts	++++	
Cash paid to suppliers	----	
Cash paid for operating expenses	----	
Income taxes paid	----	
<b>Net cash flows from operating activities</b>		=====
<b>Cash flows from investing activities</b>		
Purchases of fixed assets	----	
Purchases of Investments	----	
Proceeds from the sale of Fixed Assets	++++	
Proceeds from the sale of Investments	++++	
Cash receipts as Dividends / Interest on investments	++++	
<b>Net cash flows from investing activities</b>		=====
<b>Cash flows from financing activities</b>		
Receipts from issue of shares	++++	
Receipts from issue of Debenture	++++	
Payment on redemption of preference shares	----	
Payment on redemption of debenture	----	
Payment of dividend or interest	----	
<b>Net cash flows used in financing activities</b>		=====
Net increase in cash and cash equivalents		=====
Cash and cash equivalents, beginning of year		++++
Cash and cash equivalents, end of year		=====



**Illustration 1:** From the following Balance Sheet and income statement of ABC Ltd. as at March 2011 and 2012, you are required to prepare cash flow statement using direct method:

**Balance Sheet**

Liabilities	2011	2012	Assets	2011	2012
Share Capital	5,76,000	7,10,400	Land & Building	76,800	1,53,600
Profit & Loss a/c	2,42,880	2,62,000	Machinery	5,76,000	9,21,600
Creditors	3,84,000	3,74,400	Cash	96,000	1,15,200
Outstanding Expenses	38,400	76,800	Debtors	2,68,800	2,97,600
Provision for Tax	19,200	21,200	Stocks	4,22,400	1,53,600
Acc. Dep. on Building & Machinery	1,92,000	2,11,200	Advance	12,480	14,400
	14,52,480	16,56,000		14,52,480	16,56,000

**Income Statement**

*For the year ended 31<sup>st</sup> March, 2012*

Particular	Detail	Amount
Net Sales		40,32,000
Less: Cost of goods sold	31,68,000	
Depreciation	96,000	
Salaries and wages	3,84,000	
Operating expenses	1,28,000	
Provision for tax	1,40,800	39,16,800
Net operating profit		1,15,200
Add: Non operating incomes:		
Profit on sale of machinery		19,200
Profit for the year		1,34,400
Profit & Loss a/c as on 31 <sup>st</sup> March, 2011		2,42,880
		3,77,280
Dividend declared and paid		1,15,280
Profit & Loss a/c as on 31 <sup>st</sup> March, 2012		2,62,000

Additional Information: Cost of machinery sold Rs. 1,15,200

**Solution:**

**Cash Flow Statement**  
**For the year ended 31<sup>st</sup> March, 2012**

Particular	Detail (Rs.)	Amount (Rs.)
<b>A. Cash Flow from Operation Activities:</b>		
Cash receipt from customers	40,03,200	
Cash paid to suppliers	(29,08,800)	
Cash paid for operating expenses	(4,75,520)	
	6,18,880	
Less: Tax Paid	(1,38,800)	<b>4,80,080</b>
<b>B. Cash Flow from Investment Activities:</b>		
Purchase of Land	(76,800)	
Purchase of Machinery	(4,60,800)	
Sale of Machinery	57,600	<b>(4,80,000)</b>
<b>C. Cash Flow from Financial Activities:</b>		
Issue of share capital	1,34,400	
Dividend paid	(1,15,280)	<b>19,120</b>
Net increase in cash		<b>19,200</b>
Add: Cash balance at the beginning		<b>96,000</b>
<b>Cash balance at the beginning</b>		<b>1,15,200</b>

**Working Note:**

**Cash receipt from customers**

Particular	Amount
Sales	40,32,000
Add: Debtors at the beginning	2,68,800
Less: Debtors at the end	(2,97,600)
<b>Cash receipt from customers</b>	<b>40,03,200</b>

**Cash paid to suppliers**

Particular	Amount
Cost of goods sold	31,68,000
Add: Creditors at the beginning	3,84,000
Stocks at the end	1,53,600
Less: Creditors at the end	(3,74,400)
Stocks at the beginning	(4,22,400)
<b>Cash paid to suppliers</b>	<b>29,08,800</b>

**Cash paid for operating expenses**

Particular	Amount
Salaries and wages	3,84,000
Operating expenses	1,28,000
Add: Outstanding Expenses at the beginning	38,400
Advance at the end	14,400
Less: Outstanding Expenses at the end	(76,800)
Advance at the beginning	(12,480)
<b>Cash paid for operating expenses</b>	<b>4,75,520</b>

**Provision for Tax a/c**

<b>Particular</b>	<b>Rs.</b>	<b>Particular</b>	<b>Rs.</b>
To Bank a/c (bal. figure)	1,38,800	By Balance b/d	19,200
To Balance c/d	21,200	By Profit & Loss a/c	1,40,800
	1,60,000		1,60,000

**Land & Building a/c**

<b>Particular</b>	<b>Rs.</b>	<b>Particular</b>	<b>Rs.</b>
To Balance b/d	76,800	To Balance c/d	1,53,600
To Bank a/c (bal. figure)	76,800		
	1,53,600		1,53,600

**Machinery a/c**

<b>Particular</b>	<b>Rs.</b>	<b>Particular</b>	<b>Rs.</b>
To Balance B/d	5,76,000	By Acc. Depreciation a/c	76,800
To Profit & Loss a/c (Profit on sale of machinery)	19,200	By Bank a/c	57,600
To Bank a/c (bal. figure)	4,60,800	To Balance c/d	9,21,600
	10,56,000		10,56,000

**Accumulated Depreciation a/c**

<b>Particular</b>	<b>Rs.</b>	<b>Particular</b>	<b>Rs.</b>
To Machinery a/c	76,800	To Balance b/d	1,92,000
To Balance c/d	2,11,200	To Profit & Loss a/c	96,000
	2,88,000		2,88,000

**6.8.2 Indirect Method**

The indirect method uses net-income as a starting point, makes adjustments for all transactions for non-cash items, then adjusts for all cash-based transactions. An increase in an asset account is subtracted from net income, and an increase in a liability account is added back to net income. This method converts accrual-basis net income (loss) into cash flow by using a series of additions and deductions.

The following rules are used to make adjustments for changes in current assets and liabilities, operating items not providing or using cash and non operating items:

- Decrease in non cash current assets are added to net income
- Increase in non cash current asset are subtracted from net income
- Increase in current liabilities are added to net income
- Decrease in current liabilities are subtracted from net income
- Expenses with no cash outflows are added back to net income
- Revenues with no cash inflows are subtracted from net income (depreciation expense is the only operating item that has no effect on cash flows in the period)
- Non operating losses are added back to net income
- Non operating gains are subtracted from net income

**Cash Flow Statement (Indirect Method)**

<b>Particular</b>	<b>Detail (Rs.)</b>	<b>Amount (Rs.)</b>
<b>Cash flows from operating activities</b>		
Net income of the year	X X X X	
Add: Non-fund and non-operating Expenses/Losses:		
Depreciation on fixed assets	+ + + +	
Goodwill (or patents) written off	+ + + +	
Preliminary expenses written off	+ + + +	
Discount on issue of shares/debentures written off	+ + + +	
Loss on sale of fixed assets or long term investments	+ + + +	
Transfer to reserves	+ + + +	
Provision for taxation	+ + + +	
Proposed dividend	+ + + +	
Less: Non Fund and Non operating Incomes/Gains:		
Profit on sale of fixed assets/long-term investments	- - - -	
Interest or dividend received	- - - -	
Fund/Loss from operation	= = = =	
Add: Decrease in Current Assets	+ + + +	
Add: Increase in Current Liabilities	+ + + +	
Less: Increase in Current Assets	- - - -	
Less: Decrease in Current Liabilities	- - - -	
	= = = =	
Less: Tax Paid	- - - -	
<b>Net cash flow from operating activities</b>		= = = =
<b>Cash flows from investing activities</b>		
Purchases of fixed assets	- - - -	
Purchases of Investments	- - - -	
Proceeds from the sale of Fixed Assets	+ + + +	
Proceeds from the sale of Investments	+ + + +	
Cash receipts as Dividends / Interest on investments	+ + + +	
<b>Net cash flows from investing activities</b>		= = = =
<b>Cash flows from financing activities</b>		
Receipts from issue of shares	+ + + +	

**Illustration 2:** From the following Balance Sheet and other information of M/s. Ridhi & Sidhi Limited as at March 2011 and 2012, you are required to prepare cash flow statement following the indirect method:

**Balance Sheet of M/s. Ridhi& Sidhi Limited**  
**As on 31<sup>st</sup> March**

Liabilities	2011	2012	Assets	2011	2012
Share Capital	2,00,000	2,40,000	Plant and Machineries	2,00,000	2,50,000
Retained Earnings	1,25,000	1,60,000	Less: Accumulated Depreciation	(60,000)	(80,000)
Debenture	1,50,000	90,000		1,40,000	1,70,000
Trade Creditors	30,000	40,000	Land	1,00,000	80,000
			Trade Debtors	75,000	1,00,000
			Inventory	1,40,000	1,20,000
			Cash Balances	50,000	60,000
Additional Information:	5,05,000	5,30,000		5,05,000	5,30,000

- a) Cash dividends of Rs.25,000 has been paid during the year.
- b) An old machine costing Rs. 10,000 has been sold for Rs. 7,000. The written down value of the machine was Rs. 5,500

**Solution:**

**Cash Flow Statement**

Particular	Detail (Rs.)	Amount (Rs.)
<b>A. Cash Flow From Operating Activities:</b>		
Net Profit (Increase in retained earnings)	35,000	
Add: Depreciation	24,500	
Proposed Dividend	25,000	
Less: Profit on sale of Plant and Machinery	(1,500)	
Fund from operation	84,500	
Add: Net Decrease in Inventory	20,000	
Net Increase in Creditors	10,000	
Less: Net Increase in Debtors	(25,000)	88,000
<b>B. Cash Flow From Investing Activities:</b>		
Sales of Plant and Machinery	7,000	
Sales of Land	20,000	
Purchase of Plant and Machinery	(60,000)	(33,000)
<b>C. Cash Flow From Financing Activities:</b>		
Issue of Share Capital	40,000	
Redemption of Debentures	(60,000)	
Dividends Paid	(25,000)	(45,000)
<b>Net increase in cash (A+B+C)</b>		10,000
Cash Balance at the Beginning of the Period		50,000
<b>Cash Balance at the End of the Period</b>		60,000

**Working Note:**

**Plant and Machinery A/c**

Particular	Amount	Particular	Amount
To Balance b/d	2,00,000	By Bank a/c	7,000
To P & L a/c (Profit on sale)	1,500	By Acc. Depreciation a/c	4,500
To Bank a/c (Purchase)		By Balance c/d	2,50,000
(Balancing figure)	60,000		
	2,61,500		2,61,500

### Accumulated Depreciation A/c

Particular	Amount	Particular	Amount
To Plant and Machinery a/c	4,500	By Balance b/d	60,000
To Balance c/d	80,000	By P&L a/c (Balancing figure)	24,500
	84,500		84,500

**Illustration 3:** Use the following data to construct a statement of cash flows using the direct and indirect methods:

### Balance Sheet (As on 31<sup>st</sup> December)

Liability	2011	2010	Assets	2011	2010
Share Capital	88,000	84,000	Fixed assets	316,000	270,000
Retained earnings	59,000	60,500	Accumulated Depreciation	(45,000)	(30,000)
Debenture	173,000	160,000		2,71,000	2,40,000
Accounts payable	18,000	16,000	Accounts receivable	25,000	32,500
Wages payable	4,000	7,000	Cash	4,000	14,000
			Prepaid insurance	5,000	7,000
			Inventory	37,000	34,000
	<b>342,000</b>	<b>327,500</b>		<b>342,000</b>	<b>327,500</b>

### Income Statement

Particular	Amount (Rs.)
Sales	200,000
Cost of goods sold	(123,000)
Depreciation expense	(15,000)
Insurance expense	(11,000)
Wage Expense	(50,000)
<b>Net Income</b>	<b>1,000</b>

### Additional Information:

- During 2000 declared and paid dividends of Rs.2,500
- During 2000, ABC paid Rs.46,000 in cash to acquire new fixed assets.
- The accounts payable was used only for inventory.

### Solution:

### Cash Flow Statement (Direct Method)

Particular	Detail (Rs.)	Amount (Rs.)
<b>A. Cash Flow from Operations:</b>		
Cash received from customers	207,500	
Cash Paid to Supplier	(124,000)	
Cash paid for insurance	(9,000)	
Cash paid for wages	(53,000)	21,500
<b>B. Cash Flow from Investments:</b>		
Cash paid for fixed assets	(46,000)	(46,000)
<b>C. Cash flow from financing activities:</b>		
Cash dividend payments	(2,500)	
Proceeds from issue of Debenture	13,000	
Proceeds from issue of Share Capital	4,000	14,500
Net Cash Flow		(10,000)
Beginning Cash Balance		14,000
Ending Cash Balance		4,000

### Cash Flow Statement (Indirect Method)

Particular	Detail (Rs.)	Amount (Rs.)
<b>A. Cash Flow from Operations:</b>		
Net Income	1,000	
Add: Depreciation	15,000	
Fund from Operation	(16,000)	
Add: Decrease in Accounts receivable	7,500	
Decrease in Prepaid insurance	2,000	
Increase in Account Payable	2,000	
Less: Increase in Inventory	(3,000)	
Decrease in Wages Payable	(3,000)	21,500
<b>B. Cash Flow from Investments:</b>		
Cash paid for fixed assets	(46,000)	(46,000)
<b>C. Cash flow from financing activities:</b>		
Cash dividend payments	(2,500)	
Proceeds from issue of Debenture	13,000	
Proceeds from issue of Share Capital	4,000	14,500
Net Cash Flow		(10,000)
Beginning Cash Balance		14,000
Ending Cash Balance		4,000

#### Working Note:

##### a) Cash received from customers:

Sales of the year	2,00,000
Add: Accounts receivable at the beginning of the year (2010)	32,500
Less: Accounts receivable at the end of the year(2011)	(25,000)
<b>Cash received from customers</b>	<b><u>2,07,500</u></b>

##### b) Cash paid for inventory

Cost of goods sold	1,23,000
Add: Inventory at the end of the year (2011)	37,000
Less: Inventory at the beginning of the year(2010)	(34,000)
<b>Purchase of the year</b>	<b><u>1,26,000</u></b>
Add: Accounts payable at the beginning of the year (2010)	16,000
Less: Accounts payable at the end of the year(2011)	(18,000)

**Cash Paid to Supplier 1,24,000**

##### c) Cash paid for insurance

Insurance as per income statement	11,000
Add: Prepaid insurance at the end of the year(2011)	5,000
Less: Prepaid insurance at the beginning of the year (2010)	(7,000)
<b>Cash paid for insurance</b>	<b><u>9,000</u></b>

##### d) Cash paid for wages

Wages as per income statement	50,000
Add: Outstanding Wages at the beginning of the year (2010)	7,000
Less: Outstanding Wages at the end of the year(2011)	(4,000)
<b>Cash paid for Wages</b>	<b><u>53,000</u></b>

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## 6.9 Summary

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In this unit we have tried to develop the idea of flow of cash within the organization. We have tried to find out the cash generate form operation activities or cash generate form investment activities or cash generate form financial activities. We tried to study the importance of cash and cash flow statement. We learnt how to go about doing the cash flow analysis with the help of accounting information and finally presenting cash flows in the form of a “cash flow statement”. We also learnt, distinguishing between cash and fund as also cash flow statement and funds flow statement.

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## 6.10 Self Assessment Questions

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1. What do you understand by Cash Flow Statement? Explain its advantages and limitations.
2. What is Cash Flow Statement? How it is prepared? Explain the classification of cash flows.
3. What is Cash Flow Statement? Differentiate between cash flow statement and fund flow statement.
4. From the following information you are required to prepare a Cash Flow Statement of Shanti Stores Ltd for the year ended 31" December, 2001 using the direct method:

### Balance Sheets

<b>Lia bilities</b>	<b>2010</b>	<b>2011</b>	<b>Assets</b>	<b>2010</b>	<b>2011</b>
Share Capital	70,000	70,000	Plant Machinery	50,000	91,000
Secured Loans	- - -	40,000	Inventory	15,000	40,000
Creditors	14,000	39,000	Debtors	5,000	20,000
Tax payable	1,000	3,000	Cash	20,000	7,000
P&L A/c	7,000	10,000	Prepaid General Exp.		
				2,000	4,000
	<b>92,000</b>	<b>1,62,000</b>		<b>92,000</b>	<b>1,62,000</b>

### Profit & Loss A/c for the year ended 31" December, 2001

<b>Particulars</b>	<b>Rs.</b>	<b>Particulars</b>	<b>Rs.</b>
To Opening Inventory	15,000	By sales	1,00,000
To Purchases	98,000	By C losing inventory	40,000
To Gross Profit c/d	27,000		
	<b>1,40,000</b>		<b>1,40,000</b>
To General Expenses	11,000	By Gross Profit b/d	27,000
To Depreciation	8,000		
To Taxes	4,000		
To Net Profit c/d	4,000		
	<b>27,000</b>		<b>27,000</b>
To Dividend	1,000	By Balance b/d	7,000
To Balance c/d	10,000	By Net Profit b/d	4,000
	<b>11,000</b>		<b>11,000</b>



5. From the following Balance Sheet and additional information, prepare cash flow statement using the indirect method:

<b>Liabilities</b>	<b>2010</b>	<b>2011</b>	<b>Assets</b>	<b>2010</b>	<b>2011</b>
Share capital	60,000	67,500	Fixed assets	30,000	42,000
Creditors	15,000	22,500	Stock	15,000	10,500
P & L a/c	22,500	34,500	Debtors	45,000	67,500
Outstanding exp.	4,500	7,500	Cash	7,500	9,000
Income received in advance	3,000	1,500	Prepaid expenses	3,000	1,500
				4,500	3,000
	1,05,000	1,33,500		1,05,000	1,33,500

An old machine has been sold for Rs. 6,000. The written down value of the machine was Rs. 4,500. Dividend Rs. 6,000 has been paid during the year and Rs. 3,000 depreciation has been charged.

6. From the following Balance Sheets of XYZ Ltd. you are required to prepare cash flow statement using the indirect method:

<b>Liabilities</b>	<b>2010</b>	<b>2011</b>	<b>Assets</b>	<b>2010</b>	<b>2011</b>
Equity Share Capital	3,00,000	4,00,000	Goodwill	1,15,000	90,000
8% Preference Share Capital	1,50,000	1,00,000	Land and Buildings	2,00,000	1,70,000
General Reserve	40,000	70,000	Plant	80,000	2,00,000
Profit & Loss Account	30,000	48,000	Debtors	1,60,000	2,00,000
Proposed Dividend	42,000	50,000	Stock	77,000	1,09,000
Creditors	55,000	83,000	Bills Receivable	20,000	30,000
Bill Payable	20,000	16,000	Cash in Hand	15,000	10,000
Provision for Taxation	40,000	50,000	Cash at Bank	10,000	8,000
	6,77,000	8,17,000		6,77,000	8,17,000

Additional information:

- Depreciation of Rs. 10,000 and Rs. 20,000 have been charged on Plant and Land and Building respectively in 2011.
- An interim dividend of Rs. 20,000 has been paid in 2011.
- Rs. 35,000 Income-tax was paid during the year 2011.

7. The following are the balance Sheets of X Ltd. For the year ending 31<sup>st</sup> December 2000 and 2001

<b>Liabilities</b>	<b>2010</b>	<b>2011</b>	<b>Assets</b>	<b>2010</b>	<b>2011</b>
Share Capital	2,00,000	3,00,000	Fixed Assets	1,60,000	2,00,000
Profit and Loss Account	1,20,000	1,60,000	Add: Additions	40,000	60,000
Sundry creditors	60,000	50,000	Less: Depreciation	18,000	24,000
Provision for taxation	40,000	50,000		1,82,000	2,36,000
Proposed Dividend	20,000	30,000	Investments	8,000	16,000
			Stock	1,60,000	2,18,000
			Debtors	60,000	80,000
			Cash	30,000	40,000
	4,40,000	5,90,000		4,40,000	5,90,000

**Additional information:**

- a) Taxes Rs. 44,000 and dividend Rs. 24,000 were paid during the year 2001
- b) The net profit for the year 2001 before depreciation Rs. 1,34,000  
You are required to prepare cash flow statement.
8. From the following Balance Sheets of ABC Ltd. on 31<sup>st</sup> Dec. 2010 and 2011, you are required to prepare cash flow statement using the indirect method:

Liabilities	2010	2011	Assets	2010	2011
Share Capital	2,00,000	2,00,000	Goodwill	24,000	24,000
General Reserve	28,000	36,000	Buildings	80,000	72,000
P&L A/c	32,000	26,000	Plant	74,000	72,000
Creditors	16,000	10,800	Investments	20,000	22,000
Bills payable	2,400	1,600	Stock	60,000	46,800
Provision for Tax	32,000	36,000	Bills Receivable	4,000	6,400
Prov. for doubt. debts	800	1,200	Cash & Bank	13,200	30,400
			Debtors	36,000	38,000
	<b>3,11,200</b>	<b>3,11,600</b>		<b>3,11,200</b>	<b>3,11,600</b>

**Additional Information:**

- (i) Depreciation provided on plant was Rs.8,000 and on Buildings Rs.8,000
- (ii) Provision for taxation made during the year Rs.38,000
- (iii) Interim dividend paid during the year Rs. 16,000.
9. From the following Balance Sheet of X Ltd., as on 31<sup>st</sup> December, 2010 and 31<sup>st</sup> December 2011, you are required to prepare a funds | flow statement.

(Rs.)					
Liabilities	2010	2011	Assets	2010	2011
Share Capital	4,00,000	5,00,000	Land and Buildings	4,00,000	4,80,000
P&L A/c	1,44,000	2,18,000	Machinery	3,60,000	2,60,000
Bank Loan	3,20,000	80,000	Stock	2,00,000	2,52,000
Creditors	3,00,000	2,60,000	Debtors	1,60,000	1,28,000
Provision for Taxation	60,000	80,000	Cash at Bank	1,04,000	18,000
	<b>12,24,000</b>	<b>11,38,000</b>		<b>12,24,000</b>	<b>11,38,000</b>

**Additional Information :**

- (i) During the year ended 31<sup>st</sup> December 2011 dividend of Rs.84,000 was paid.
- (ii) Depreciation written off on machinery is Rs.24,000 and on Land and Buildings is Rs.45,000.
- (iii) Income-tax paid during the year was Rs. 70,000.
- (iv) Additions to Buildings were for Rs.75,000.

**6.11 Reference Books**

- Khan, Jain (2009), Management Accounting, Tata McGraw Hill, 2009, New Delhi
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- Rustagi R.P., (2011), Taxmann Publication (P) Ltd., 2011, New Delhi
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## Unit - 7 : Management of Working Capital

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### Structure of Unit:

- 7.0 Objectives
- 7.1 Introduction
- 7.2 Concept of Working Capital
- 7.3 Types of Working Capital
- 7.4 Determinants of Working Capital
- 7.5 Advantages of Adequate Working Capital
- 7.6 Disadvantages from Redundant or Excess Working Capital
- 7.7 Estimation of Working Capital Requirements
  - Percentage of Sales Method
  - Regression Analysis Method
  - Operating Cycle Method
  - Forecasting Net Current Assets Method
  - Projected Balance Sheet Method
- 7.8 Summary
- 7.9 Self Assessment Questions
- 7.10 Reference Books

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### 7.0 Objectives

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After completing this unit you will be able to:

- to understand concept of Working Capital
- to know the types of Working Capital
- to understand determinants of Working Capital
- to point out advantages and disadvantages due to adequate and excessive Working Capital
- to learn the methods of estimation of Working Capital requirements

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### 7.1 Introduction

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Working Capital is the part of the firms capital which is required for financing short term or current assets such as stock, receivables, marketable securities and cash. Money invested in these current assets keep revolving with relative rapidity and are being constantly converted into cash. This cash flows rotat again in exchange of other such assets. Working Capital is also called as “short term capital”. “Liquid Capital”, “Ciculating or revolving capital”, The Working Capital management refers to management of the working capital or to be more precise the management of current assets and current liabilities. The goal of working capital management is to manage the firms’ current assets and current liabilities in such a way that a satisfactory level of working capital is maintained. This is so because, if the firm cannot maintain a satisfactory level of working capital, it is likely to become insolvent and may even be forced into bankruptcy. Each of the short term sources of financing must be continuously managed to ensure that they are obtained and used in the best possible way. The current assets should be large enough to cover its current liabilities in order to ensure a reasonable margin of safety.

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## 7.2 Concept of Working Capital

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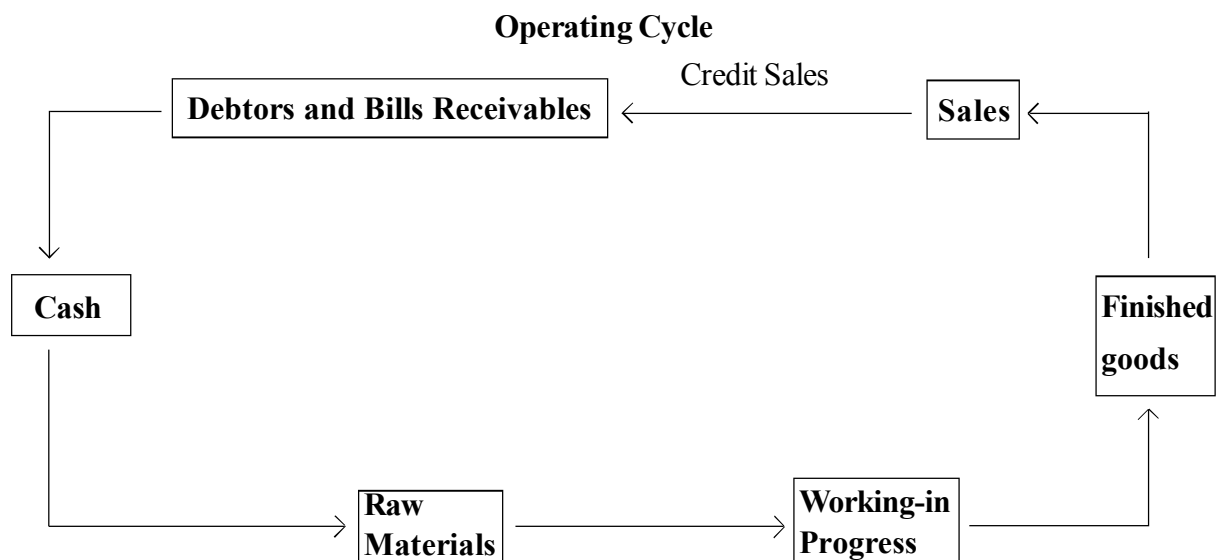
There is no unanimous decision with the definition of working capital. The word working with reference to capital refers to circulation of capital from one form to another during day-to-day operations of business. The word capital refers to the monetary values of all assets of the business. There is lot of difference of opinions among accountants, entrepreneurs and economists. There are two concepts of working capital:

**Gross Working Capital :** It referred to as working capital, means the total current assets.

**Net working capital :** It can be defined in two ways (i) the most common definition of net working capital is the difference between current assets and current liabilities, and (ii) alternate definition of Net working capital is that portion of current assets which is financed with long term funds.

Net working capital as a measure of liquidity, is not very useful for comparing the performance of different firms, but it is quite useful for internal control. The goal of working capital management is to manage the current assets and liabilities in such a way that an acceptable level of net working capital is maintained.

Another concept is “operating concept.” The duration or time required to complete the sequence of events right from purchase of raw materials/goods for cash to the realisation of sales in cash is called the operating cycle or working capital cycle.



The net duration of operating cycle is calculated by adding the number of days involved in the different stages of operation. This concept is more appropriate than others. According to this concept, the necessary liquid funds required by a firm for production, administration and selling can be determined for the whole year. If cash working capital requirements are known in advance, then non-cash current assets may be better managed. Now it is an important tool in projecting working capital requirements of an enterprise.

### Activity A:

1. What is operating cycle Concept :

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## 7.3 Types of Working Capital

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### (A) On the Basis Balance Sheet :

- (i) Gross working Capital
- (ii) Net working capital

It is discussed earlier in 7.2

**(B) On the Basis of Time :**

- (i) Permanent working capital
- (ii) Variable (Temporary) working capital
  - (a) seasonal working capital
  - (b) specific working capital

**Permanent Working Capital :** It means that minimum amount which is permanently blocked in the business and that cannot be converted into cash in the normal course of business. This amount is definitely required throughout the year on a continuous basis for maintaining the circulation of current assets. Tandon committee has identified this capital as core current assets. As the business grows the requirement of permanent working capital also increased due to increase in current assets. This portion of working capital is financed through longterm sources.

**Variable Working Capital :** The amount which is above the permanent level of working capital is called as temporary working capital. Such requirement of this part of working capital financed from shortterm funds, whenever needed. It is classified further : **(A) seasonal working capital :** Some of the industries like refrigerators and coolers may need extra fund to carry on production and to accumulate stock before the sale operations. It is of short term nature, it has to be financed from short term sources like bank loan etc. **(B) Specific working Capital :** Such capital is required to meet unforeseen contingencies like slumps and others. It is arranged to meet special exigencies.

**Activity B:**

1. Define Gross Working Capital :

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## **7.4 Determinants of Working Capital**

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In order to determine the proper amount of working capital of a firm, the following factors should be considered carefully :

1. Seasonal nature of the firm
2. Firm's credit policy
3. Size of Business
4. Nature of business
5. Rate of growth of business
6. Business cycle
7. Duration of operating cycle
8. Change in terms of purchase and sales.

The amount of working capital required depends upon a large number of other factors like political stability, means of transport, co-ordination of activities, rate of industrial development, speed of circulation of working capital, profit margin etc. The above determinants should be considered, because no certain criterion to determine the amount of working capital needs that may be applied to all firms.

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## 7.5 Advantages of Adequate Working Capital

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Inadequate working Capital is harmful for a business organisation. It is a source of energy to a business. The profitability of a business also depends upon planning of adequate working capital. Following are the advantages to a business enterprise if adequate working capital is available with the firm.

1. Adequate working capital enables a firm to pay its suppliers immediately.
2. Adequate working capital creates an environment of confidence, high morale, confidence and increases overall efficiency of the business.
3. Adequate working capital increases the productivity and efficiency of fixed assets in the business. Adequacy of working capital affects the use of fixed assets.
4. Due to adequate working capital a firm can pay its debt in time and also its collection from debtors is relatively in time. Hence it increases goodwill of the firm because adequate working capital provides better security.
5. Despite of sufficient profits, if a firm has inadequate working capital, then it cannot distribute appropriate and enough dividend. Hence, if there is adequate working capital a firm can distribute sufficient profits and it can bring satisfaction among shareholders.
6. Due to a better credit worthiness, a firm can easily fetch shortterm loans and advances from banks for completing its seasonal and short period needs.

### Activity C:

1. Adequate Working Capital enable the firm and create an environment of

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## 7.6 Disadvantages from Redundant or Excess Working Capital

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Excess working capital refers to idle funds which do not earn any profit for the firm. If there is idle funds with a firm following disadvantages are :

1. If management is not utilising its current resources than it indicate inefficient management.
2. Excess working capital means, there is a defective credit policy and collection policy.
3. There may be more change of holding excess inventory, if there is excess working capital such situation results upon companies profitability and efficiency in using its resources.
4. Excess working capital results, the low rate of return, and it will causing dissatisfaction among shareholders.
5. Due to idle funds the efficacy of firm to earn profits is effected, hence due to more interest liability, it reduces the amount of profits.

Hence, it can be concluded that excess working capital reduces return on investment while adequate working capital increase the firms profitability as well as goodwill.

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## 7.7 Estimation of Working Capital Requirements

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There are following methods for estimation of working capital :

**1. Percentage of Sales Method:** Relationship between sales and working capital is calculated over the year, if it is found stable then it is taken as a base for determining working capital. In this method, percentage

of each item of working capital is determined. On the basis of this relationship value of each component of working capital is calculated and then these estimated amount is sum up for final result. We can learn it from following example.

**Illustration 1 :** Suppose sales for the year 2011-2012 Rs. 20 Lakh, and anticipated sales for the year 2012-2013 Rs. 30 Lakh The Balance Sheet of the company as on 31st March 2012 is as follows :

Liabilities	Rs.	Assets	Rs.
Capital	300000	Fixed Assets	350000
Reserves & Surplus	200000	Stock	100000
Creditors	100000	Receivables	100000
		Cash in hand and at Bank	500000
	6000000		6000000

Calculate estimated working capital requirement for 2012-2013 adding 10% per annum for contingencies.

**Solution :**

	Actual 2011-12 Rs.	% of Sales 2011-12	Estimates for 2012-13 Rs.
Sales	20,00,000	100	30,00,000
(A) Current Assets			
Stock	1,00,000	5%	1,50,000
Receivables	1,00,000	5%	1,50,000
Cash in hand and At Bank	50,000	2.5%	75,000
	2,50,000		3,75,000
(B) Current Liabilities			
Sundry Creditors	1,00,000	5%	1,50,000
	1,00,000		1,50,000
(C) Net Working Capital (A-B)			2,25,000
Add: 10% for contingencies			22,500
			247500

**2. Regression Analysis Method:** It is a statistical technique in which working capital requirements is calculated by using least square method. The relationship between sales and working capital is expressed by the following equation :

$$y = a + bx$$

$x$  = Sales (Independent variable)  
 $y$  = Working Capital (Dependent variable)  
 $a$  = Intercept

$$b = \text{Slop of the time}$$

We can learn it from following example :

**Illustration 2 :** The sales and working Capital for a period of seven years are given below : **(Rs. in crores)**

Year	Sales (Rs.)	Working Capital (Rs.)
2005-06	100	35
2006-07	120	39
2007-08	130	50
2008-09	150	58
2009-10	180	65
2010-11	210	80
2011-12	240	85

Estimate the working capital requirement by using regression analysis for the year 2012-13, if anticipated sales is Rs. 275 crores.

**Solution :**

Year	Sales (x)	Working Capital (y)	XY	X <sup>2</sup>
2005-06	100	35	3500	10000
2006-07	120	39	4680	14400
2007-08	130	50	6500	16900
2008-09	150	58	8700	22500
2009-10	180	65	11700	32400
2010-11	210	80	16800	44100
2011-12	240	85	20400	57600
	<b>1130</b>	<b>412</b>	<b>72280</b>	<b>197900</b>

$$y = a + bx$$

$$xy = na + b \sum x$$

$$exy = a \sum x + b \sum x^2$$

$$412 = 7a + 1130b \quad (i)$$

$$72280 = 1130a + 197900b \quad (ii)$$

Multiplying (i) equation by 1130 & second by 7

$$465560 = 7910a + 1276900b$$

$$505960 = 7910a + 1385300b$$

$$(-) \quad (-) \quad (-)$$

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$$(-) 40400 = -108400b$$


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$$b = .3727$$

Finding the value of a by multiplying value of b in equation (i)

$$412 = 7a + 421.14$$

$$-7a = 9.1439$$

$$a = \frac{9.1439}{7}$$

$$a = (-) 1.3062$$



$$\begin{aligned}
\text{Hence } y &= a + bx \\
y &= -1.3062 + 0.3727x \\
y &= -1.3062 + 0.3727 \times 275 \\
\text{or } &= -1.3062 + 102.4925 \\
\text{or } &= 101.4563 \\
y &= \text{Working Capital} = \text{Ans. Rs. 101.4563 crores}
\end{aligned}$$

When sales in Rs. 275 crores the working capital Rs. 101.4563 crores.

### 3. Operating Cycle Method : In This Method

following steps are for computation of working capital

#### 1. Calculation of Operating Expenses :

Value of Raw Material Consumed		
Op. Stock of Raw Material	-	
(+) Purchases	-	
	-	
(+) Closing stock of Raw Material	-	-
Direct Wages		-
Prime Cost		-
Add : Manufacturing overhead		-
Add : Op. stock of work in progress		-
		-
Less : Closing stock of working Progress		-
Cost of Production		-
Add : Administrative Overhead		-
Add : Op. Stock of finished goods		-
Less : Closing stock of finished goods		-
Cost of Goods sold		-
Add : Selling & Distribution expenses		-
Total operating expenses		-

**Note : 1** Depreciation, non cash items and mortisation of intangible assets should not included. Similarly capital expenses and appropriation of profits and tax payments should not included.

**2. Calculation of Operating Cycle Period :** Total number of days involved in the different stages of operation as materials storage period, conversion period, finished goods storage period, debtors collection period and creditors payments period. It is a total period involved in different stages of operations, which

may be calculated as follows :

**Operating Cycle Period** : Material storage period + conversion period + finished goods storage period + debtors collection period - creditors payment period. The calculation of each are as follows:

**(a) Material Storage Period** : It is the period for which raw material will remain in stores before they are issued for production. It is calculated by following formula :

$$\text{Material Storage Period} = \frac{(\text{Opening stock} + \text{Closing stock})/2}{\text{Material consumed for the year}/365}$$

Note : Raw material consumed = Op. stock of raw material + Purchases - closing stock of raw material

**(b) Conversion Period (Work-in-Progress Period)** : The time which is taken in converting the raw material into finished goods. It is calculated by following formula :

$$\text{Conversion Period} = \frac{(\text{opening WIP} + \text{Closing WIP})/2}{\text{Total Production Cost}/365}$$

Total production cost = value of R.M. consumed + Direct Wages + Manufacturing expenses (excluding depreciation) + Op. stock of WIP - closing stock of WIP

**(c) Finished Goods Storage Period** : It is the period for which goods have to remain in the godown before sale taken place. It is calculated as follows :

$$\text{Finished Goods Storage Period} = \frac{(\text{Opening stock} + \text{Closing Stock})/2}{\text{Total cost of goods sold}/365}$$

Note : Total cost of goods sold : Cost of Production (excluding depreciation) + opening stock of finished goods - closing stock of finished goods. It does not include adm. expenses and selling and distribution expenses.

**(d) Debtors Collection Period** : It is the time lag in payments by debtors. It is calculated as follows:

$$\frac{(\text{Opening Debtors \& B/R} + \text{Closing Debtors \& B/R})/2}{\text{Total credit sales}/365}$$

**(e) Creditors Payment Period** : It is the length of credit period available from trade creditors. It is calculated as follows :

$$\frac{(\text{Opening Creditors \& B/R} + \text{Closing Creditors \& B/R})/2}{\text{Total credit purchases}/365}$$

Note :

- (1) In the absence of any information, total purchases and total sales be treated as credit.
- (2) There is no hard and fast rule and for taking 365 days as number of days in a year, However, sometimes even 360 days may be considered.
- (3) If, opening values of stock, debtors or creditors are not available then closing balances of these items should be taken.

**3. Number of Operating Cycles** : The number of operating cycles in a year are determined by the following formula :

$$\text{No. Operating cycle} = \frac{365/360}{\text{Operating cycle period}}$$

**4. Calculation of amount of Working Capital :** The amount of actual Working Capital required is calculated by dividing the total operating expenses for the period by the number of operating cycles in that period. It is expressed as follows :

$$\text{Working Capital} = \frac{\text{Operating Expenses}}{\text{No. Operating cycle}}$$

Alternatively working capital may be calculated as follows :

$$\text{Working capital} = \text{Cash Balance required} + \frac{\text{Operating cycle period}}{365/360} \times \text{Estimated cost of goods sold}$$

#### Activity D:

1. Operating cycle period is equal to : -----

**5. Provision for Contingencies :** The above calculation of working capital is based on estimates hence it may not be more accurate, Therefore, a provision for contingencies as required 5% or 10% may be added while ascertaining the final amount of estimated working capital.

Through, the following illustration above calculation can be understandable :

**Illustration 3 :** From the following information calculate the working capital requirement under operating cycle method taking 5% reserve for contingencies : Rs.

Opening Stock :	Raw Material :	9000
	Work-in-progress	9000
	Finished goods	4000
Purchases (credit)		36000
wages & manufacturing Exp.		15000
Administrative expenses (excluding Dep.)		12000
Selling and distribution expenses		13000
Sales (credit)		105000
Closing Stock		
	Raw Materials	10000
	Work-in-progress	9500
	Finished goods	4500
Opening Receivables		6000
Closing Receivables		10000
Opening payables		5000
Closing Payables		10000

Calculation of operating cycle Period

$$(A) \text{ Raw material storage period} = \frac{(\text{Opening stock} + \text{closing stock of Raw Materials})/2}{\text{Raw Materials Consumed}/365}$$

Raw Materials consumed = Opening stock of R.M. + Purchases - Closing stock of Raw Materials  
Rs. 9000 + 36000 - 10000 = Rs. 35000

$$= \frac{(9000 + 10000)/2}{35000/365} = \frac{9500}{95.89} = 99 \text{ days}$$

$$(B) \text{ Conversion period} = \frac{(\text{Opening stock} + \text{closing stock of WIP})/2}{\text{Total Production Cost}/365}$$

$$= \frac{(9000 + 9500)/2}{49000/365} = \frac{9750}{135.6164} = 99 \text{ days}$$

Production cost :	Rs.
Material consumed (as above)	35000
Add: Wages & Manufacturing Exp.	15000
Add: Opening Stock of WIP	9000
	59000
Less: Closing Stock of WIP	9500
	49500

$$(C) \text{ Finished goods storage Period} = \frac{(\text{Opening Stock} + \text{Closing Stock of Finished goods})/2}{\text{Cost of goods sold}/365}$$

$$= \frac{(4000 + 4500)/2}{49000/365} = \frac{4250}{134.246} = 32 \text{ days}$$

Cost of goods sold :	Rs.
Production cost (as above)	49500
Add: Opening Stock of Finished goods	4000
Less: Closing Stock of Finished goods	4500
	<u>49000</u>

$$(D) \text{ Debtors Collection Period} = \frac{(\text{Opening Receivables} + \text{Closing Receivables})/2}{\text{Sales}/365}$$

$$= \frac{(6000 + 10000)/2}{105000/365} = \frac{8000}{287.67} = 28 \text{ days}$$

$$(E) \text{ Creditors Payment Period} = \frac{(\text{Opening payables} + \text{Closing payables})/2}{\text{Purchases}/365}$$

$$= \frac{(5000 + 10000)/2}{36000/365} = \frac{7500}{98.63} = 76 \text{ days}$$

$$(F) \text{ Net operating cycle Period} = A + B + C + D - E$$

$$99 + 72 + 32 + 28 - 76 = 155 \text{ Days}$$

(G) Computation of working Capital required =

$$(i) \text{ No. of operating cycle per year} = \frac{365}{\text{Net operating cycle period}}$$

$$= \frac{365}{155} = 2.3548$$

(ii) Total operating expenses.	Rs.
Cost of goods sold (as above)	49000

Add: Adm. expenses	12000
Add: Selling & distribution expenses	13000
	<u>74000</u>

$$(iii) \text{ Working Capital required} = \frac{\text{Total operating expenses}}{\text{No. of operating cycles in a year}}$$

$$= \frac{74000}{2.3548} = \text{Rs. } 31425$$

(iv) Working Capital required

	Rs.	31425
+ 5% Reserve for	Rs.	1571
Contingencies	Rs.	<u>32996</u>

**4. Forecasting Net Current Assets Method :** It's a method which is also recommended by Tondon Committee for computing working capital requirements. In this method of forecasting first of all, estimate of stock of raw materials, estimated value of work-in-process, estimated value of stock of finished goods, amount receivable from debtors and others and estimate minimum cash balance required to Meet-day-to-day payments required. Then also estimate outstanding payment for material, wages, and other adm. expenses. Now, difference between forecasted amount of current assets and current liabilities gives net working capital requirements of the firm. A flat percentage may be added in this amount of provision for contingencies.

A specimen of calculating working Capital requirements in given below :

**Statement Showing Estimated Working Capital Requirements**

	Rs. Amount	
<b>(A) Current Assets :</b>		-
(i) Stock of Raw Materials (for..... months consumption)		
(ii) Work-in-process (for.....months)		
(A) Raw-materials		
(B) Direct wages	-	-
(C) Overheads	-	
(iii) Stock of finished goods (for..... months)		
(A) Raw Materials		
(B) Direct Wages		-
(C) Overheads		
(iv) Receivables (for..... month's sales)		
(A) Raw Materials		
(B) Direct wages		-
(C) Overheads		-
(v) Payment in advance (if any)		-
(vi) Cash - balance required		-
(vii) others (if any)		
<b>(B) Current Liabilities :</b>		
(i) Creditors (for..... months purchase of Raw Material)		
(ii) Lag in payment of expenses (outstanding Exp..... months)		-
(iii) others (if any)		-
<b>Net working Capital (A-B)</b>		-
Add : Provision for contingencies		-
<b>Working Capital required</b>		

**Notes :**

1. While preparing above statement there are two approaches : (A) Total approach : In this method all cost including depreciation and profit margin are included (B) Cash cost approach : under this approach depreciation is excluded from cost of production. The profit margin is also not considered while calculating investment in receivables, i.e. debtors are valued at cash cost of sales, which includes adm., selling and distribution expenses.
2. Investment in work-in-process is calculated on the assumption that material is input in the beginning of the process, where labour and overhead should be introduced for half the process time, hence on the assumption that wages and overhead should be evenly spread during the production.
3. Students are advised to write specific assumption which student used while solving the problem.
4. Normally, debtors, are calculated on cash cost basis.

We can learn this method from the following example:

**Illustration 4 :** X Ltd. plans to sell 60000 units next year. The expected cost of goods sold is as follows:

	Rs. Per unit
Raw Material	100
Manufacturing expenses (including wages)	30
Selling, Administration Expenses	25
Selling Price	200

The duration of various stages of the operating cycle is expected to be as follows :

Raw Material	2 Months
Work-in-progress	1 Months
Finished goods	1 Months
Debtors	1 Months

Assuming sales are evenly spread over throughout the year, wages and overhead are evenly incurred. It is also assumed that a minimum Rs. 50000 cash balance is desired. The company enjoys a credit of 1/2 month on its purchases. Workout net working capital requirement for next year.

**Solution :****Statement of Working Capital requirements**

	Rs. Amount	
(A) Current Assets :		1000000
(i) Raw Materials (2 months) (5000 X 100 X 2)		
(ii) WIP (1 month)		575000
Raw Material (5000 X 100 X 1)	500000	
Manufacturing Expenses (5000 X 30 X 1/2)	75000	
(iii) Finished goods (1 month)		650000
Raw Material (5000 X 100 X 1)	500000	
Manufacturing Expenses (5000 X 30 X 1)	150000	775000
(iv) Debtors (1 Month) (5000 X 155 X 1)		50000
(v) Cash balance		
(A)		3050000
(B) Current Liabilities		
Creditors (1/2 months) (5000 X 100 X 1/2)		250000
Net Working Capital required.		2800000

**Working notes :**

1. It is assumed that all sales and purchases are on credit.
2. Debtors are calculated on the basis of cash cost of sales.

**5. Projected Balance Sheet Method:** In this method, estimates of different assets (excluding cash) and liabilities are made, with taking into consideration the transactions in the ensuing period. After that, a “Projected Balance Sheet is prepared on the basis of these forecasts. If the total of assets side is more than the total of liabilities side, then it indicates the deficiency of working capital which is to be collected by the management either taking bank loan or from other sources. On the contrary, if total of liabilities side is more than total of assets side then it represents cash balance available to the firm. Such surplus cash may invest outside the business or as management plans for it.

This method is not a popular method and calculations made through this method are not more scientific.

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**7.8 Summary**

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- Working Capital is that part of the total Assets of the business that changes from one form to another form in the ordinary course of business operations.
- Gross working capital means the sum of the current assets of the business.
- Net working capital is the difference between current assets and current liabilities of the business.
- The time required to complete the sequence of business events starting from cash raw material work-in-process finished goods debtors cash is called as operating cycle or working capital cycle.
- As per Balance-Sheet concept Working Capital is classified as Gross Working Capital and Net Working Capital.
- Inadequate working capital as-well-as excessive working capital is disastrous for the business.
- A Corporation can preserve its image with meeting all the expenses and liabilities promptly and take care for emergency needs, if its hold adequate working capital.
- Return on investment will reduce if a Corporation have excessive or redundant working capital.
- There are so many factors which should be considered for determination of working capital.
- Most popular method for estimating Working Capital requirement is forecasting Net Current Assets Method

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**7.9 Self Assessment Questions**

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1. Explain the concept of working capital.
2. What are the types of working capital ? Explain it
3. What are the determinants of working capital ?
4. “Profitability of the business also depends upon working capital”. Explain the statement.
5. “Excessive working capital is harmful for the business”. Explain the statement.
6. From the following information, calculate the estimated working capital by using regression analysis method.

Year	Sales	Working Capital
2005-06	55	20
2006-07	75	30
2007-08	100	40
2008-09	130	50
2009-10	170	60

7. Compute operating cycle period from the following informations, taking 365 days in a year.

Rs.

Average Stocks :

Raw Materials	30000
Work-in-progress	36000
Finished goods	25000
Total production cost (excluding depreciation Rs. 10000)	960000
Raw Material consumption	400000
Average debtors	45000
Total Cost of sales (excluding depreciation Rs. 10000)	1100000
Sales	1600000

Average period allowed by Suppliers : 15 days

8. You are required to calculate estimated working capital from the following information:

- Level of activity 5000 units
- Elements of cost
 

Raw Materials	Rs. 8 per Unit
Direct wages	Rs. 2 per Unit
Overheads (excluding dep.)	Rs. 6 per Unit
Selling price	Rs. 20 per Unit
- Raw materials are in stock on an average one month.
- Credit allowed by creditors is one month.
- Materials are in process, on an average half a month.
- Credit allowed to debtors is 3 months.
- Lag in payment of wages in one week.
- Assume 52 weeks in a year and 4 weeks in a month.
- Expected bank balance required to Rs. 7000.
- It is assumed that the production is carried on evenly during the year, wages and overheads accrue similarly.

9. Calculate working capital requirements by using operating cycle method:



<b>Stocks:</b>	<b>Opening Rs.</b>	<b>Closing Rs.</b>
Raw Material	20000	26000
Work-in-process	12000	16000
Finished goods	20000	24000
Purchases (all credit)		140000
Cost of goods sold		200000
Sales (all Credit)		240000
Debtors		40000
Creditors		16000

Assume 360 days in a year.

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## 7.10 Reference Books

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- Khan, Jain : Management Accountancy
- S.N. Maheshwari : Management Accountancy
- Saxena, Vasistha : Management Accountancy
- Agrawal, Agrawal : Management Accountancy

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## Unit - 8 : Management of Inventories

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### Structure of Unit:

- 8.0 Objectives
- 8.1 Introduction
- 8.2 Meaning of Inventory and Inventory Management
- 8.3 Objectives of Inventory Management
- 8.4 Benefits of Holding Inventory
- 8.5 Factors Affecting Level of Inventory
- 8.6 Risk and Costs Associated With Holding Inventory
- 8.7 Techniques of Inventory Management
- 8.8 Summary
- 8.9 Keywords
- 8.10 Self Assessment Questions
- 8.11 Reference Books

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### 8.0 Objectives

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After Studying this unit you should be able to:

- Understand the concept of inventory management.
- List out various objectives for holding inventories.
- Identify the factors affecting investment level in inventory.
- Pin point risk and cost associated with holding inventory.
- Explain re-ordering, physical verification systems of inventory management.
- Determine stock levels, reorder point and economic order quantity.
- Use selective inventory management techniques like ABC, VED etc.

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### 8.1 Introduction

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The role of capital is crucial in this increased pace of industrialization. The capital raised by a firm is invested in fixed assets and current assets for carrying on its activities. Inventory constitutes the largest portion of current assets. As such, inventories are a vital element in the efforts of the firm to achieve desired goals.

The concept of inventory management has been one of the many analytical aspects of management. It involves optimization of resources available for holding stock of various materials. Excessive inventory leads to unnecessarily blockage of funds, resulting decreased profit. On the other hand, lack of inventory not only impairs the profitability but also results in interruption in production and causes inefficiencies. Often one is inclined to agree with the observation that "when you need money, look at your inventories, before you look at your banker." Even, if there is no shortage of funds in a business the financial manager has to participate actively in the formulation of inventory policies with a view to speeding inventory turnover ratio and maximising return on investment.

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### 8.2 Meaning of Inventory and Inventory Management

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Inventories are resources of any kind having an economic value.

S.E. Bolton defines it as "The term 'Inventory' refers to the stockpile of the product, a firm is offering for sale and the components that make up the product."

The Accounting Research and Terminology Bulletin defines the term inventory as "The aggregate of those items of tangible personal property which;

- (a) are held for sale in the ordinary course of business,
- (b) are in the process of production for such sales or
- (c) are to be currently consumed in the production of goods or services to be available for sale."

ICMA defines it as "The function of ensuring that sufficient goods are retained in stock to meet all requirements without carrying unnecessarily large stocks."

The following items are included in inventory:

- 1. Raw Materials:-** These are goods that have not yet been committed to production in a manufacturing firm i.e. stored for use in future production.
- 2. Works-in-Progress:-** This category includes those materials that have been committed to the production process but have not been completed at the end of a financial year. Thus, these are neither raw materials nor finished goods.
- 3. Finished Goods:-** These are completed products awaiting sale. For a trading concern inventory always means finished goods, while for a manufacturing firm they are the final output of the production process.
- 4. Consumables and Stores:-** Loose tools, cotton, lubricant, oil, grease etc. which are required for running and maintenance of plant and machineries are called consumables and stores. Though these are not held for sale, but have significant importance.

The problems of managing inventories in manufacturing enterprises are relatively complex.

**Inventory Management:-** The area of inventory management covers the following individual phases: determining the size of inventory to be carried and lot sizes for new orders, establishing timing schedules and procedures, ascertaining safety levels, providing proper storage facilities, co-ordinating inventory policies with sales and production, arranging the procurement and disbursement of materials, record keeping, assigning responsibilities for carrying out the inventory control functions and providing necessary reports for supervising the overall activity. Within these individual phases acquisition, Unit/physical control i.e. material handling and production related decision are made by persons within purchasing and production departments. The financial executive is only one of the persons in top management who is concerned with the levels and fluctuations of investment in inventories. He is concerned with any aspect of inventory management that is controllable from the stand point of reducing inventory costs and risks. This is also called value control.

As per Gordon B. Carson, "Inventory control refers to the process by which the investment in materials and parts carried in stock are regulated within pre-determined limits set in accordance with the inventory policy established by the management".

Thus, inventory management refers to a system which ensures the supply of required quantity and quality of inventory at the required time and at the same time prevents unnecessary investment in inventories.

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### 8.3 Objectives of Inventory Management

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Reducing inventories without impairing operating efficiency frees working capital that can be effectively employed elsewhere. The aim of a sound inventory management system is to secure the best balance between "too much and too little." Too much inventory carries financial burden and too little reacts adversely

on continuity of productions and competitive dynamics. The real problem is not the reduction of the size of the inventory as a whole but to secure a scientifically determined balance between several items that make up the inventory. Thus, Inventory management should strike a balance between excess inventory and too little inventory. The primary objects of inventory management are-

- I. to minimize wastage and losses of material in course of purchase, storage, handling and uses,
- II. to achieve maximum economy in purchasing and inventory holding,
- III. to make minimum investment in working capital by forecasting the demand and production in advance,
- IV. to ensure uninterrupted flow of materials of the right quality for continuous production,
- V. to provide better service to customers by maintaining an adequate inventory level.

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## 8.4 Benefits of Holding Inventory

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Primarily, inventory is held for transaction purposes. Today's inventory is tomorrow's consumption. An enterprise cannot ensure uninterrupted production unless it maintains adequate inventory of raw materials. By holding inventories the firm is able to separate the processes of purchasing, producing and selling. By doing the separation of these functions, the firm realizes a number of specific benefits:-

1. **Avoid Losses of Sale:-** Inadequate inventory may disturb the production function and resulting the firm may not be in a position to deliver the goods within the scheduled time to its customers and it may lose customer forever. The ability of the firm to give quick service and to provide prompt delivery is closely tied to the proper management of inventory.
2. **Gaining Quantity Discounts:-** If a firm is willing to maintain large inventory in selected product lines, it may be able to make bulk purchases of goods at heavy discount. Suppliers frequently offer a greatly reduced price if the firm orders double or triple of its normal order. By paying less for its goods, the firm can increase profits, as long as the costs of maintaining the inventories are less than the amount of the discount.
3. **Continuity in Production:-** Inadequate inventory may cause production interruption and inefficiencies . It is very difficult to procure raw material whenever it is needed. If the firm has scheduled a long run and begins production, only due to shortage of a vital raw material, the production may be halted at considerable cost to the firm. So it is necessary to maintain an adequate level of inventory to continue the production process without any interruption.
4. **Low Ordering Cost:-** Every time a firm places an order it incurs certain costs. The variable cost associated with individual orders can be reduced if the firm places a few large rather than numerous small orders.
5. **To Meet Contingencies:-** Inventory is also held as a precaution or as a contingency for increase in lead time or consumption rate. This increase may be due to suppliers strike, labour strike, transporters strike, short supplies or bulk orders etc.
6. **Optimum Utilization of Resources:-** In a manufacturing concern production planning can be done with an object to have optimum utilization of resources namely men, machines and materials. This objective can be achieved only if we hold sufficient inventory.

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## 8.5 Factors Affecting Level of Inventory

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As stated above, a firm should maintain its inventory at reasonable level. There are different factors, which determine the level of inventory, the important among them are as follows.

1. **Nature of the Product:-** The nature of the product greatly affect the quantity of inventory, like in case of perishable and fashion goods. It is not feasible to store large quantity. If the firm deals in such type of products for which raw material is available only in a particular season, then the organisation has to invest a huge fund in the season.
2. **Nature of Business:-** If the business deals with luxury and consumer products, then it may maintain lower level of inventory. But if it deals with industrial goods it has to maintain a higher level of inventory.
3. **Terms of Purchase:-** If supplier provides heavy discount and liberal credit facilities on bulk purchase, then firm may maintain high level of inventory. Similarly, if supply conditions are favourable, no disturbance in supply chain then inventory level can be low, but in adverse condition or uncertainty, firm should main high level of inventory.
4. **State of Economy:-** In case of booming economy, firm will maintain high level of inventory to grab the high chances of emerging large orders and vice-versa.
5. **Inventory Turnover Rate:-** When the turnover rate is high, investment in inventories tends to be low and vice-versa.
6. **Value of the Product:-** In case of high value product, firm cannot afford to have large inventory. In case of low value products, firm can keep large quantities in stock.
7. **Attitude of Management:-** Conservative management does not bother much in forecasting, demand and consider it safer to carry large stocks, while energetic or dynamic manager decides this by using advanced techniques of forecasting.
8. **Other Factors:-** Many other factors like market structure, fluctuations in price level, availability of funds, government policies, period of operating cycle etc. also affect the level of inventories.

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## 8.6 Risk and Costs Associated With Holding Inventory

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When a firm holds goods for future sale, it exposes itself to a number of risks and costs. Inventories constitute a large percentage of the total cost. Inventory management is one of balancing tactics of various costs so that the total cost can be minimized. These costs are as follows;

1. **Material Cost:-** These are the cost of purchasing the goods plus transportation and handling charges. This may be calculated by adding the purchase price, the delivery charges and the sales tax charged by the supplier (if any).
2. **Cost of Ordering:-** It is the cost of placing an order and securing the supplies. The ordering cost is of variable nature and increases in proportion to the number of orders placed but has negative relation with level of inventory. It includes the following;
  - Preparation of purchase order.
  - Documentation processing costs.
  - Costs of receiving goods (Inspection and handling).
  - Quality analysis expenses.
  - Transport costs.
  - Addition costs of frequent or small quantity order, rejecting faulty goods.
  - Follow up costs.

- Where goods are manufactured internally, the set up and tooling costs associated with each production run, which is also known as 'set up cost'.
3. **Cost of Holding or Carrying Inventory:-** These are the expenses of storing goods. Once the goods have been accepted, they become part of the firm's inventories. It comes around 30% of the total inventory cost in most of the industrial undertakings. Cost of carrying stocks includes the following:
    - Storage costs (rent, lighting, heating, refrigeration, air conditioning etc.)
    - Stores staffing, equipment maintenance and running costs.
    - Material handling costs.
    - Capital cost and opportunity cost.
    - Accounting, audit, stock taking or perpetual inventory costs.
    - Product risk costs (deterioration and obsolescence)
    - Insurance and security costs.
    - Pilferage, damage and theft cost.
  4. **Under Stocking Costs:-** It is the penalty incurred to the concern on account of the inability to meet the demand in time. It includes the following:
    - Loss of goodwill.
    - Loss of profit due to reduction in sales.
    - Machine and man hours lost due to unavailability of materials.
    - Loss of future sales because customers go elsewhere.
    - Compensation payable on account of non- fulfilment of orders.
    - Extra costs associated with urgent purchases.
  5. **Over Stocking Costs:-** In situations where disproportionate amount of funds are invested in inventories, excessive borrowing or financing would be required. It increases interest expenses and reduces profits. It also involves increase in associated costs like opportunity, obsolescence, loss due to decline in prices etc.

The costs of ordering opposes the cost of carrying while the under stocking costs opposes overstocking costs. If these costs operate in the same direction, there will be no inventory problem. The under stocking and overstocking costs, help an industrial unit to determine the service level that has to be maintained for the inventory. The costs of ordering and the cost of carrying enable us to optimize on the number of orders and the quantity of inventory to be ordered.

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## 8.7 Techniques of Inventory Management

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Designing a sound inventory management system is a large pre-requisite for balancing operations. Reducing inventories without impairing operating efficiency frees working capital that can be effectively employed elsewhere. Various techniques applied for inventory management are as follows:

1. Reordering systems
  - (a) Two bins system
  - (b) Order cycling system
  - (c) Min max system
2. Physical verification systems
  - (a) Continuous stock taking

- (b) Periodic stock taking
- 3. Accounting systems
  - (a) Perpetual inventory system
  - (b) Establishment of system of budgets
- 4. Inventories control ratios
  - (a) Input output ratio
  - (b) Inventory turnover ratio
- 5. Setting of various stock levels
- 6. Economic order quantity
- 7. Selective inventory control techniques

## 1. Reordering Systems

**(a) Two Bin System:** Bin means the drawer, almirah or other place of keeping the goods. Under two bin system, each item of material is stored in two bins and material is continuously issued from one bin until the stock of materials is emptied in that bin. Then material from the second bin is started using and action will be taken to replenish the materials in the first bin. The material in the second bin will be sufficient enough until the fresh delivery is received. The major advantage of this system is that stock can be kept at a lower level because of the ability to re-order whenever stock fall to a low level, rather than waiting for the next re-order date.

**(b) Order Cycling System:** In case of this system the review of materials in hand is undertaken periodically. If the review discloses that stock of a particular material will last before the next review date keeping in view of its consumption rate, an order for replenishment of that material is made immediately. The review period differs from material to material. Critical items of stock have a shorter review period; on the other hand less critical stock items will have a larger interval. This technique is also called as periodic order system.

**(c) Min Max System:** According to this plan, for every material two levels are fixed (i) minimum level and (ii) the maximum level. The minimum level functions as the re-order point. As soon as the stock of material comes down to minimum level a new order is placed for quantity which will bring it to the maximum level. This method is one of the oldest methods of materials control. It is very simple to operate and easy to understand.

## 2. Physical Verification Systems

**(a) Continuous Stock Taking:** Under this system, physical stock verification is made for each item of stock on continuous basis. It is physical checking of the stock records with actual stock on continuous basis. It is a method of verification of physical stock on a continuous basis instead of at the end of the accounting period. It is a verification conducted round the year, thus covering each item of store twice or thrice. Valuable items are checked more frequently than the stocks with lesser value.

CIMA defines "Continuous stock taking is the process of counting and valuing selected items at different times on a rotating basis."

The main benefits of this technique are that day to day work is not disturbed, discrepancies, irregularities or changes are detected at early stage. Thus it acts as an effective deterrent to malpractices.

Continuous stock taking is not, however without disadvantages. It imposes regular strain on the stores staff and unless carried out very carefully, may lead to misplacement of materials.

**(b) Periodic Stock Taking:-** Under this system the stock levels are reviewed at fixed intervals e.g., at the end of every month or three months. All the items of stocks in the store are reviewed periodically.

CIMA defines periodic stock taking as "a process where by all stock items are physically counted and then valued". The aim of periodic stock taking is to find out the physical quantities of materials of all types are physically counted at a given date.

### 3. Accounting Systems:

**(a) Perpetual Inventory System:** Basically it is a method of accounting for inventory. Under this system inventory records are maintained in such a way that it can show the balance of the stock after each receipt and issue. Bin cards and stores ledger are used under this system.

CIMA defines perpetual inventory system as "the recording as they occur of receipts, issues and the resulting balances of individual items of stock in either quantity or quantity and value".

The main benefit of this system is that every time we have updated record of inventory and the checking and verification is done at any time without disturbing the normal function.

It is worthwhile to mention the difference between perpetual inventory system and physical verification system. Under the perpetual inventory system only balances are updated on concurrent basis while in the physical verification system the inventory is physically verified and checked with the actual balances drawn from the stores ledger.

**(b) Establishment of Systems Of Budgets:** To control investment in the inventories, it is necessary to know in advance about the inventories requirement during a specific period usually a year. Under this technique estimates are prepared regarding the requirement of various material and on the basis of these estimate budget is prepared. Such a budget will discourage the unnecessary investment in inventories.

4. **Inventory Control Ratios:** Inventory control ratios also play a vital role in controlling the inventory. The ratios work as a comparison tool. The various ratios are as given below:

**(a) Input Output Ratio:-** This ratio indicates the relation between the quantity of material used in the production and the quantity of final output. This acts as a performance indicator of a particular production centre.

$$\text{Input output ratio} = \frac{\text{Input Units}}{\text{Output Units}} \times 100$$

**(b) Inventory Turnover Ratio:** This ratio indicates the movement of average stock holding of each item of material in relation to its consumption during the accounting period

$$\text{Inventory Turnover ratio} = \frac{\text{Cost of materials consumed}}{\text{Costs of average stock held during the period}}$$

$$\text{Inventory Turnover ratio (in days)} = \frac{\text{Days during the period}}{\text{Inventory turnover ratio}}$$



Stock turnover figures may reveal the following types of stocks:

**I. Fast Moving Stock:** These are materials which are in great demand. An attempt should be made to keep these materials in stock at all the times.

**II. Slow Moving Stock:** These are materials which have a low turnover ratio. Thus inventory of such materials should be maintained at very low level.

**III. Dormant Stock:** Materials which have no demand are classified as dormant stocks. The purchase officer, the store-keeper, the production controller and cost accountant should sit together to decide whether to retain these materials because of good chance of future demand or to decide whether demand or to cut losses by scrapping the materials while they may have some market value.

**IV. Obsolete Stock:** These are materials which are no longer in demand because a better substitute has been found. These materials should either be scrapped or discarded.

Other ratio like inventory as a percentage of current assets, total assets are also useful.

**5. Setting of Various Stock Levels:** Various stock levels are fixed for effective management of inventories. These levels serve as indices for initiating action on time so that the quantity of each item of inventory is controlled.

" **Re-Order Level:-** Re-order level is the level of stock availability when a new order should be raised. The stores department will initiate the purchase of material when the stock of material reaches at this point. This level is fixed between the minimum and maximum stock levels. The re-order level can be determined by applying the following formula:

$$\text{Re-Order level} = (\text{Maximum consumption rate} \times \text{Maximum re-order period})$$

Or

$$\text{Re-order level} = (\text{Lead time} \times \text{Usage rate per day}) + \text{Safety stock}$$

While deciding this level (i) the rate of consumption of the material, and (ii) the time required in receiving the supply are kept in mind. Re- order level is the determined so much above the minimum stock level that by the time new stock is received, if the material is consumed at the normal rate, actual stock in the store may not go below the minimum stock level.

• **Minimum Stock Level:** Minimum stock level is the lower limit below which the stock of any stock item should not normally be allowed to fall. This level is also called safety stock or buffer stock level. The main object of establishing this level is to protect against stock- out of a particular stock item. The following two points are kept in view while determining the minimum stock level:

**(a) Time Required for Receiving Fresh Stock:** After order for purchase of some item is placed it takes some time in receiving the goods. If this time is more, the minimum stock level should be kept more; and if the time taken is less, minimum stock level will also be kept low.

**(b) Rate of Consumption of the Material:** If a material is consumed in large quantity per day, its minimum stock level has to be kept higher. If the consumption per day is in small quantity, its minimum stock level is kept low.

Minimum stock level is computed by using following formula:

Minimum stock level = Re-order level - (Normal consumption rate x Normal re-order period)

Or

Minimum stock level = Usage rate per day x Days of safety

- **Maximum Stock Level:-** Maximum stock level represents the upper limit beyond which the quantity of any item is not normally allowed to rise to ensure that unnecessary working capital is not blocked in stock items. The maximum level of stock is fixed after due consideration of the storage costs of holding excessive stock, cost of insurance, cost of obsolescence, risk of deterioration, cost of capital, time required in receiving fresh stock and average rate of consumption. It represents the total of safety stock level and economic order quantity. It is computed by the following formula:

Maximum stock level = (Re-order level + Re-order quantity) - (Minimum consumption rate x Minimum re-order period)

Or

Maximum stock level = Economic order quantity + Safety stock

- **Average Stock Level:-** Average stock level is obtained by adding the minimum and maximum stock levels and dividing the sum by two.

Average stock level = (Minimum stock level + Maximum stock level)/2

Or

Average stock level = Minimum stock level + 1/2 Re-order quantity

- **Danger Level:-** Danger level of stock is fixed below the minimum stock level and if stock reaches below this level, urgent action for replenishment of stock should be taken to prevent stock out position.

Danger Stock level = Minimum rate of consumption x Minimum re-order period.

**Illustration 1:** In a factory components A and B are used weekly as follows:

Normal Usage		50 units
Maximum Usage		75 units
Minimum Usage		25 units
Re-order Quantity	A =	300 units
	B =	500 units
Re- order Period	A =	4 to 6 weeks
	B =	2 to 4 weeks

Calculate for each component:

- (i) Re-order Level
- (ii) Maximum Stock Level
- (iii) Minimum Stock Level

**Solution:** Calculation of various stock levels

(1) Re- Order Level = ( Max. Usage x Max. re-order period)

Component A = (6 x 75) = 450 units

Component B = (4 x 75) = 300 units

- (2) Maximum Stock Level = (Re-order level + Re-order quantity) - (Minimum consumption rate x Minimum re-order period)  
 Component A =  $(450+300) - (25 \times 4) = 650$  units  
 Component B =  $(300+500) - (25 \times 2) = 750$  units
- (3) Minimum Stock Level = Re-order level - ( Normal Usage x Normal re-order period)  
 Component A =  $450 - (50 \times 5) = 200$  units  
 Component B =  $300 - (50 \times 3) = 150$  units

6. **Economic Order Quantity:-** The economic order quantity refers to the order size that will result in the lowest total of order and carrying costs for an item of inventory. If a firm places unnecessary orders, it will incur unneeded ordering cost. If it places too few orders, it must maintain large stocks of goods and will have excessive carrying cost. So it is clear that there is negative co-relation between ordering cost and carrying cost. By calculating an economic order quantity, the firm identifies the number of units to order that results in the lowest total of these two costs.

Assumption of economic order quantity:

- The rate of demand is known and sales occur at a constant rate.
- Lead time is constant and known.
- Stock holding costs not changes with time factor and are known.
- There is no price discount.
- Lead time is constant and known.
- Ordering costs are in proportion to number of orders.
- The replenishment is made instantaneously.

Economic order quantity can be determined by

- (i) Algebraic method
- (ii) Graphic method

- (1) **Algebraic Method:-** Economic order quantity can be computed by using the following formula:

$$EOQ = \sqrt{2AB / CS}$$

Here, EOQ = Economic order quantity

A = Annual consumption

B = Buying or ordering cost per order

C = Cost per unit

S = Storage or inventory carrying cost

**Illustration 2:** The annual usage of a refrigerator manufacturing company is 1,60,000 units of a certain component. The order placing cost is Rs. 100 per order and the cost of carrying one unit for a year is 10% of the cost per unit which is Rs. 80. Calculate the economic order quantity.

**Solution:**

$$\begin{aligned} EOQ &= \sqrt{2AB / CS} \\ &= \sqrt{2 \times 1,60,000 \times 100 / 10\% \text{ of Rs. } 80} \\ &= 2,000 \text{ units} \end{aligned}$$

**Illustration 3:** From the following information find out economic order quantity-

1. Annual usage = 3,200 units
2. Price per unit : Rs. 30
3. Cost of placing an order : Rs. 100
4. Cost of working capital : 10 % per annum
5. Cost of rent, insurance, tax etc. per unit per annum: Re. 1

**Solution:**

$$\begin{aligned} \text{EOQ} &= \sqrt{2AB/CS} \\ &= \sqrt{2 \times 3,200 \times 100 / 4} \\ &= 400 \text{ units} \end{aligned}$$

Note:- Inventory carrying cost = Cost of rent, insurance etc.+ Interest  
= 1+30\*10%  
= 1+3 = Rs. 4 per unit

**(2) Graphic Method:** The EOQ can also be calculated by graphic method. While using this method various costs related to inventory like stock holding cost, ordering cost and total cost are plotted on Y axis, while order size is plotted on X axis. The point at which total cost is minimum is EOQ. Total cost is minimum at that point where the line of ordering cost intersects the line of carrying cost. The graphical presentation of the behaviour of ordering cost and carrying cost can be illustrated as follows:

**EOQ with Quantity Discount:-** A particularly unrealistic assumption with the basic EOQ calculation is that the price per item remains constant. Usually some form of discount can be obtained by ordering large quantities. When a quantity discount is offered, three things can happen:-

- (i) Reduction in the yearly acquisition cost of the item.
- (ii) Increase in the cost of holding inventory as now a larger average inventory will have to be carried.
- (iii) Decrease in ordering cost as now less orders will have to be initiated.

If the increase in carrying cost is less than, the savings due to ordering cost and quantity discount offered, the order of large quantity ( more than EOQ) should be given.

**Illustration 4:** For one of the A class item the purchase manager spends Rs. 500 in procuring 1,000 units in a single lot in a year and thereby avails a discount of 5% on the price of Rs. 10 per unit. No discount will be given for any other order quantity. Inventory carrying charges work out to 40%. If he follows EOQ policy what would be the gain or loss to the organisation?

**Solution:**

$$\begin{aligned}(a) &= \sqrt{2AB/CS} \\ &= \sqrt{2 \times 1,000 \times 500 / 4} \\ &= 500 \text{ units}\end{aligned}$$

**Note:-** No. of orders per year = 1,000/500 = 2 orders

- (b) If 5% discount is availed
- |                         |                           |
|-------------------------|---------------------------|
| No. of orders           | = 1 order                 |
| product price           | = 10 - 5% of 10 = Rs. 9.5 |
| Inventory carrying cost | = 9.5 x 40/100            |
|                         | = Rs. 3.80                |

	Without discount	With 5% discount
E OQ units	500	1,000
Ordering cost	2 x 500 = 1,000	1 x 500 = 500
carrying cost	(500/2) x 4 = 1,000	(1,000/2) x 3.8 = 1,900
Material Purchase cost	1,000 x 10 = 10,000	1,000 x 9.5 = 9,500
Total cost	12,000	11,900

**Suggestion:** - If he follows EOQ, organization will bear a loss of Rs. 100 (12,000 - 11,900), so 5% discount were be beneficial for the organisation.

**7. Selective Inventory Control Techniques:-** Effective inventory management requires understanding and knowledge of the inventories and to gain this understanding some analysis and classification of inventory is required. Main selective inventory control techniques are as follow:

**(a) ABC analysis:** ABC analysis is a basic analytical management tool which enables top management to place the effort where the result will be greatest. This is a rational approach for determining the degree of control that should be exercised on each item of inventory. The technique tries to analyse the distribution of any characteristics by stock value of importance in order to determine its priority. This is also known as 'Always Better Control' techniques. Under this technique the items in inventory are classified in three categories:

- **Category A:** In this category such items are selected which are comparatively costly and are substantial in the cost structure. Number of such items is very small, but these items represent the major portion of the total value of materials. Items selected in this group are very sensitive in nature.
- **Category B:** In this category those items of material are included which are less important and less costly as compared to those included in group 'A'. Capital needed for purchase of these items is neither too large nor too small.

- **Category C:** Items of the material in the store which have very low cost are included in this category. Number of such items is large, but these represent a very small fraction of the total cost of material. As the purchase of these items requires only a small capital, such items are purchased in large quantity at a time.

Obviously, 'A' class items should be subject to strict management control under either continuous review or periodic review with short review cycles. Constant attention is paid by purchases and stores management i.e. no or very low safety stock is maintained, centralised and frequent purchase system is followed, rigorous value analysis is done, efforts for minimisation of wastage are done etc. 'C' class items require little attention and can be relegated down the line for periodic review. Control over 'B' class items should be somewhere in between.

**Classification of Inventory**

Category	% of items	% of value	Control Required	Supervision
A	10% to 15%	50% to 70%	Strict control system	Top management
B	25% to 30%	25% to 30%	Continuous watch over inventory	Middle management
C	60% to 65%	10% to 15%	General control	Lower management

The graphic presentation of ABC classification is as follows;

**Note:** The number (percentage) are just indicative and actual break up can vary from situation to situation. In inventory management, this technique has been applied in those areas which need selective control, such as criticality of items, obsolete stocks, purchasing orders, receipts of materials, inspection, store keeping and verification of bills. This approach helps the material manager to exercise selective control and focus his attention only on a few items when he is confronted with lakhs of stores items. Many organisations those adopted this technique have claimed that ABC analysis has helped in reducing the clerical costs and resulted in better planning and improved inventory turnover.

**Limitations:** Though, ABC analysis is a powerful scientific and systematic approach in the direction of cost reduction and saving time as it helps to control items with a selective approach. Some items though negligible in monetary value, may be vital for smooth functioning of plant and constant attention is needed. For example diesel, oil is categorised in class 'C' items in most of the manufacturing firms, will become the most high value item during power crises. So, the results of ABC analysis have to be periodically reviewed and updated.

- (b) **VED Classification:** This type of classification divides items into three categories in the descending order of their criticality. Here 'V' stands for Vital items and their stock analysis requires more attention, because out of stock situation will result in stoppage of production for example, needle for the machine. Thus, 'V' items must be stored adequately to ensure smooth operation of the plant. 'E' means Essential items. Such items are considered essential for efficient running but without these items the system would not fail but production capacity will be affected. Example, lubricant oil for machine. Care must be taken to see that they are always in stock. 'D' stands for Desirable items which do not affect the production immediately but availability of such items will lead to more efficiency and less fatigue.

This technique is mainly used in the storage of spare parts and more suitable method for automobile industries.

- (c) **FSND Classification:** FSND classification divides the items into four categories according to their material turnover ratio:

- (i) F = Fast moving items. Stocks of such items are consumed in a short span of time.
- (ii) N = Normal moving items. Normally such items are exhausted over a period of a year or so.
- (iii) S = Slow moving items. Though moves slowly but it is still expected to be used up.
- (iv) D = Dead items. The material which is dormant and obsolete covered under this category.

Stock of fast moving items must be observed continuously and replenishment orders be placed in time to avoid stock out situations. The reorder level and quantities of slow moving items should be based on estimate of future demand to minimize the risks of surplus stock. For dead items, efforts must be made to find alternative uses. Otherwise, it must be disposed of.

- (d) **Just In Time (JIT) Approach:** Under this technique, the material is purchased only when it is required. The basic principle of this philosophy is to produce at each manufacturing stage, only the necessary products at the necessary time in the necessary quantity to hold the successive in manufacturing stages together. Thus efforts are made to maintain the stock at zero level. This technique is also called as 'Zero Inventory Production System' or 'Material As Needed System'. The purpose behind the technique is to eliminate waste not only the conventional form of waste such as scrap, rework and equipment down time but also excess lead time over production and poor space utilization.

- (e) **Value Analysis:** This technique was developed by Lawrence D. Miles, to obtain optimum benefit from materials. Value analysis investigation of material is usually carried out every year in order to-

- (i) Minimize consumption.
- (ii) Maximize the utilization.
- (iii) Substitute indigenous materials for imported ones without sacrificing quality or performance.
- (iv) Substitute it with cheaper material. Value analysis aims at assessing the value of an items and then enhancing it systematically.
- (f) Other Techniques-

**(i) HML Classification:** To control purchases the material is classified into High, Medium and Low value items depending on the unit price of material.

**(ii) SDE Analysis:** Materials can be classified according to their availability at the time of procurement in Scarce, Difficult and Easy to obtain category. Lead time analysis and special purchasing strategies can be used for scarcely available items.

**(iii) Statistical Techniques:** Operation Research (OR), Linear Programming (LP), Programme Evaluation Review Technique (PERT) can be used by the manager for the purpose of planning and control of inventory.

**(iv) Application of Computers:** The scope of application of computers in inventory management is really immense. With the basic issues and receipts, documents billing, inventory planning, material budgeting, inventory valuation, fixation of inventory levels can be efficiently computerized. Moreover, if the manual and mechanized system has been properly designed, the implementation of a computerized system will not pose any problem.

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## 8.8 Summary

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Inventory represents the major portion of the total current assets in most of the concerns. Every business concern maintains some level of inventory, therefore it is important to manage and control the inventory for smooth functioning of business. The basic problem of inventory management is to strike a balance between the operating efficiency and the cost of investment and other costs associated with large inventories.

The greater the efficiency with which the firm manages its inventory, the lower the required investment in inventory. The financial officer should pay attention to the following aspects of inventory management (a) Action taken against imbalances of raw material and work in progress inventory that may limit the utility of stocks of that item which is in shortest supply. (b) Production schedules as far as possible, should be firmly adhered to for reducing inventory of raw materials and in progress goods. Any change should get early notification. (c) Continuous efforts should be made to shorten the production cycle. (d) There should be reasonable procurement lead time assumptions and safety stock levels. (e) There should be an efficient system to dispose of goods that are unusable or obsolete for production. (f) Special pricing policy may be required to move extremely slow moving finished items. Various techniques like two bin system, setting of reorder point, fixation of stock levels, determination of economic order quantity, selective inventory management techniques (ABC, VED, SDE, FSND etc.) can be used to maintain optimum level and control of inventory. Thus inventory management helps to reduce inventory without any adverse effect on production and sale.

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## 8.9 Key Words

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- **Inventory Management:** The function of ensuring that sufficient goods are retained for smooth functioning of the business operations.
- **Ordering Cost:** The cost which is associated with the purchasing or ordering of material.
- **Carrying Cost:** The cost incurred for handling/ holding the material in stores.
- **Lead Time:** This is the time gap between placing of an order and the time of actual supply.
- **Minimum Stock Level:** The lowest figure of inventory balance, which must be maintained, so that there is no stoppage of production.
- **Maximum Stock Level:** That quantity of material above which the stock of any item should not generally be allowed to go.
- **Re-order Level:** It is the level at which fresh order should be placed for replenishment of stock.
- **ABC Analysis:** The system which exercises discriminating control over different items of stores classified on the basis of the investment involved.



- **Economic Order Quantity:** The size of the order for the total of both ordering and carrying cost is minimum is known as economic order quantity.
- **Two Bin System:** If items in one bin exhausts new order is placed and till the mean time quantity from the other bin is used.

## 8.10 Self Assessment Questions

1. What is inventory management?
2. The major objective of inventory management is 'to minimise cash outlays for inventories'. Explain how this can be achieved.
3. Write short notes on :-
  - (a) ABC analysis
  - (b) Just in time approach
  - (c) Double bin system
  - (d) Perpetual inventory system
4. What do you mean by 'Economic order quantity'? How is it determined?
5. How would you determine the optimal order size when quantity discounts are available? Illustrate your answer with a suitable example?
6. Discuss the selective inventory management techniques.
7. Explain the formulas of determination of minimum and maximum stock levels. What factors are taken into account in fixing these limits?
8. Explain the concept of 'ABC analysis' as a technique of inventory control.
9. The average annual consumption of a material is 18,250 units at a price of Rs. 36.50 per units. The cost of placing an order is Rs. 50 and the storage cost is 20% on average inventory. How much quantity is to be purchased at a time.

Ans. 500 units

10. A company manufactures a special product which requires a component 'A'. The following detail is available-
- (i) Annual demand = 8000 units
  - (ii) Cost per unit = Rs. 400
  - (iii) Carrying cost = 20%
  - (iv) Cost of placing an order = Rs. 200 per order.

The company has been offered a quantity discount of 4% on the purchase of 'A' provided the order size is 4000 components at a time.

You are required to

- Calculate the economic order quantity.
- Advise whether the company should avail quantity discount.

Ans. ( EOQ = 200 units; Not to accept the quantity discount)

11. The following information is supplied to you in respect of an item of stores.
- |               |   |          |
|---------------|---|----------|
| Minimum usage | = | 50 units |
|---------------|---|----------|

Maximum usage	=	150 units
Reorder quantity	=	600 units
Reorder period	=	4 to 6 weeks

You are required to ascertain.

- (i) Reorder level
- (ii) Minimum stock level
- (iii) Maximum stock level
- (iv) Average stock level

Ans. (Reorder level = 900 units; Minimum stock level = 400 units; Maximum stock level = 1300 units; Average stock Level = 850 units)

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## 8.11 Reference Books

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## Unit - 9 : Management of Cash and Marketable Securities

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### Structure of Unit:

- 9.0 Objectives
- 9.1 Introduction
- 9.2 Meaning of Cash
- 9.3 Motives of Holding Cash
- 9.4 Meaning and Objectives of Cash Management
- 9.5 Factors Affecting the Cash Requirement
- 9.6 Functions of Cash Management
  - 9.6.1 Cash Planning and Control
  - 9.6.2 Management of Cash inflows and Outflows
  - 9.6.3 Determination of Optimum Level of Cash
  - 9.6.4 Optimum investment of Surplus Cash
- 9.7 Cash Management Models
  - 9.7.1 Baumol's Model
  - 9.7.2 Miller-Orr Model
- 9.8 Investment in Marketable Securities
- 9.9 Summary
- 9.10 Key Words
- 9.11 Self Assessment Questions
- 9.12 Reference Books

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### 9.0 Objectives

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The main objectives to study this unit are:

- To explain the reasons of holding cash.
- To describe the meaning and objectives of cash management.
- To explain the factors which affect the cash requirement.
- To discuss the techniques of cash planning and control.
- To focus on the management of cash collection and disbursement.
- To highlight the need for investing surplus cash in marketable securities.
- To understand cash management models to determine the optimum cash balance.

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### 9.1 Introduction

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Since cash is the medium of exchange, it is the most important component of working capital. Cash is the basic input required to keep the organisation running on a continuous basis and the ultimate output expected to be realised by selling goods and services. It can be compared to the blood in the human body which gives life and strength to the body. Similarly, Cash keeps the organisation as a vital entity. The firm should keep sufficient cash, neither more nor less. Cash shortage will disrupt the firm's manufacturing operations while excessive cash remaining idle will increase the cost without contributing anything towards the profitability of the organisation and since cash is the most sensitive and fraud prone asset, there will be high chances of embezzlement. Therefore, for smooth functioning and for higher profitability effective cash management is of paramount importance. Apart from the fact that it is the most liquid current asset, it is the common denominator to which all current assets get converted eventually. This underlines the significance of cash management.

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## 9.2 Meaning of Cash

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Cash is the money which a firm can disburse immediately without any restriction. In cash management, the term cash is used in both narrow and broad senses. In narrow sense, it includes coins, currency, cheques, drafts held by the firm and demand deposits in its bank accounts.

In broader sense, it also covers near cash assets, i.e. marketable securities and time deposits in banks and other financial institution. The word 'cash management' is, generally used for cash and near cash assets i.e. for both type of assets.

Cash has the following characteristics : -

1. Cash itself does not produce goods or services. Interest can be earned by depositing or lending it but it does not earn any profit like other assets. So it is called an unproductive asset. Shortage of cash is likely to harm the operations of a firm.
2. Every business needs to show a minimum cash to carry its business activities. If business does not show sufficient cash balance, it will not be able to pay its creditors on time. This may be called critical level of cash.
3. Cash is a medium of exchange and plays an important role as most of the transactions involve flow of cash funds.
4. Deploying extra funds always involves opportunity cost. Therefore, excess cash should be invested in a profitable way to yield something in the form of interest and dividend rather than remaining idle.

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## 9.3 Motives of Holding Cash

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Although cash does not earn any substantial return for the business on its own, a firm holds cash by virtue of the following motives : -

- a) Transaction Motives:** Transaction motive is the most important reason for which cash balance is maintained by a firm. This motive refers to the holding of cash for meeting the day-to-day transactions of business. Firms hold cash to make the necessary payments for the goods and services they require i.e. purchase of raw material, hiring of labour, repair and maintenance of fixed assets etc. Similarly, there is a regular inflow of cash in the form of interest, dividend, cash sales, collection from debtors etc.

The need to hold cash arises because cash receipts and cash payments do not coincide perfectly. Sometimes cash receipts (inflows) exceed cash payments (outflows) or vice versa. So, the firm should maintain adequate cash balance to meet its obligations when outflows exceed inflows, otherwise firm will lose its reputation in the market. When cash is retained by a firm, it is said to have been held for transaction motive. Thus, transaction motive refers to holding of cash to meet anticipated obligations whose timings do not perfectly synchronise with cash receipts.

- b) Precautionary Motives:** The second motive of holding cash is to make the business to cope with unforeseen contingencies. It provides a cushion or buffer to withstand some unexpected emergency. "The cash balance held in reserve for random and unforeseen fluctuations in cash flow are called as Precautionary Motive".

Unexpected cash needs at short notices may arise as a result of:

- a) uncontrollable situations like floods, droughts, fire, accidents, strike, lockouts etc.,

- b) presentation of bill for settlement earlier than expected,
- c) slow recovery of tradebills,
- d) sheer rise in material and labour cost;
- e) cancellation of some orders for goods on account of poor quality and
- f) some penalty is imposed under some court orders.

The quantum of precautionary cash will depend upon the predictability of cash inflows. **Micheal firth** say's, "the more uncertain the cash flows are, the greater the precautionary balances that have to kept." If a firm can borrow at short notice to pay the unforeseen obligations, it will need to maintain a relatively small balance and vice-versa. Some times, a portion of such cash balance may also be held in marketable securities to earn some return.

- c) **Speculative Motive:** Speculative motive refers to the holding of cash to take advantage of unexpected opportunities which may emerge suddenly. Sometimes firms hold cash balances above the precautionary level of cash balance to ; (a) take advantage of speculative investment opportunities (b) exploit discounts for prompt payment, (c) improve credit rating, (d) make purchases at reduced price by paying immediate cash (e) delay the purchase in anticipation of decline in price.

while the precautionary motive is defensive in nature, the speculative motive represents positive and aggressive approach.

"The speculative motive is the desire of the firm to take advantage of opportunities which present themselves at unexpected moments or which are typically outside the normal course of business". In addition to above some firms have cash balance for compensation motive discussed as below.

- d) **Compensation Motive:** Another motive to hold cash balance is to compensate banks for providing certain free services like clearance of cheques, transfer of funds etc. and loans. Usually clients are required to maintain a minimum balance in there accounts, which cannot be utilized by the firm for transaction motives. The banks themselves can use the amount to earn a return. Such balances are compensating balances.
- e) **Statutory Motive:** This motive is applicable particularly in case of banking industry, where as per the provisions of sec. 42 (1) of Reserve Bank of India Act 1935 and as per the provisions of sec. 18 of Banking Regulation Act 1949, all the commercial banks are required to maintain some minimum amount of cash with themselves, with their branches and in a current account with RBI. If a bank fails to meet the minimum cash reserve requirements, it will be levied with civil and criminal penalties.

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## 9.4 Meaning and Objectives of Cash Management

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Cash flows are inseparable parts of the business operations of firms. While inadequacy of cash disturbs the functional schedule and payment which can cause the firms failure, excess of cash means blockage of funds, which lowers the profitability of firm. Cash Management is a technique to plan and control of cash in such a way that sufficient cash is always available to meet the obligations of the firms and excess balances, if any, may invested to enhance profitability.

A cash management scheme therefore, is a delicate balance between the twin objectives of liquidity and costs.

**Objectives of Cash Management:** The main objective of cash management is to trade-off liquidity and profitability in order to maximise the firms value. The larger the cash balance, the greater the degree of

liquidity, the lesser will be profit earning capacity of the firm. Similarly, the lesser the cash balance and the degree of liquidity, the more will be the profit earning capacity. So every firm needs optimum level of cash. The basic objectives of cash management are :-

- i) to meet the cash disbursement needs as per the payment schedule,
- ii) to minimize the cash balance.
- iii) effective control of cash.

These are conflicting and mutual contradictory and the task of cash management is to reconcile them.

- i) **Meeting the Cash disbursement Needs:** In the normal course of business firms need cash to invest in inventory, pay to short term lenders and to make payment for operating expenses. If these payment are not meet on time, the business operations may be disturbed.

Thus it is needless to say that all the business activities would remain stand still if proper payment schedule is not maintained. The primary objectives of cash management is to ensure the meeting of cash outflows or disbursements as and when required.

- ii) **Minimising Funds Locked Up as Cash Balances:** Another objectives of cash management is to minimise the amount locked up as cash balance because whatever cash balance is maintained, the firm loses interest income on that balance. Therefore, investment in idle cash balance must be reduced to minimum.

- iii) **Effective Control of Cash:** Usually, the financial manager is confronted with two conflicting views. On one hand, although the higher cash balance ensures proper payment which will prevent the firm from bankruptcy or insolvency, will make good relations with suppliers, firms can bargain for discount, but it also implies that large funds will remain idle as cash is a non earning asset and the firm will have to forgo profits. On the other hand, if a firm keeps its cash balance at low level, it cannot meet its payment schedule. The aim of cash management should be to try to have an optimum level of cash by taking into account the above facts.

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## 9.5 Factors Affecting the Cash Requirement

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A firm must have so much of cash balance, that daily requirements and unexpected demands can be met out. The factors affecting cash requirements and their effect on cash management are as follows:

1. **Credit Position of the Firm:** Firms with good and sound credit standing and goodwill need not to maintain separate cash for unforeseen situations, as cash is available to such firms whenever needed. They can get liberal credit facilities to purchase necessary material. On the contrary, firms with bad credit position shall have to maintain high level of cash balance.
2. **Relation With Banks:** If firm has good relation with banks, it can get the facility of cash credit and bank overdraft resulting less requirement of maintaining cash balance.
3. **Terms of Purchase and Sale:** Terms of purchase and sale also affect the level of cash balance. If a firm has facilities to buy material on credit terms but sells its products on cash, it can operate its business affairs with a little cash balance. On the other hand, if the firm makes purchases on cash basis but sells its products to customers on credit terms, larger cash balance will have to be maintained.
4. **Nature of Demand of Goods:** If there is a steady demand of product in the market i.e. products of day to day requirement (necessary items) and the product is sold for cash or for short credit period, firm will need low level of cash. On the contrary, firm's engaged in the production of luxury items have to maintain high level of cash.

5. **Inventory Policy:** If high level of inventory is maintained by the firm, large amount is required for this, while if a firm follows just in time inventory system, it need not to maintain large cash funds.
6. **Production Process:** Longer the production process, higher the requirement of cash balance but if production process is short, the need of maintaining cash balance will be low.
7. **Collection Period of Receivables:** If, in a firm, speed of collection of accounts receivable is quick, the cash will be available at all time, bad debts will be lower and, the firm is not required to carry large cash balance. However, if collection period is large, high balance will have to be maintained.
8. **Management Policy:** Cash balance held by a firm also depends upon management policies and attitude towards the liquidity preference, risk bearing capacity, sales and purchases policy, quantity of investment and inventory etc. If the owners and managers of the firm want strict plans of cash management, it can work with lower cash balance otherwise high balance will be required.
9. **Matching of Cash Inflows and Outflows:** The extent of non synchronization between cash inflow and outflow determines the requirement of cash . Higher the degree of variance between cash collection and disbursement, higher will be the requirement of cash and vice versa.

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## 9.6 Functions of Cash Management

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Management of cash is an important function of the finance manager. He should formulate strategies for the following areas : -

### 9.6.1 Cash planning and Control

Cash planning is a process of predicting cash inflows and cash outflows of the firm so as to determine surplus or shortage of cash. At times, a firm can have idle cash with it if its cash inflows are more than its outflows. Such excess can be anticipated and properly invested if cash planning is resorted to. Similarly, cash poor position can be corrected if the cash needs are planned in advance. Thus, cash planning is a technique to plan and control the use of cash. This may be done on daily, weekly or monthly basis depending upon the size of the firm and policies of management. Cash budget is the most significant tool for cash planning and control.

- a) **Cash Budget:** A firm should hold adequate cash balances but should avoid excessive balances. The firm has therefore to assess its need for cash properly. “A cash budget is a statement showing anticipated cash inflow, outflow and net cash balance for a future period of time”.

Cash budget is an important device to forecast the predictable discrepancies between cash inflows and outflows over a projected time period. It is a summary statement which shows the estimated cash inflows and cash outflows over the firm's planning horizon. The time period for which cash budget can be prepared depends upon the following points : -

- i) Impact of seasonal variations on cash flows;
- ii) Degree and pattern of fluctuations in cash flows, and
- iii) Preciseness in prediction of cash flows.

#### A Cash Budget has the following benefits:

- It coordinates the timings of cash needs. It identifies the period(s) when there might either be a shortage of cash or remain an abnormally large balance.
- It also helps to pinpoint period(s) when there is likely to be excess cash to take advantage like cash discounts on its accounts payable, capital expenditure decision etc.

- Lastly it helps to plan/arrange adequately needed funds (avoiding excess/shortage of cash) on favorable terms.

There are three methods to prepare the cash budget:

- Receipt and Payment Method.
- Adjusted Profit and Loss Account Method, and
- Projected Balance Sheet Method.

For short term (monthly, weekly, quarterly) cash budget, receipt and payment method is used while for long term cash budget other methods can be used.

Methodology of preparing cash budget is explained in detail in the chapter - 'Financial Forecasting'.

With advance planning through cash budget firms get adequate time to take the necessary action for borrowing and lending of cash on the terms which are most advantageous to the firm.

- b) Cash Flow Analysis:** A simple definition of a cash flow statement is - 'a statement which discloses the causes of changes in cash position between the two periods'.

As per ICWAI, "Cash flow statement is a statement setting out the flow of cash under different heads of sources and their utilizations to determine the requirements of cash during the given period and to prepare for its adequate provisions". Thus along with changes in the cash position the cash flow statement also outlines the reasons for such inflows or outflows of cash which in turn helps to analyze the functioning of the business. Cash flow analysis is based on historical data while cash budget is a technique for future estimation.

- c) Ratio Analysis:** Ratios like cash turnover ratio, cash flow coverage ratio, cash payment ratio are also important techniques of cash planning and control.

### 9.6.2 Management of Cash Inflows and Outflows

After knowing the cash position with the help of cash budget, the management should work out the basic strategies to be employed to manage its cash flows. So that there does not exist a significant deviation between projected cash flows and actual cash flows. In the words of **Van Horne**, "Optimising cash availability involves accelerating collections as much as possible and delaying payments as long as is realistically possible". The methods used for accelerating the collections and decelerating disbursements are as follows -

- (A) Accelerating Cash Collections:** In order to accelerate cash inflows, the collection from customers should be prompt. The finance manager has to devise action not only to fraudulent diversion of cash but also to speed up collection of cash.

A firm can conserve cash and reduce its requirements for cash balances if it can speed up its cash collections by issuing invoices quickly or by reducing the time lag between a customer pays bill and the cheque is collected and funds become available for the firm's use i.e. first of all customers should be encouraged to make the payments as early as possible and secondly efforts should be made to quickly process and collect the cheques and drafts deposited by the customers. There are basically three types of floats that create the difference : -

**(i) Mail Float:** The time gap between the postage of cheques / drafts by the debtors and the receipt of the same in the firm is called mail or postal float.



**(ii) Processing Float:** Time taken in processing the cheque within the firm before they are deposited in the bank due to lethargy of employees is termed as processing float.

**(iii) Collection Float:** The time difference between the cheque is deposited into the bank and its actual realisation is called collection float.

Decentralised collection systems known as concentration banking and lock box systems can help us to speed up collection of cash and in reducing the time involved in these floats considerably.

**(a) Concentration Banking:** A large firm operating over wide geographical areas can speed up its collection by following a decentralised collection procedure. In concentration banking the company establishes a number of strategic collection centres in different regions instead of a single collection centre at the head office. Payments received by the different collection centres are deposited with their respective local banks which in turn transfer all surplus funds to the concentration bank of head office. The concentration bank with which the company has its major bank account is generally located at the headquarters. Concentration banking is one important and popular way of reducing the size of the float as it helps in -

**i) Reduction of Mailing Time:** Under the system of concentration banking, as the collection centres themselves collect cheques from the customers and immediately deposit them in local bank account, the mailing time is reduced. If collection centres are allowed to send bills to the customers of their respective areas, the time required for mailing is less than the bills are mailed from the head office.

**ii) Reduction of Time Required to Collect Cheques:** As the cheques deposited in the local bank accounts are usually drawn on banks in that area, the average collection period also comes down.

**iii) Expediting Collection of Cash:** The system of concentration banking also helps in quicker collection of cash as it reduces the size of deposit float.

Thus, in case of business organisations having large number of branches located at different places all over the country, this system helps a lot in the quick collection of money. Under this method, the firm will have to bear additional costs for establishing collection centres in different areas. Therefore, the criterion for adopting this system of concentration banking is that saving or benefits from this should exceed the cost of using this system. Generally, this system may be beneficial for firms having large business and scattered customers.

**(b) Lock - Box System:** Lock-box system is another step in expediting collection of cash. Lock-Box is a post office box maintained by a firm's bank that is used as a receiving point for customer remittance. Collection centre and its actual depositing in the local bank account. Under lock-box system, the firm hires a post-office box and instructs its customers to mail their remittances to the box. The firm's local bank is given the authority to pick up the remittances directly from the lock box. The bank collects from the box several times a day. It deposits the cheques, clears them locally and credits the cash in the firm's account. Local banks are given standing instructions to transfer funds to the Head Office when they exceed a particular limit.

The local bank sends a deposit slip together with the list of payments and other enclosures to the firm for proof, record and information after crediting the respective account of the firm.

The selection of the cities for lock-boxes depends upon the geographic coverage of business

area; number of customers in a particular area; frequency of receiving remittances from customers and the cost of renting out and using post boxes. Lock box system in a sense, is like concentration banking since the collection is decentralised. The only significant difference between the two is that, under concentration banking system the customers send the cheques to the collection centres, while under lock-box system, they send them to post-office box.

In a way, the lock box arrangement is an improvement over the concentration banking system because one step in the collection process is eliminated with the use of lock box. This system saves (i) processing time within the firm before depositing a cheque in the bank and (ii) the cheques received in the lock box are not delivered by the post office or the firm itself to the bank, rather, the bank itself picks them up saving this mailing time.

The following are the advantages of lock-box system : -

- (i) It helps to eliminate the time lag between the receipt of cheques by a firm and their deposit into the bank.
- (ii) The system reduces the overhead expenses as the firm is free from botheration of receiving, processing, endorsing and depositing remitted cheques.

Although, the use of lock-box system accelerates the collection of receivables, the set up of this system involves cost as firms have to pay compensation to the bank for services. Therefore, the lock-box system will prove useful and economical for large firms which receive a large number of cheques from a wide geographical area.

**(c) Minimum Number of Bank Accounts:** Sometimes a firm may have more bank accounts and we know it is the policy of banks to have some specified minimum balance in the account, resulting blocking of some part of the cash in each such account. So, by closing the superfluous accounts the firm can release funds for investment in profitable channels.

**(d) Other Methods:** Some other methods for managing collection of cash are -

- Offering cash discounts so that in their anxiety to avail this facility, the customers would be eager to make payments early.
- What a customer has to pay, the period of payment etc. should be notified accurately and in advance i.e. prompt billing.
- Personal visit to customers for receiving cheques particularly of large amounts.
- Control on inter-bank transfer of cash.
- Setting a maximum limit of cash which each bank of the firm will maintain at a time. The excess balance should be immediately transferred by wire to the principal bank of the firm.

**(B) Slowing Disbursement:** The operating cash requirement can be reduced by slow disbursement of accounts payables. Slow disbursements represent a source of funds requiring no interest payments. But this should not impair the credit rating or reputation of the firm. There are several techniques to delay payment of accounts payable. Some of important methods are as below : -

**1. Centralised Disbursement Centre:** The firm should follow the centralised system for disbursements as against decentralised system for collections. Under centralised system, as all payments are made from a single control account, there will be delay in presentation of cheques for

payment by parties who are away from the place of control account. Thus, the larger is the delay or presentation of cheques for collection by the creditors the smaller bank balance will have to be maintained by the firm.

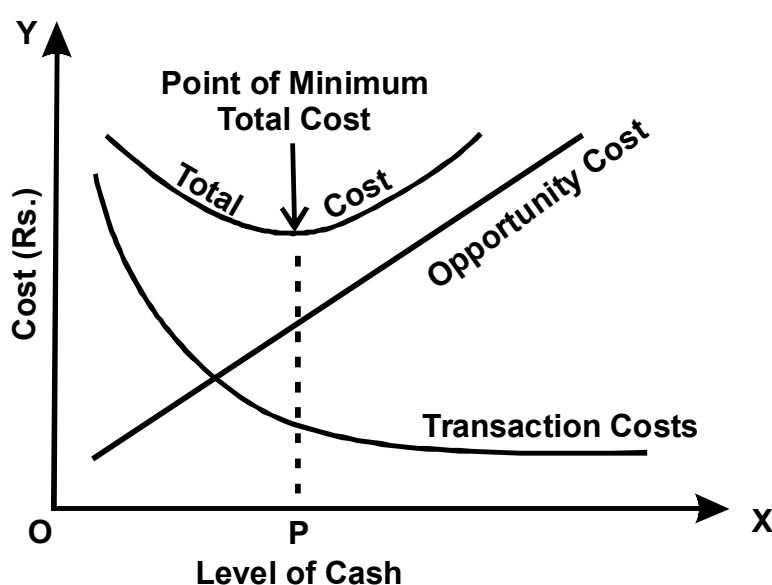
**2. Avoidance of Early Payments:** According to the terms of credit, some credit period is allowed to the buyers. The finance manager should try to control over the timing of payments so as to ensure that bills are paid only as they become due. When a firm makes payment on due dates, it should neither lose cash discount nor its prestige on account of delay in payments. Thus all payments should be made on due dates, neither before nor after.

**3. Playing the Float:** It is a technical process by which a firm can make maximum utilisation of cash. Float means the amount blocked in cheques issued but yet to be collected and encashed. In other words, float is the difference between the balance shown in firm's cash book (bank column) and balance in the pass book of the bank. The difference between the total amount of cheques drawn on a bank account and the balance shown on the bank's book is caused by transit and processing delay. For example, If the party is at some distant station then cheque will come through post and it may take a longer period before it is presented. If the finance manager can accurately estimate when the cheque issued will be deposited and collected, he can invest the 'float' during the float period to earn a return. However playing the float should not result into loss of credit worthiness of the firm.

### 9.6.3 Determination of Optimum Level of Cash

A business firm maintains the optimum cash balance for transaction and precautionary motives. This amount will depend on risk return trade off. When the firm runs out of cash or it has low liquidity, then it will have either to sell short-term securities or borrow cash. In both these situations, the firm has to bear transaction cost. On the contrary, if firm maintains high level of cash balance, the opportunity to earn interest is lost. So, the potential interest lost on holding large cash balance involves opportunity cost to the firm.

The optimal level of cash is determined by the trade-off between transaction cost and opportunity cost as shown in the following figure:



Diagram

Figure - 9.1

It is clear from the above diagram that if the firm maintains large cash balances, its transaction cost will decline but opportunity cost will increase or vice-versa. At point P the sum of the two costs i.e. total cost is the minimum. This is the point of optimal cash balance which a firm should seek to achieve.

#### 9.6.4 Optimum investment of surplus cash

Cash kept by the firm in excess of its normal need is called the surplus cash. Due to changing working capital needs or unpredictable requirements the finance manager is required to consider the minimum cash balance that the firm should keep to avoid the cost of running out of funds. This minimum level may be termed as 'Safety level of Cash'. Formula's used for this level are :-

- a) **During Normal Periods:** Safety level of cash = Desired days of cash x Average daily cash outflows.
  - b) **During Peak Periods:** Safety level of cash = Desired days of cash at the peak period x Average of highest daily cash outflows
- Firm can breakup its surplus into these categories:

- i) Surplus which is made available for meeting unforeseen disbursements should be invested in assets which can be immediately sold without much loss.
- ii) Surplus which is made available for some specific payments like dividend, capital expenditure should be invested in securities whose maturities coincide with the date of payments.
- iii) Surplus which is not required for any specific purpose like general reserve, can be invested in securities with long term maturity and thus firm can earn more return. Having determined both the temporary and permanent cash surplus and after considering the following factors, the finance manager should decide the channels of investment :-

**a) Safety:** Safety in investment means absence of risk. The risk associated with a loss in value of principal amount invested in marketable securities is the most important aspect of selection process. Therefore, the firm should select those securities which have no risk of default of interest or recovery of principal. The rule of selection of marketable securities is to invest in less risky securities and be prepared to sacrifice extra return for the sake of safety.

**b) Liquidity:** Liquidity refers to the ability to transform a security into cash. To ensure liquidity, the money should be invested in marketable (short term) securities including Government treasury bills and short term fixed deposits with banks.

**c) Maturity:** Maturity refers to the time period over which interest and principal are to be paid. The price of long-term securities fluctuates more widely with the interest rate changes than the price of short term securities. Hence, long-term securities are relatively more risky. Therefore, for safety reasons, the firm prefers to invest excess cash in short-term securities.

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### 9.7 Cash Management Models

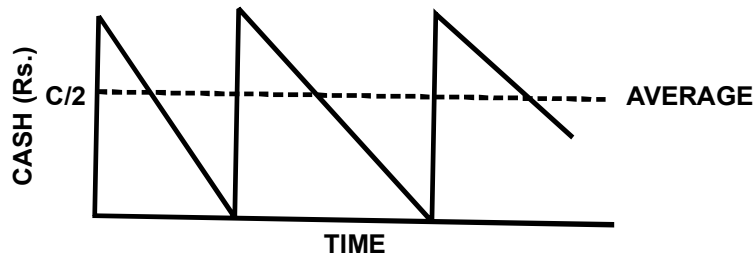
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To help in determining optimum cash balance, several types of cash management models have been designed. Out of such models, two of them are : (1) Baumol's Model, i.e., optimum cash balance under certainty, and (2) The Miller-Orr Model i.e., Optimum cash balance under uncertainty are quite popular.

#### 9.7.1 Baumol's Model : (Economic Order Quantity Model, 1952)

Baumol's model, suggested by **William J. Baumol**, considers cash management similar to an inventory management problem. It is a formal approach in determining a firm's optimum cash balance under certainty. According to this model, optimum cash level is that level of cash where the carrying costs and transactions

costs are the minimum. The carrying cost refers to the cost of holding cash (opportunity cost) namely, the interest foregone on marketable securities. The transaction cost refers to the cost involved in getting the marketable securities converted into cash. It can be understood by following diagram : -



**Figure - 9.2**

For preparing the above diagram it is assumed that the demand of cash is steady for a given period of time. During this period the firm can recover cash after selling the investments. Suppose opening cash balance with firm is C and as and when this balance is spent on various expenses, the firm sells the investment hence when cash balance becomes zero, the funds are transferred from investment to cash.

This optimum cash balance according to this model will be at that point, where these two costs are minimum.

The formula for determining optimum cash balance is : -

$$C = \sqrt{\frac{2UP}{S}}$$

Here, C = Optimum cash balance

U = Annual or monthly cash disbursement

P = Fixed cost per transaction

S = Opportunity cost of holding cash (one rupee p.a. or p.m.)

The Baumol's model has the following assumptions : -

- i) The firm can forecast its cash requirement with certainty.
- ii) Cash disbursement will be steady during a given period.
- iii) The sequence of cash receipt and disbursement will continue to be the same.
- iv) Whenever the firm converts its securities into cash, its transaction cost will be the same.
- v) The firm's opportunity cost of holding cash is known and it is the same over time.

**Illustration 1 :** XYZ Ltd. estimates its total cash disbursement Rs. 12,60,000 for the next year. The firm will have to incur Rs. 20 per transfer. Marketable securities yield 8% per annum. Determine the optimum cash balance according to Baumol's Model.

**Solution :**  $C = \sqrt{\frac{2UP}{S}}$

$$C = \sqrt{\frac{2 \times 1260000 \times 20}{0.08}}$$

$$= \text{Rs. } 25100$$

**Limitation of Baumol's Model:** The assumptions do not fit in practical environment. Practically cash disbursements are found to be variable and uncertain and variance will be there in cash receipts and disbursements during each month or days in a month. Transaction and opportunity cost also varies over time.

### 9.7.2 Miller-Orr Model

Miller-Orr (MO) Model helps in determining the optimum level of cash when the demand for cash is not steady and cannot be known in advance. MO model deals with cash management problem under the assumption of random cash flows by laying down control limits for cash balances. These limits comprise of (i) upper limit, (ii) lower limit, and (iii) return point. Setting of the control limits depend upon the fixed cost associated with a securities transaction, the opportunity cost of holding cash and the degree of likely fluctuations in cash balances. These limits satisfy the demands for cash at the lowest possible cost. The following diagram illustrates the Miller-Orr Model :

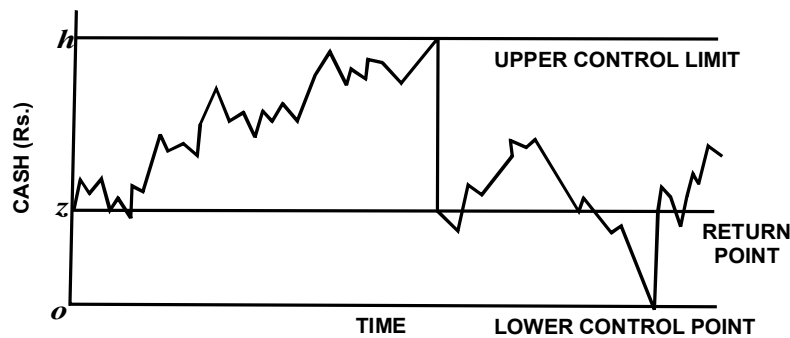


Figure - 9.3

The MO Model is more realistic as it allows variations in cash balance within lower and upper limits.

**Recent developments in Cash Management:** Both technological advancement and desire to reduce cost of operations has led to some innovative techniques in managing cash. Some of them are : -

- a) Electronic Fund Transfer
- b) Zero Balance Account
- c) Petty Cash Imprest System
- d) Virtual Banking

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## 9.8 Investment in Marketable Securities

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The marketable securities are the short-term money market instruments that can easily be converted into cash, hence these are considered as a part of liquid assets.

Management of marketable securities is an integral part of investment of cash as this may serve both the purposes of liquidity and cash. As the working capital needs are fluctuating, it is possible to park excess funds in some short term securities, which can be liquidated when need for cash is felt.

The following short term investment opportunities are available to companies in India to invest their surplus cash : -

1. **Bank Deposits:** All the commercial banks offer short-term deposit schemes at varying rates of interest depending upon the deposit period. A firm having excess cash can make a deposit for even a short-period of few days only. These deposits provide full safety, facility of pre-mature payment.
2. **Inter-Corporate Deposits:** A firm having excess cash can make a deposit with other firms also. When a company makes a deposit with another company such deposit is known as 'Inter-Corporate

deposit'. These deposits are usually for a period of three months to one year. Higher rate of interest is an important feature of these deposits. However, these are generally unsecure and this lack of safety is the main drawback of these type of short-term investments, but returns are quite attractive.

3. **Treasury Bills:** Treasury bills are short-term government securities. The usual practice in India is to sell treasury bills at a discount and redeem them at par on maturity. The difference between the issue price and the redemption price, adjusted for the time value of money is return on treasury bills. These bills are highly safe investments and are easily marketable.
4. **Bill Discounting:** A firm having excess cash can also discount the bills of other firms in the same way as commercial banks do. On the maturity date of the bill, the firm will get the money. However, the discounting of bill as a marketable security is subject to two limitations. i.e. (i) the safety of this investment depends upon the credit rating of the acceptor of the bill, and (ii) usually the pre-mature payment of the bill is not available.
5. **Negotiable Certificates of Deposits:** NCD's are papers issued by banks acknowledging fixed deposits for a specified period of time. Commercial Papers are negotiable instruments.
6. **Money Market Mutual Funds:** Money market mutual funds (MMMFs) focus on short-term funds like marketable securities such as TBs, CPs, CDs or call money. They have a minimum lock-in period of 30 days, and after this period, an investor can withdraw his or her money any time at a short notice or even across the counter in some cases. They offer attractive yields. MMMFs have become quite popular with institutional investors and some companies. UTI's MMMF schemes are most successful so far.

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## 9.9 Summary

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Management of cash and marketable securities is one of the key areas of working capital management. Cash is required to meet a firm's transaction and precautionary needs. A firm needs cash to make payments for acquisition of resources and services for the normal conduct of business. It keeps additional funds to meet any emergency situation. Some firms may also maintain cash for taking advantages of speculative changes in prices of input and output.

The aim of finance manager in cash management is to minimize the investments in cash and at the same time ensure that the firm has sufficient liquidity.

The main objective of cash management is to trade-off liquidity and profitability in order to maximise the firm's value. Credit standing of the firm, relations with bank, management policies regarding holding inventory, liquidity preference etc. effects cash requirement of a firm. The finance manager can formulate strategies of cash management by (i) determining optimum level of cash (ii) cash planning and control (iii) managing the cash flows (iv) investing surplus cash. Cash budget is probably the most important tool of cash management.

The basic strategies that can be employed to minimise the operating cash balance are (a) Accelerating cash collection - Concentration banking, Lock box system deserve specific mention as principal methods of establishing a decentralised collection network. (b) Slowing disbursements - Centralised disbursement centre, Avoidance of early payments and Playing the float are the important techniques for slowing disbursement, but this slow down should not impair the credit rating or reputation of the firm.

A firm should hold an optimum balance of cash, and invest any temporary excess amount in marketable securities. In choosing these securities, the firm must keep in mind safety, maturity and liquidity of its investment.

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## 9.10 Key Words

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- **Cash Planning:** It is a technique to plan and control the use of cash.
- **Cash Budget:** A cash budget is a summary statement of the firm's expected cash inflows and outflows over a projected time period.
- **Cash Turnover:** The number of times the firm's cash is used during each year.
- **Transaction Motive:** It refers to holding cash to meet anticipated obligations whose timing do not perfectly coincide with cash inflows.
- **Precautionary Motive:** Holding cash to meet the unpredictable cash obligations of the firm.
- **Cash Management:** It involves the management of cash in such a way that sufficient cash is always available to meet the obligations of the firm.
- **Concentration Banking:** A mean of accelerating the flow of cash of a firm by establishing strategic collection centres.
- **Marketable Securities:** Short term money market instruments that can easily be converted into cash.
- **Mail Float:** The time gap between the postage of cheques by the debtors and the receipt of the same in the firm is called mail float.
- **Processing Float:** Time taken within the firm before depositing the cheque in the bank.
- **Collection Float:** Time difference between depositing the cheques and their actual realisation.

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## 9.11 Self Assessment Questions

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1. What is 'cash' in cash management? What are the motives of holding cash?
2. "A number of methods are being employed to speed up the collection process and maximise available cash". Explain these methods.
3. What are the objectives of cash management?
4. Discuss the functions of cash management?
5. What is Baumol Model of cash management?
6. What is Miller-Orr Model of cash management?
7. Write a short note on the investment of idle cash in readily marketable securities.
8. Write short notes on : -
  - a) Concentration Banking
  - b) Lock Box System
  - c) Optimum Cash Balance
  - d) Playing the Float
9. Explain the techniques that can be used to accelerate the firm's collection.
10. How can the optimum level of operating cash balance be determined?
11. Explain the criteria that a firm should use in choosing the short term investment alternative in order to invest surplus cash.



12. From the following information compute optimum cash balance of a firm by using Baumol's Model.

Monthly cash requirement	Rs. 6,000
Fixed cost per transaction	Rs. 10
Interest rate on marketable securities	6%

(Ans. - Rs. 15422)

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## 9.12 Reference Books

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## Unit - 10 : Cost of Capital

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### Structure of Unit:

- 10.0 Objectives
- 10.1 Introduction
- 10.2 Meaning and Definitions of Cost of Capital
- 10.3 Classification of Cost of Capital
- 10.4 Cost of Different Sources of Capital
  - 10.4.1 Debt Capital
  - 10.4.2 Preference Shares
  - 10.4.3 Equity Shares
  - 10.4.4 Retained Earnings
- 10.5 Weighted Average Cost of Capital (WACC)
- 10.6 Significance of Cost of Capital
- 10.7 Problems in Determining Cost of Capital
- 10.8 Summary
- 10.9 Self Assessment Questions
- 10.10 Reference Books

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### 10.0 Objectives

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After completing this unit, you would be able to:

- Meaning and definitions of cost of capital
- Classification of cost of capital
- Cost of different sources of capital
- Debt capital, Preference shares, Equity shares, Retained earnings
- Weighted average cost of capital (WACC)
- Significance of cost of capital
- Problems in determining cost of capital

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### 10.1 Introduction

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The cost of capital is an important factor while planning the capital structure of an organization. The cost of capital is concerned with what a firm has to pay for the capital it uses to finance new investments. The capital may be in the form of debt, retained earnings, preference shares and equity shares. Every firm, for its survival and growth, has to earn a sufficient return to cover its costs of capital and also to have surplus for its growth. If a firm's rate of return on its investment exceeds its cost of capital, the wealth of equity stockholders is enhanced. It is, because, the firm's rate of return on its investments is greater than its cost of capital, the rate of return earned on equity capital (after nearing the costs of other forms of financing) will exceed the rate of return required by equity stockholders. Hence, the wealth of equity stockholders will increase.

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### 10.2 Meaning and Definitions of Cost of Capital

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'Cost of Capital' is a concept having manifold meanings. Cost of capital, for an investor is the measurement of disutility of funds in the present as compared to the return expected in the future. From the firm's point of view, its meaning is somewhat different. From its point of view, cost of capital is the required rate of return needed to justify the use of capital. This very idea has been subscribed by the following authorities also:

“The cost of capital is the minimum required rate of earnings or the cut off rate for capital expenditure”.

**Solomon Ezra**

“The cost of capital is the rate of return a company must earn on an investment to maintain the value of the company”.

**M.J. Gorden**

“Cost of capital is the rate of return, the firm requires from investment in order to increase the value of the firm in the market rate”.

**John J. H.**

“The cost of capital is the minimum rate of return which a firm requires as a condition for undertaking an investment”.

**Milton H. Spencer**

“The cost of capital represents a cut off rate for the allocation of capital to investment of projects. It is the rate of return on a project that will leave unchanged the market price of the stock”.

**James C. Van Home**

**Conclusion :** Thus, it is clear from the above that the cost of capital is the minimum rate of return which a company is expected to earn from a proposed project so as to make no reduction in the earning per share to equity shareholders and Its market price. It is the combined coal of each type of source by which a firm raises the funds.

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### 10.3 Classification of Cost of Capital

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- 1. Historical Cost and Future Cost:** Historical cost are those which are calculated on the basis of existing capital structure. Future cost relates to the cost of funds intended to finance the expected project, historical costs are useful for analyzing the existing capital structures. Future costs are widely used in capital budgeting and capital structure designing decisions.
- 2. Specific Cost and Composite Cost:** The cost of individual source of capital is referred to as the specific cost and the cost of capital of all the sources combined is termed as composite cost. It is, thus the weighted cost of capital.
- 3. Average Cost and Marginal Cost:** The average cost is the average of the various specific costs of the different components of capital structure at a given time. The average cost is relevant for overall investment decision as on enterprise employs a mix of different sources. The marginal cost of capital is that average cost which is concerned with the additional funds raised by the firm. It is very important in capital budgeting decisions. Marginal cost tends to increase proportionately as the amount of debt increases.
- 4. Explicit Cost and Implicit Cost:** An explicit cost is the discount rate which equates the present value of cash inflows with the present value of cash outflows. In other words, it is the internal rate of return of cash flows.

Implicit cost is also known as opportunity cost. It may be defined as the rate of return associated with the best investment opportunity for the firm. It is generally said that cost of retained earnings is an opportunity cost in the sense that it is the rate of return at which the shareholders could have invested these funds had they been distributed among them.

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### 10.4 Cost of Different Sources of Capital

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In making investment decisions, cost of different types of capital is measured and compared. The source, which is the cheapest is chosen and than capital is raised. It is necessary to determine the specific cost of

each source in order to determine the minimum obligation on a company. (Generally, the following are the sources of capital:

Specific cost of different sources of raising funds are calculated In the following manner :

#### 10.4.1 Cost of Debt Capital

Funds can be borrowed both for short term as well as for long term. Short term debt is required to satisfy working capital needs. The cost of debt finance can be defined in terms of the required rate of return that the debt financed investment must yield to prevent damage to the stockholders position. The cost of debt can be computed in the following manner:

**(a) Cost of Short Term Debt:** Short term funds are borrowed for short period of time and repaid within the operating period. Cost of short term debt is the percentage of burden in relation to net proceeds of the debt. In this context, burden can be defined as the annual rate of interest accepted to be paid plus other related costs. When funds are borrowed, some expenses such as brokerage, stamps duty, legal expenses etc. are to be incurred by borrower. So, it is necessary to compute cost of debt on net proceeds. It can be understood with the help of the following example.

**Illustration 1:** Mr. X wants to borrow Rs. 1,00,000 from State Bank of India. The rate of interest is 14% p.a. The loan is repayable in one year. For this purpose Rs. 1,000 will be incurred by Mr. X. The actual cost of loan will be as follows :

**Solution :**

Net Proceeds = Rs. 1,00,000 – Rs. 1,000 = Rs. 99,000

Annual Interest charges = Rs. 14,000

Cost of Loan (before tax) =  $\frac{\text{Interest}}{\text{Net Proceeds}} \times 100$   
=  $\frac{\text{Rs.14,000}}{\text{Rs.99,000}} \times 100 = 14.14\%$

The above cost is before tax. Interest is a deductible expense for the purpose of income tax. Hence, the cost of loan after tax will be reduced. In the above example, if tax rate is 50%. The cost of loan after tax will be as follows :

Cost of Loan (after tax) = Before Tax Cost (I-T)  
= 14.14% (1-.50)  
= 7.07%

**(b) Cost of Long Term Debt:** According to **Weston and Brigham**, “The cost of debt is defined as the rate of return that must be earned on debt financed investment in order to keep unchanged the earning available to equity shareholders”. Long term debts include bonds, debentures, bank loan, term loan, public deposits etc. A company must earn minimum return on debt capital to protect the interest of shareholders. For example. A company issues 12% debentures for Rs. 10 lakhs at par. It must earn at least Rs. 1,20,000 p.a. to protect the interest of shareholders. If company earns less than Rs. 1,20,000, the return to shareholders will be affected adversely and the market value, of share will also decrease.

**Cost of Debentures or Bonds:** A company borrows capital in order to maximize the profits for its shareholders i.e., to pay higher dividend to them. It continues to use this source of finance until the incremental return is higher than the incremental cost of debt capital.

According to Sec. 2(12) of the Indian Companies Act, 1956 the term debenture includes debenture stock, bonds and any other securities of a company whether constituting a charge on assets of the company or not. Interest is paid to the debenture holders at a fixed rate. The interest on debentures is payable even if the company does not earn the profits.

Debentures or Bonds can be issued at par, at premium or at discount. When debentures or bonds are issued, a company has to incur some issue expenses such as underwriting commission, printing and other expenses, brokerage etc. These expenses are deducted from issue price while computing net proceeds. Debentures can be classified into two categories :

- (a) **Irredeemable Debentures:** These are also known as perpetual debentures. Irredeemable debentures are those whose principal is not repaid to the debenture holders by the company during its life time.

### Computation of Cost of Debentures

(i) **When Debentures or Bonds Issued at Par:** If debentures or bonds are issued at par, the cost of debentures or bonds will be :

$$(i) \quad Cd \text{ (before tax)} = \frac{I}{NP} \times 100$$

Cd = Cost of debt

I = Annual Interest Charges

NP = Net Proceeds.

$$(ii) \quad Cd \text{ (after tax)} = \frac{I}{NP} \times 100 (1 - T)$$

T = Tax rate

OR

Cd (before Tax) (I-T)

**Illustration 2:** X Ltd. issues 10,000 14% Debentures of Rs. 100 each at par. The underwriting commission and brokerage are Rs. 25,000. Assuming that tax rate for the company is 50%; calculate the cost of debt of the company before tax and after tax.

**Solution :**

$$(i) \quad Cd \text{ (before tax)} = \frac{I}{\text{Net Proceeds}} \times 100$$

$$= \frac{\text{Rs. 1,40,000}}{\text{Rs. 9,75,000}} \times 100$$

$$= 14.36\%$$

$$(ii) \quad Cd \text{ (after tax)} = Cd \text{ (before Tax) (I-T)}$$

$$= 14.36\% (1-50)$$

$$= 7.18\%$$

**(ii) When Debentures or Bonds are Issued at Premium or Discount:** In case the debentures or bonds are issued at premium or discount, the cost of debt should be calculated on the basis of net proceeds realized on account of issue of such debentures or bonds.

**Important Points:**

(i) It should be noted that interest is always calculated on face value (Paid up) of debentures.

(ii) Net proceeds should be calculated as follows :

**(a) When debentures are issued at par:**

$$\text{Net Proceeds} = \text{Face Value} - \text{Flotation Cost.}$$

**(b) When debentures are issued at premium:**

$$\text{Net Proceeds} = \text{Face value} + \text{Premium on issue of deb} - \text{issue exp. or flotation costs.}$$

**(c) When debentures are issued at discount:**

$$\text{Net Proceeds} = \text{Face value} - \text{Discount on issue} - \text{Issue expenses or flotation cost.}$$

(iii) In the absence of information brokerage, underwriting commission etc. may be calculated on face value of debentures.

**Illustration 3:** A Ltd. wants to issue 5,000 9% Irredeemable Debentures of Rs. 100 each and for which the company will have to incur the following expenses :

Underwriting commission	2%
Brokerage	0.5%
Printing and other expenses	Rs. 5,000

Calculate the cost of debt (before as well as after tax) if the Debentures are issued at (i) 5% discount, and (ii) 10% premium. The tax rate for the company is 45%.

**Solution :**

**(i) In case the Debentures are issued at 5% discount:**

**Calculation of Net Proceeds:**

		Rs.
Fact Value	Rs.	100.00
Less : Underwriting commission	2.00	
Brokerage (0.5% of Rs. 100)	0.50	
Printing (Rs. 5,000 -f 5,000)	1.00	
Discount on issue of Debentures	<u>5.00</u>	<u>8.50</u>
Net Proceeds		<u>91.50</u>

$$\begin{aligned} \text{(i) Cd (before tax)} &= \frac{I}{NP} \times 100 \\ &= \frac{\text{Rs. 9}}{\text{Rs. 91.50}} \times 100 = 9.84\% \\ \text{(ii) Cd (after tax)} &= \text{Cd before Tax (I-T)} \\ \text{Cd (after tax)} &= 9.84\% (1-.45) \\ &= 5.41\% \end{aligned}$$

**(ii) In case the Debentures are issued at 10% premium:**

**Calculation of Net Proceeds:**

		Rs.
Fact Value		100.00
Add : Premium on issue of debenture		<u>10.00</u>
	Rs.	110.00
Less : Underwriting commission	2.00	
Brokerage (0.5% of Rs. 100)	0.50	
Printing (Rs. 5,000 -f 5,000)	<u>1.00</u>	<u>3.50</u>
Net Proceeds		<u>106.50</u>

$$\begin{aligned}\text{(i)} \quad \text{Cd (before tax)} &= \frac{I}{NP} \times 100 \\ &= \frac{\text{Rs.9}}{\text{Rs.106.50}} \times 100 = 8.45\% \\ \text{(ii)} \quad \text{Cd (after tax)} &= \text{Cd before Tax (I-T)} \\ \text{Cd (after tax)} &= 8.45\% (1-.45) \\ &= 4.65\%\end{aligned}$$

- (b) Cost of Redeemable Debt:** Redeemable debentures provide for the payment of the principal amount on the expiry of a certain period. Generally, these debentures are redeemed at par or at premium. If the redeemable debentures are issued by the company, the cost of debentures can be computed by using the following formula:

$$\text{Cd (before tax)} = \frac{I + \left( \frac{RV - NP}{n} \right)}{\left( \frac{RV + NP}{2} \right)} \times 100$$

Cd = Cost of debt

I = Annual interest charges

RV = Redeemable value or price

NP = Net proceeds

n = Number of years of maturity

**Tax Adjustment:** When tax payable is computed, the interest paid on debt is deducted from income. The higher the interest charges, the lower will be the amount of tax payable by the firm, the cost of debt after tax will be calculated as follows :

$$\text{Cd (after tax)} = \text{Cd before tax (I-T)}$$

T = Tax rate

**Illustration 4: (When debentures are issued at par and redeemable at par)**

Gaurav Ltd. issued 14% Redeemable Debentures of Rs. 100 each at par for Rs. 10,00,000. The issue expenses amount to Rs. 40,000, the debentures are to be redeemed after 7 years. Assuming corporate tax rate at 50%. Calculate cost of debentures before tax and after tax.

**Solution:**

$$\text{Cd (before tax)} = \frac{I + \left( \frac{RV - NP}{n} \right)}{\left( \frac{RV + NP}{2} \right)} \times 100$$

$$\begin{aligned}
&= \frac{14 + \left( \frac{\text{Rs. } 100 - \text{Rs. } 96}{7} \right)}{\left( \frac{\text{Rs. } 100 + \text{Rs. } 96}{2} \right)} \times 100 \\
&= \frac{\text{Rs. } 14.57}{\text{Rs. } 98} \times 100 = 14.87\% \\
\text{Cd (after tax)} &= \text{Cd before Tax (I-T)} \\
&= 14.87\% (1-.50) \\
&= 7.435\%
\end{aligned}$$

**Illustration 5: (When Debentures are issued at discount and redeemable at par)** Rama Ltd. is considering to issue Rs. 5,00,000 of Rs. 1,000 9% Debentures at a discount of 5%. These debentures are repayable after 8 years. However the company will pay Rs. 16 per debenture as issue expenses. Assume 50% corporate tax rate.

Calculate the after tax cost of debentures.

**Solution:**

$$\begin{aligned}
\text{Cd (before tax)} &= \frac{I + \left( \frac{\text{RV} - \text{NP}}{n} \right)}{\left( \frac{\text{RV} + \text{NP}}{2} \right)} \times 100 \\
&= \frac{\text{Rs. } 90 + \left( \frac{\text{Rs. } 1,000 - \text{Rs. } 934}{8} \right)}{\left( \frac{\text{Rs. } 1,000 + \text{Rs. } 934}{2} \right)} \times 100 \\
&= \frac{\text{Rs. } 90 + \text{Rs. } 8.25}{\text{Rs. } 967} \times 100 \\
&= \frac{\text{Rs. } 98.25}{\text{Rs. } 967} \times 100 = 10.16\% \\
\text{Cd (after tax)} &= \text{Cd before Tax (I-T)} \\
&= 10.16\% (1-.50) \\
&= 5.08\%
\end{aligned}$$

### Working Note

#### Calculation of Net Proceeds:

		Rs.
Face value of Debenture	Rs.	1000
Less : Issue Expenses	16	
Discount on issue (5% of Rs. 1,000)	<u>50</u>	<u>66</u>
Net Proceeds		<u>934</u>

#### Illustration 6: (When debentures are issued at premium and repayable at par)

Hari Ltd. wants to issue Rs. 10 lakhs of 12% Debentures of Rs. 500 each. These debentures are to be redeemed after 10 years at par. The company will pay the following issue expenses :



Underwriting commission	1.5%
Brokerage	0.5%
Printing and other expenses	Rs. 10,000

Calculate the cost of debentures (before tax as well as after tax), if the debentures are issued at (i) 5% premium (ii) 10% premium.

Assuming that company's tax rate is 50%.

**Solution:**

**(i) When Debentures are issued at 5% premium:**

<b>Calculation of Net Proceeds:</b>	Rs.
Face value of Debenture	500
Add : Premium on issue 5%	<u>25</u>
	<u>525</u>
Less : Issue Expenses	Rs.
Underwriting commission	7.50
Brokerage	2.50
Printing and other expenses	
(Rs. 10,000 , 2,000)	<u>5.00</u>
	<u>15</u>
Net Proceeds	<u>510</u>

**Calculation of Cost of Debentures:**

$$\begin{aligned}
 \text{Cd (before tax)} &= \frac{1 + \left( \frac{RV - NP}{n} \right)}{\left( \frac{RV + NP}{2} \right)} \times 100 \\
 &= \frac{\text{Rs.}60 + \left( \frac{\text{Rs.}500 - \text{Rs.}510}{10} \right)}{\left( \frac{\text{Rs.}500 + \text{Rs.}510}{2} \right)} \times 100 \\
 &= \frac{\text{Rs.}60 - \text{Rs.}1}{\text{Rs.}505} \times 100 = 11.68\%
 \end{aligned}$$

$$\begin{aligned}
 \text{Cd (after tax)} &= \text{Cd before Tax (I-T)} \\
 &= 11.68\% (1-.50) \\
 &= 5.84 \%
 \end{aligned}$$

**(ii) When Debentures are issued at 10% premium:**

<b>Calculation of Net Proceeds:</b>	Rs.
Face value	500
Add : Premium on issue 10%	<u>50</u>
	<u>550</u>
Less : Issue Expenses : (as above)	<u>15</u>
Net Proceeds	<u>535</u>

**Calculation of Cost of Debentures:**

$$\text{Cd (before tax)} = \frac{1 + \left( \frac{RV - NP}{n} \right)}{\left( \frac{RV + NP}{2} \right)} \times 100$$

$$\begin{aligned}
&= \frac{\text{Rs.}60 + \left( \frac{\text{Rs.}500 - \text{Rs.}535}{10} \right)}{\left( \frac{\text{Rs.}500 + \text{Rs.}535}{2} \right)} \times 100 \\
&= \frac{\text{Rs.}60 - \text{Rs.}3.50}{\text{Rs.}517.50} \times 100 = 10.92\% \\
\text{Cd (after tax)} &= \text{Cd (before Tax) (I-T)} \\
&= 10.92\% (1-.50) \\
&= 5.46\%
\end{aligned}$$

### Illustration 7: (When Debentures are issued at discount and repayable at premium)

Rajeev Ltd. issued 10,000, 12.5% Debentures of Rs. 100 each at 4% discount. These debentures are redeemable after 10 years. Under the terms of debenture trust, these debentures are to be redeemed at 5% premium. The cost of floatation amount to Rs. 30,000.

Calculate before tax and after tax cost of debentures assuming a tax rate of 50%.

#### Solution:

$$\begin{aligned}
\text{Cd (before tax)} &= \frac{I + \left( \frac{\text{RV} - \text{NP}}{n} \right)}{\left( \frac{\text{RV} + \text{NP}}{2} \right)} \times 100 \\
&= \frac{\text{Rs.}12.5 + \left( \frac{\text{Rs.}105 - \text{Rs.}93}{10} \right)}{\left( \frac{\text{Rs.}105 + \text{Rs.}93}{2} \right)} \times 100 \\
&= \frac{\text{Rs.}13.70}{\text{Rs.}99} \times 100 = 13.84\% \\
\text{Cd (after tax)} &= \text{Cd before Tax (I-T)} \\
&= 13.84\% (1-.50) \\
&= 6.92\%
\end{aligned}$$

#### Working note:

Calculation of Net Proceeds:	Rs.	
Face value	Rs.	100
Less : Discount on issue of debentures	4	
Floatation Exp. (Rs. 30,000 , 10,000)	<u>3</u>	<u>7</u>
Net Proceeds		<u>93</u>

### 10.3.2 Cost of Preference Share Capital

Preference shares are the fixed cost bearing securities. A fixed rate of dividend is payable on preference shares. Although, payment of dividend on preference shares is not compulsory but it is generally paid whenever the company makes sufficient profits. Preference shares can be divided into two parts for the purpose of computation of cost of capital (i) Irredeemable Preference shares (ii) Redeemable Preference Shares.

- (i) **Cost of Irredeemable Preference Share Capital:** Irredeemable preference shares can be redeemed only when company goes into liquidation, According to the Companies (Amendment) Act, 1988, no company can issue irredeemable preference shares or shares which are redeemable after 10 years from the date of their issue. The cost of irredeemable preference share capital is calculated as follows :

$$C_p (\text{after tax}) = \frac{DPS}{NP} \times 100$$

Where, DPS = Dividend payable per preference share

NP = Net proceeds per share

Cp = Cost of preference share capital

**Tax Adjustment:** It should be noted that preference share dividend is paid out of after tax profits. Hence, the cost of preference share capital is not adjusted for taxes. The cost of preference share capital is automatically computed on after tax basis. If we want to calculate cost of capital before tax, the following formula should be used :

$$C_p (\text{before tax}) = \frac{C_p \text{ After tax}}{(1-T)}$$

T = Corporate Tax rate

**Illustration 8:** Shah Ltd. issues 10,000, 8% Preference Shares of Rs. 100 each. Cost of issue is Rs. 3 per share. Assume tax rate 50%. Calculate after tax cost of preference share capital if these shares are issued :

(a) at par; (b) at a discount of 5%; (c) at a premium of 10%.

**Solution:**

(a) **When Preference Shares are issued at par:**

$$\text{Net Proceeds} = \text{Rs. 100} - \text{Rs. 3} = \text{Rs. 97}$$

$$\begin{aligned} C_p (\text{after tax}) &= \frac{DPS}{NP} \times 100 \\ &= \frac{\text{Rs. 8}}{\text{Rs. 97}} \times 100 = 8.25\% \end{aligned}$$

(b) **When Preference Shares are issued at 5% discount:**

$$\text{Net Proceeds} = \text{Rs. 100} - \text{Rs. 5} - \text{Rs. 3} = \text{Rs. 92}$$

$$C_p (\text{after tax}) = \frac{\text{Rs. 8}}{\text{Rs. 92}} \times 100 = 8.69\%$$

(c) **When Preference Shares are issued at 10% premium:**

$$\text{Net Proceeds} = \text{Rs. 100} + \text{Rs. 10} - \text{Rs. 3} = \text{Rs. 107}$$

$$C_p (\text{after tax}) = \frac{\text{Rs. 8}}{\text{Rs. 107}} \times 100 = 7.48\%$$

- (ii) **Cost of Redeemable Preference Share Capital:** Redeemable preference shares are those shares which can be redeemed on maturity date. The cost of redeemable preference share capital can be calculated as follows :

$$\text{Cp (before tax)} = \frac{\text{DPS} + \left( \frac{\text{RV} - \text{NP}}{n} \right)}{\left( \frac{\text{RV} + \text{NP}}{2} \right)} \times 100$$

Cp = Cost of redeemable preference share capital.

n = No. of years in which shares are to be redeemed

RV = Redeemable value or Maturity value

NP = Net Proceeds

DPS = Dividend Per Preference Share.

**Illustration 9:** X Ltd. issues 10,000, 9% Preference Shares of Rs. 100 each at par redeemable after 5 years at a premium of 5%. The cost of issue (under writing commission, printing and other expenses etc.) is Rs. 3 per share. The corporate tax rate is 50%.

Calculate the cost of preference share capital (before tax as well as after tax)

**Solution:**

$$\begin{aligned} \text{Cp (before tax)} &= \frac{\text{DPS} + \left( \frac{\text{RV} - \text{NP}}{n} \right)}{\left( \frac{\text{RV} + \text{NP}}{2} \right)} \times 100 \\ &= \frac{\text{Rs}9 + \left( \frac{\text{Rs}.105 - \text{Rs}.97}{5} \right)}{\left( \frac{\text{Rs}.105 + \text{Rs}.97}{2} \right)} \times 100 \\ &= \frac{\text{Rs}.10.60}{\text{Rs}.101} \times 100 = 10.49\% \\ \text{Cp (before tax)} &= \frac{\text{Cp After tax}}{(1-T)} \\ &= \frac{10.49\%}{1-.50} = 20.98\% \end{aligned}$$

**Working Note:**

$$\begin{aligned} \text{Net Proceeds} &= \text{Face Value} - \text{Issue expenses} \\ &= \text{Rs. } 100 - \text{Rs. } 3 = \text{Rs. } 97 \end{aligned}$$

### 10.4.3 Cost of Equity Share Capital

Cost of equity share capital is the minimum rate of return that the company must earn on equity financed portion of its investments in order to leave unchanged the market price of its stock. It is sometime argued that equity share capital is free of cost. It is, because, it is not legally binding for company to pay dividends to ordinary shareholders. However, this is not true. In fact, the equity shareholders invest their funds in shares with the expectation of getting dividend from the company. Thus, equity shares involve a return in terms of dividend expected by the equity shareholders.

**Methods of Computing Cost of Equity Share Capital:**

The following methods are used for computing cost of equity share capital :

- (i) Dividend Yield Method
- (ii) Earnings Yield Method
- (iii) Dividend Yield and Growth in Dividend Method
- (iv) Realized Yield Method.

**(i) Dividend Yield Method:** It is also known as dividend price ratio method. According to this method, the cost of equity share capital is calculated on the basis of a required rate of return in terms of future dividends to be paid on equity shares for maintaining their present market price. This method is based on the assumptions that the investors give prime importance to dividends and risk in the form remains unchanged. This method does not seem to consider the growth in dividend. The following formula is used for computation of cost of existing equity shares :

$$C_e (\text{after tax}) = \frac{\text{DPS}}{\text{MPS}} \times 100$$

$C_e$  = Cost of Equity Share Capital

DPS = Dividend Per Share

MPS = Market Price per Share

**Illustration 10:** Varsha Ltd. issued 10,000 Equity Shares of Rs. 100 each at par. The company has been paying 20% dividend to equity shareholders for the past five years and expects to maintain the same in the future also. Market price of equity share is Rs. 160.

Calculate the cost of equity share capital.

**Solution:**

$$C_e (\text{after tax}) = \frac{\text{DPS}}{\text{MPS}} \times 100$$

$$C_e = \frac{\text{Rs.20}}{\text{Rs.160}} \times 100 = 12.5\%$$

**(ii) Earnings Yield Method:** This is also called 'Earnings Price Ratio' method. According to this approach, the earning per share determines the market price of equity shares. Under this method, the cost of equity share capital is equal to the rate which must be earned on incremental issues of equity shares so as to maintain the present value of investment. The following formula is used for computation of cost of equity share capital:

$$C_e = \frac{\text{EPS}}{\text{MPS}} \times 100$$

$C_e$  = Cost of Equity Share Capital

EPS = Earnings Per Share

MPS = Market Price per Share

This method of computing cost of equity capital may be employed in the following cases : (i)

When the earnings per share are expected to remain constant.

- (ii) When all earnings are distributed to the shareholders in the form of dividends.
- (iii) The market price of the share is influenced only by earnings per share.

**Illustration 11:** Jain Tubes Ltd. has issued 10,000 equity shares of Rs 100 each fully paid. It has earned profit after tax R| 1,80,000. The market price per share is Rs. 200. Calculate the cost of equity share capital on the basis of earning yield method assuming that all earnings has among shareholders.

**Solution:**

$$\begin{aligned}
C_e &= \frac{EPS}{MPS} \times 100 \\
&= \frac{Rs. 18}{Rs. 200} \times 100 = 9\% \\
EPS &= \frac{\text{Profit After Tax}}{\text{No. of Equity Share}} \\
&= \frac{Rs. 1,80,000}{10,000} = Rs. 18
\end{aligned}$$

**(iii) Dividend Yield and Growth in Dividend Method:** According to this method, the cost of equity is determined on the basis of the expected dividend rate plus the rate of growth in dividend. The rate of growth in dividend is determined on the basis of amount of dividends paid by the company for the last few years. According to this approach the cost of equity share capital may be determined by using the following formula :

$$\begin{aligned}
C_e &= \frac{DPS}{MPS} \times 100 + G \\
C_e &= \text{Cost of Equity Capital} \\
DPS &= \text{Dividend Per Share} \\
MPS &= \text{Market Price Per Share} \\
G &= \text{Growth rate in dividend}
\end{aligned}$$

**Illustration 12:** Mahadev Ltd. has issued 20,000 equity shares of Rs. 100 each. The rate of dividend paid by the company is 21%. The earnings of the company have recorded a growth rate of 5% per annum. The current market price of an equity share of company is Rs. 150.

Find out cost of equity share capital.

**Solution:**

$$\begin{aligned}
C_e &= \frac{DPS}{MPS} \times 100 + G \\
&= \frac{Rs. 21}{Rs. 150} \times 100 + 5\% \\
&= 14\% + 5\% = 19\%
\end{aligned}$$

**(iv) Realised Yield Method:** According to this method, the rate of return actually realised by shareholders forms the basis for determining the cost of equity capital. The advocate of this approach argue that the rate of earnings as well as the market price of shares are always subject to fluctuations on account of so many factors. Therefore the return actually realised is a true indicator of the return expected by the shareholders. The realised return is discounted at the present value factor and then compared with the value of investment. This approach is based on the following assumptions :

- (i) The risks of the company remain same.
- (ii) The shareholders continue to expect the same rate of return for bearing the given risk.
- (iii) The reinvestment opportunity rate of the shareholders is equal to the realised yield.

**Illustration 13:** Mr. Rajat purchased 100 shares of Hero Honda Ltd. at a cost of Rs. 428 on 1st January 2000. The face value of share is Rs. 100 each. He held them for 5 years and finally sold them on 31st Dec. 2004 for Rs. 600. The amount of dividend received by him in each of these 5 years was as follows :

Year	Dividend Per Share
2000	Rs. 12
2001	Rs. 14
2002	Rs. 15
2003	Rs. 15
2004	Rs. 18

**Solution:**

In order to calculate the cost of equity capital, it is necessary to calculate the internal rate of return. It can be calculated by 'trial and error' method.

Year	Dividend	Discount factor at 10%	Present value
	Rs.		Rs.
2000	12	.909	10.91
2001	14	.826	11.56
2002	15	.751	11.27
2003	15	.683	10.25
2004	18	.621	11.18
2004	600 (sale Proceeds)	.621	372.6
			<hr/> 427.77

The purchase price of the share is Rs. 428, which is equal to the present value of cash inflows over a period of 5 years (dividends and capital receipt on sale) at 10%. thus, the cost of equity capital can be taken at 10%.

• **Cost of Newly Issued Equity Shares:** When new equity shares are issued by the company, it has to incur some expenses such as underwriting commission, brokerage, printing and other expenses. These expenses are deducted from the issue price or market price (If it is given) and net proceeds is computed. The cost of equity capital is computed on the basis of net proceeds and dividend per share and earnings per share.

The following formulae are used to compute the cost of equity capital:

**1. Divided Yield Method:**

$$C_e = \frac{DPS}{NP} \times 100$$

**2. Earning Yield Method:**

$$C_e = \frac{EPS}{NP} \times 100$$

**3. Dividend Yield Method and Growth in Dividend Method:**

$$C_e = \frac{DPS}{NP} \times 100 + G$$

**Illustration 14:** From the following information of Santosh Ltd., calculate the cost of new equity shares of the company :

- (i) Current selling price Rs. 150 per share.
- (ii) Flotation cost are expected to be 3% of current selling price.
- (iii) The expected dividend on new shares amounts to Rs. 16 per share.
- (iv) The following are the dividends paid by the company for the last 5 years.

Year	Dividend Per Share Rs.
2000	10.50
2001	11.00
2002	12.50
2003	12.75
2004	13.25

**Solution:**

**(i) Calculation of Growth Rate in Dividend:**

The dividend declared by the company have increased from Rs. 10.50 to Rs. 13.25 during the last 4 years (and not 5 years, since dividends at the end of 2000 are being compared with dividends at the end of 2004).

$$\text{Compound Factor} = \frac{\text{Rs. 13.25}}{\text{Rs. 10.50}} = 1.262$$

Compound interest table (See Appendix 3 at the end of this book) suggests that Re 1.00 Compounds to Rs. 1.262 in 4 years at the compound rate of 6%. Therefore, the growth rate in dividends is 6%.

**(ii) Cost of Equity Capital DPS:**

$$\begin{aligned} C_e &= \frac{\text{DPS}}{\text{NP}} \times 100 + G \\ &= \frac{\text{Rs. 16}}{\text{Rs. 145.50}} \times 100 + 6\% \\ &= 11\% + 6\% = 17\% \end{aligned}$$

**Working Note:**

$$\begin{aligned} \text{Net Proceeds} &= \text{Market Price Per Share} - \text{Floatation Cost Per Share} \\ &= \text{Rs. 150} - \text{Rs. 4.50 (3\% of Rs. 150)} \\ &= \text{Rs. 145.50} \end{aligned}$$

**Illustration 15:** X Ltd. is considering an expenditure of Rs. 6 lakhs for expanding its operations. The relevant information is as follows :

No of existing equity shares	1 lakh
Market value of existing share	Rs. 60
Net earnings after tax	Rs. 9 lakhs

Compute the cost of existing share capital and of new equity share capital assuming that new shares will be issued at a price of Rs. 96 per share (Face value Rs. 100 each). The estimated cost of new issue will be Rs. 3 per share.

**Solution:**

**(i) Cost of Existing Equity Share Capital :**



$$C_e = \frac{EPS}{MPS} \times 100$$

$$= \frac{Rs.9}{Rs.60} \times 100 = 15\%$$

$$EPS = \frac{\text{Net Profit After Tax}}{\text{No. of Equity Shares}}$$

$$= \frac{Rs. 9,00,000}{1,00,000} = Rs.9$$

**(ii) Cost of New Equity Share Capital:**

$$C_e = \frac{EPS}{NP} \times 100$$

$$= \frac{Rs.9}{Rs.93} \times 100 = 9.68\%$$

#### 10.4.4 Cost of Retained Earnings

Retained earnings are the profits which have not been distributed by the company to its shareholders and have been retained in the company to be used for future expansion. They are represented by the uncommitted or free reserves and surplus. Retained earnings do not involve any cash cost or out of pocket cost. Therefore, some people argue that retained earnings are cost free. However, it is not true, Retained earnings involve an opportunity cost. From shareholder's point of view, the opportunity cost of retained earnings is the rate of return that they can obtain by Investing after tax dividend in the similar securities, if earnings are paid to them as dividend in cash. The following adjustments are made while computing cost of retained earnings.

**(i) Income Tax:** An individual pays income tax on dividend hence he would only be able to invest the amount remained after paying individual income tax on such earnings. Similarly, an individual also pays tax on capital gain. Hence, adjustment of income tax is made.

**(ii) Brokerage, Commission etc.:** When the amount of dividend is invested, some expenses like brokerage commission etc. are incurred by the investor. These expenses are deducted from invested amount.

The following formulae may be used for computation of cost of retained earnings:

$$C_r = \frac{C_e (1 - T_p) (1 - B)}{OR}$$

$$C_r = \frac{DPS (1 - T_p) (1 - B)}{MPS} \times 100$$

OR

$$C_r = \frac{EPS (1 - T_p) (1 - B)}{MPS} \times 100$$

OR

$$C_r = \frac{DPS}{MPS} \times 100 + G [(1 - T_p)(1 - B)]$$

Where :

$C_r$  = Cost of Retained Earnings

DPS	=	Expected Dividend Per Share
EPS	=	Earnings Per Share
Tp	=	Personal tax rate
B	=	Brokerage Cost
MPS	=	Market Price Per Share
Ce	=	Cost of Equity Share Capital

**Illustration 16:** Sony Ltd. retains Rs. 5 lakhs 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 3% and the shareholders came in 30% tax bracket. Calculate the cost of retained earnings.

**Solution:**

$$\begin{aligned}
 Cr &= Ce (I - Tp) (I-B) \\
 Cr &= .10(1-30) (1-.03) \\
 &= .10 (.70) (.97) \\
 &= 0.0679 \text{ or } 6.79\%
 \end{aligned}$$

**Illustration 17:** Calculate cost of retained earnings in each of the following cases :

- (a) Mr. X holds 500 shares of Rs. 100 each in Vimco Ltd. The company has earned Rs. 18 per share and distributed Rs. 10 per share as dividend among the shareholders and the balance is retained. The market price of the share is Rs. 160 each. Personal Income tax applicable to Mr. X is 30%.

- (b) The following information was obtained from Laxmi Ltd.:

Current market price of a share	Rs. 140
Cost of floatation/brokerage per share	3% on market price
Growth in expected dividends	5%
Expected dividend per share on new shares	Rs. 14
Shareholders marginal/personal income tax	30%

**Solution:**

- (a) Amount retained on 500 shares @ Rs. 8 per share is Rs. 4,000. New shares to be acquired out of Rs. 4,000 are 25 @ 160. Earnings on 25 shares @ Rs. 18 per share would be Rs. 450.

$$Cr = \frac{D(I-Tp)}{MPS} \times 100$$

D = Expected dividend

Tp = Personal tax rate

MPS = Market price of shares to be acquired.

$$= \frac{Rs.450 (1-.30)}{Rs. 160} \times 100$$

$$= 7.875\%$$

or

$$Cr = \frac{EPS(I-Tp)}{MPS} \times 100$$

$$= \frac{\text{Rs. } 18 (1-.30)}{\text{Rs. } 160} \times 100 = 7.875\%$$

Here: MPS = Market price per share

EPS = Earnings per share

$$\begin{aligned} \text{(b) Cr} &= \left[ \frac{\text{DPS}}{\text{MPS}} \times 100 + g \right] (1-T_p) (1-B) \\ &= \left[ \frac{\text{Rs. } 14}{\text{Rs. } 140} \times 100 + 5\% \right] (1-.30) (1-.03) \\ &= (10\% + 5\%) (.7) (.97) \\ &= 15\% \times .7 \times .97 = 10.19\% \end{aligned}$$

**Adjustment of Tax on Capital Gain:** When a shareholder has to pay income tax on capital gain, the following formula should be used while computing cost of retained earnings :

$$\text{Cr} = \frac{\text{DPS} (1-T_p)}{\text{MPS} (1-T_c)} \times 100$$

D = Expected dividend per share

T<sub>p</sub> = Personal tax rate

T<sub>c</sub> = Personal capital gain tax rate

MPS = Market price per share

**Illustration 18:** Find out the cost of retained earnings from the following information :

Dividend per share	Rs. 9.00
Personal income tax rate	25%
Personal capital gain tax rate	10%
Market price per share	Rs. 100

**Solution:**

$$\begin{aligned} \text{Cr} &= \frac{\text{DPS} (1-T_p)}{\text{MPS} (1-T_c)} \times 100 \\ &= \frac{\text{Rs. } 9(1-0.25)}{\text{Rs. } 100 (1-0.1)} \times 100 \\ &= \frac{\text{Rs. } 6.75}{\text{Rs. } 90} \times 100 = 7.5\% \end{aligned}$$

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## 10.5 Weighted Average Cost of Capital (WACC)

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A company has to employ owner's fund as well as creditors' funds to finance its projects so as to make the capital structure of the company balanced and to increase the return to the shareholders. Weighted average cost of capital is the average cost of various sources of financing. According to CIMA the weighted average cost of capital "as the average cost of the company's finance (equity, debentures, bank loans) weighted according to the proportion each element bears to the total pool of the capital, weighting is usually based on market valuations current yields and costs after tax."

Weighted average cost of capital is also known as composite cost of capital, overall cost of capital or average cost of capital. The composite cost of capital is the weighted average of the cost of various sources of funds, weights being the proportion of each source of funds in the capital structure.

The following steps are used to calculate the weighted average cost of capital :

- (i) Calculate the cost of the specific sources of funds (i.e., cost of debt, cost of equity share capital, cost of preference share capital, cost of retained earnings etc.). These should be calculated after tax.
- (ii) Multiply the cost of each source by its proportion in the capital structure.
- (iii) Apply the following formula :

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

$C_w$  = Weighted average cost of capital

$X$  = Cost of different sources of capital

$W$  = Weights given to different sources of capital

$\sum XW$  = Summation of the product of the specific cost of capital with the relative proportions.

$\sum W$  = Summation of weights.

**Assignment of Weights:** The assignment of weight to specific sources of funds is a difficult task. Several approaches are followed in this regard but two of them are commonly used which are

**(i) Book value weights:** Book value weights mean the weights according to the values shown in respect of the different sources of finance in the balance sheet (or in the books of accounts).

**(ii) Market value weights:** Market value weights mean the weights of different components of capital, according to the value prevailing in the market. The cost of capital of the market value is usually higher than it would be if the book value is used. The market value weights are more logical to be adopted due to the following reasons :

- (i) It represents the true value of funds invested by investors.
- (ii) Historic book value have no relevance in calculation of real cost of capital.
- (iii) It represents near to the opportunity cost of capital.

However, the market value weights suffer from the following limitations :

- (i) It is difficult to determine the market values because of frequent fluctuations.
- (ii) With the use of market value weights, equity capital gets greater importance.

**Illustration 19:** The Capital Structure of Gupta Agra Industries Ltd.

	Rs.
Equity Shares (Rs. 9 each)	20,00,000
Retained Earnings	10,00,000
9% Preference Shares (Rs. 100 each)	5,00,000
12% Debentures (Rs. 100 each)	<u>15,00,000</u>
	<b><u>50,00,000</u></b>

The equity shares of the company sales for Rs. 30. It is expected that company will pay Rs. 3 per share this year. Corporate tax rate is 50%. Assume 20% as income tax rate of individual shareholder. Compute weighted average cost of capital of existing capital structure.

**Solution:**

Calculation of Different Source of Capital (i) Cost of Equity Shares

**(i) Cost of Equity Shares:**

$$\begin{aligned}
 C_e (\text{after tax}) &= \frac{\text{DPS}}{\text{MPS}} \times 100 \\
 &= \frac{\text{Rs.3}}{\text{Rs.30}} \times 100 = 10\%
 \end{aligned}$$

**(ii) Cost of Retained Earnings:**

$$\begin{aligned}
 C_r (\text{after tax}) &= \frac{\text{DPS}(1-T_p)}{\text{MPS}} \times 100 \\
 &= \frac{\text{Rs.3}(1-.20)}{\text{Rs.30}} \times 100 = 8\%
 \end{aligned}$$

**(iii) Cost of preference Shares:**

$$\begin{aligned}
 C_p (\text{after tax}) &= \frac{\text{DPS}}{\text{NP}} \times 100 \\
 &= \frac{\text{Rs.9}}{\text{Rs.100}} \times 100 = 9\%
 \end{aligned}$$

**(iv) Cost of Debentures:**

$$\begin{aligned}
 C_d (\text{after tax}) &= \frac{I}{NP} \times 100(1-T) \\
 &= \frac{12}{100} \times 100(1-.50) = 6\%
 \end{aligned}$$

**Computation of Weighted Average Cost of Capital**

Sources (1)	Amount (W) (2)	After Tax Cost (X) (3)	Total after tax cost (XW) (2) x (3) = (4)
	Rs.		Rs.
Equity Shares Retained	20,00,000	10%	2,00,000
Earnings Preference	10,00,000	8%	80,000
Shares Debentures	5,00,000	9%	45,000
	15,00,000	6%	90,000
	50,00,000		4,15,000
	$\Sigma W$		$\Sigma XW$

$$\begin{aligned}
 \text{Weighted Average Cost of Capital} &= \frac{\Sigma XW}{\Sigma W} \times 100 \\
 &= \frac{\text{Rs.4,15,000}}{\text{Rs.50,00,000}} \times 100 = 8.3\%
 \end{aligned}$$
**Illustration 20:** Calculate weighted average cost of capital from the following information :

	Rs.
4,000 Equity shares (Fully paid up)	4,00,000
3,000 6% Debentures	3,00,000
2,000 6% Preference Shares	2,00,000

Retained Earnings 1,00,000

Earnings per equity share has been Rs. 10 during the past years and equity shares are being sold in the market at par. Assume corporate tax at 50 per cent and shareholder's tax liability 25 per cent.

(Raj. B.Com. 1993)

**Solution:**

**Calculation of Different Source of Capital Cost of Equity Share Capital:**

**(i) Cost of Equity Shares Capital:**

$$\begin{aligned} C_e (\text{after tax}) &= \frac{\text{DPS}}{\text{MPS}} \times 100 \\ &= \frac{\text{Rs.10}}{\text{Rs.100}} \times 100 = 10\% \end{aligned}$$

**(ii) Cost of Debentures:**

$$\begin{aligned} C_d (\text{after tax}) &= \frac{I}{NP} \times 100(1 - T) \\ &= \frac{\text{Rs.6}}{\text{Rs.100}} \times 100(1 - .50) \\ &= 6\% \times .50 = 3\% \end{aligned}$$

**(iii) Cost of Preference Shares:**

$$\begin{aligned} C_p (\text{after tax}) &= \frac{\text{DPS}}{NP} \times 100 \\ &= \frac{\text{Rs.6}}{\text{Rs.100}} \times 100 = 6\% \end{aligned}$$

**(iv) Cost of Retained Earnings:**

$$\begin{aligned} C_r (\text{after tax}) &= \frac{\text{DPS}(1 - T_p)}{\text{MPS}} \times 100 \\ &= \frac{\text{Rs.10}(1 - .25)}{\text{Rs.100}} \times 100 = 7.5\% \end{aligned}$$

**Computation of Weighted Average Cost of Capital**

Sources (1)	Amount (W) (2) Rs.	After Tax Cost (X) (3)	Total after tax cost (XW) (2)x(3) = (4) Rs.
Equity Shares Capital	4,00,000	10%	40,000
Debentures	3,00,000	3%	9,000
Preference Shares Capital	2,00,000	6%	12,000
Retained Earnings	1,00,000	7.5%	7,500
	10,00,000 ΣW		68,500 ΣXW

$$\begin{aligned} \text{Weighted Average Cost of Capital} &= \frac{\sum XW}{\sum W} \times 100 \\ &= \frac{\text{Rs.68,500}}{\text{Rs.10,00,000}} \times 100 = 6.85\% \end{aligned}$$

**Illustration 21:** From the following capital structure of a company find out the weighted average cost of capital using (a) book value weights and (b) market value weights.

Sources	Book Value Rs.	Market Value Rs.	After Tax Cost %
Equity Share Capital (Rs. 10 per share)	45,000	90,000	14
Retained Earnings	15,000	—	13
Preference Share Capital	10,000	10,000	10
Debentures	30,000	30,000	5

**Solution:**

**(a.) Taking Book Value Weights**

Computation of Weighted Average Cost of Capital			
Sources d)	Amount (W) (2)	After Tax Cost % (X) (3)	Total after tax cost (XW) (2)x(3) = (4)
	Rs.		Rs
Equity Shares Capital	45,000	14	6,300
Retained Earnings	15,000	13	1,950
Preference Shares Capital	10,000	10	1,000
Debentures	30,000	5	1,500
	1,00,000		10,750
	ΣW		ΣXW

$$\begin{aligned} \text{Weighted Average Cost of Capital} &= \frac{\sum XW}{\sum W} \times 100 \\ &= \frac{\text{Rs. } 10,750}{\text{Rs. } 1,00,000} \times 100 = 10.75\% \end{aligned}$$

**(b) Taking Market Value Weights**

Computation of Weighted Average Cost of Capital			
Sources (1)	Amount (W) (2)	After Tax Cost % (X) (3)	Total after tax cost (XW) (2) x (3) = (4)
	Rs.		
Equity Shares Capital	90,000	14	12,81
Preference Shares Capital	10,000	10	1,000
Debentures	30,000	5	1,500
	1,30,000		15,100
	ΣW		ΣXW

$$\begin{aligned} \text{Weighted Average Cost of Capital} &= \frac{\sum XW}{\sum W} \times 100 \\ &= \frac{\text{Rs. } 15,100}{\text{Rs. } 1,30,000} \times 100 = 11.615\% \end{aligned}$$

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## 10.6 Significance of Cost of Capital

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The cost of capital is very important concept in financial management. Prior to the development of the concept of cost of capital the problem was ignored or by passed. The progressive management always takes notice of the cost of capital while taking a financial decision. The concept is quite relevant in the following managerial decisions :

### Significance of Cost of Capital:

- 1. Capital Budgeting Decisions:** Cost of capital may be used as the measuring rod for adopting as investment proposal. In various methods of capital budgeting cost of capital is the key factor in deciding the project out of various proposals pending before the management. It measures the financial performance and determines the acceptability of all investment opportunities by discounting cash flows under present value method. The cost of capital being the minimum rate of return desired is used to compare with the actual rate of return (internal rate of return). Thus, the cost of capital provides the criterion of accepting or rejecting the proposals in capital expenditure decisions.
- 2. Capital Structure Decisions:** While designing an optimal capital structure, the management should raise capital from different sources in such a way that it optimizes the risk and cost factors. Raising of loans may be cheaper on account of income tax benefits, but it involves heavy risk because a slight fall in the earning capacity of the company may bring the firm near to cash insolvency. It is, therefore, necessary that cost of cash source of funds is carefully considered and compared with the risk involved in it.
- 3. Evaluation of Financial Performance:** The cost of capital framework can be used to evaluate the financial performance of top management. If the actual profitability, of the project is more than the projected and the actual cost of capital, the performance may be said to be satisfactory.
- 4. Allocation of Capital:** This concept is very useful in allocation of capital to various investment proposals. It is the corner stone of the investment decisions. The main goal of financial management is the wealth maximization of its shareholders. So the company must choose only those investment opportunities that are financially beneficial to the shareholders.
- 5. Helpful in Dividend Policy and Working Capital Management:** The measurement of the cost of capital helps the management in taking decisions relating to dividend policy and working capital requirements.

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## 10.7 Problems in Determining Cost of Capital

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The determination of cost of capital is not an easy task. The financial manager is confronted with a large number of problems. These problems can briefly be summarized as follows :

### Problems in Determining Cost of Capital:

- 1. Conceptual Controversy:** There is major controversy whether or not the cost of capital is dependent upon the method and level of financing by the company. According to traditional theorists, a firm can change its overall cost of capital by changing debt-equity mix. On the other hand, the modern theorists, reject the traditional view and holds that cost of capital is independent of the method and level of financing.



- 2. Computation of Cost of Equity:** Determination of cost of equity is a difficult task because the equity shareholders value the equity shares of company on the basis of a large number of factors, financial as well as psychological.
- 3. Determination of Cost of Retained Earnings:** The cost of retained earnings is determined according to the approach adopted for computing the cost of equity shares which is itself a controversial problem.
- 4. Future Cost Versus Historical Cost:** It is argued that for decision making purposes, the historical cost is not relevant. The future cost should be considered. It, therefore, creates another problem whether to consider marginal cost of capital or average cost of capital.
- 5. Problems of Weight:** The assignment of weights to each type of funds is a complex. The finance manager has to make a choice between the book value to each source of funds and the market value of each source of funds. The result would be different in each case.

## 10.8 Summary

### 1. Cost of Debt Capital:

$$\begin{aligned}
 (a) \quad Cd \text{ (before tax)} &= \frac{I}{NP} \times 100 \\
 Cd &= \text{Cost of debt} \\
 I &= \text{Annual Interest Charges} \\
 NP &= \text{Net Proceeds.} \\
 T &= \text{Tax Rate}
 \end{aligned}$$

$$\begin{aligned}
 Cd \text{ (after tax)} &= \frac{I}{NP} \times 100 (1 - T) \\
 &\text{OR}
 \end{aligned}$$

$$\begin{aligned}
 (b) \quad \text{Cost of Redeemable Debt} &= \frac{Cd \text{ (before Tax)} (1 - T)}{1 + \left( \frac{RV - NP}{n} \right)} \times 100
 \end{aligned}$$

$$\begin{aligned}
 Cd \text{ (before tax)} &= \frac{I + \left( \frac{RV - NP}{n} \right)}{\left( \frac{RV + NP}{2} \right)} \times 100
 \end{aligned}$$

$$\begin{aligned}
 Cd &= \text{Cost of Debt} \\
 I &= \text{Annual Interest Charges} \\
 RV &= \text{Redeemable value or Maturity value} \\
 NP &= \text{Net Proceeds} \\
 n &= \text{number of years of maturity} \\
 Cd \text{ (after tax)} &= Cd \text{ (before Tax)} (1 - T) \\
 T &= \text{Tax Rate}
 \end{aligned}$$

### 2. Cost of Preference Shares:

#### (a) Cost of Irredeemable Preference Shares

$$Cp \text{ (after tax)} = \frac{DPS}{NP} \times 100$$

DPS = Dividend payable per preference share

NP = Net proceeds per share

Cp = Cost of preference share capital

$$C_p (\text{before tax}) = \frac{C_p \text{ After tax}}{(1-T)}$$

T = Corporate Tax rate

(b) Cost of Redeemable Preference Shares

$$C_p (\text{before tax}) = \frac{DPS + \left( \frac{RV - NP}{n} \right)}{\left( \frac{RV + NP}{2} \right)} \times 100$$

Cp = Cost of redeemable preference share capital.

n = No. of years in which shares are to be redeemed

RV = Redeemable value or Maturity value

NP = Net Proceeds

DPS = Dividend Per Preference Share.

T = Tax Rate

3. **Cost of Equity Shares:**

(a) Dividend Yield Method

$$C_e (\text{after tax}) = \frac{DPS}{MPS} \times 100$$

Ce = Cost of Equity Share Capital

DPS = Dividend Per Share

MPS = Market Price per Share

(b) Earning Yield Method

$$C_e = \frac{EPS}{MPS} \times 100$$

Ce = Cost of Equity Share Capital

EPS = Earnings Per Share

MPS = Market Price per Share

(c) Dividend Yield and Growth in Dividend Method

$$C_e = \frac{DPS}{MPS} \times 100 + G$$

Ce = Cost of Equity Capital

DPS = Dividend Per Share

MPS = Market Price Per Share

G = Growth rate in dividend

(d) Cost of Newly Issued Equity Shares

**Divided Yield Method:**

$$C_e = \frac{DPS}{NP} \times 100$$

**Earning Yield Method:**

$$C_e = \frac{EPS}{NP} \times 100$$

**Dividend Yield Method and Growth in Dividend Method:**

$$C_e = \frac{DPS}{NP} \times 100 + G$$

#### 4. Cost of Retained Earnings:

$$C_r = \frac{C_e (1 - T_p) (1 - B)}{OR}$$

$$C_r = \frac{\frac{DPS (1 - T_p) (1 - B)}{MPS} \times 100}{OR}$$

$$C_r = \frac{\frac{EPS (1 - T_p) (1 - B)}{MPS} \times 100}{OR}$$

$$C_r = \frac{DPS}{MPS} \times 100 + G [(1 - T_p)(1 - B)]$$

$C_r$  = Cost of Retained Earnings

$DPS$  = Expected Dividend Per Share

$EPS$  = Earnings Per Share

$T_p$  = Personal tax rate

$B$  = Brokerage Cost

$MPS$  = Market Price Per Share

$C_e$  = Cost of Equity Share Capital

#### 5. Weighted Average Cost of Capital (WACC):

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

$C_w$  = Weighted average cost of capital

$X$  = Cost of different sources of capital

$W$  = Weights given to different sources of capital

$\sum XW$  = Summation of the product of the specific cost of capital with the relative proportions.

$\sum W$  = Summation of weights.

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### 10.9 Self Assessment Questions

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1. “Debt is the cheapest source of funds”, Elucidate.
2. Explain the significance of cost of capital in capital expenditure decisions.
3. Write a short note on cost of retained earnings.
4. Define “Cost of Capital”? How will you determine the cost of capital from different sources?
5. Define cost of capital and discuss its importance in capital structure decisions.
6. “Retained earnings and depreciation funds provide cost free capital”? Do you agree with this statement? If not, then explain the method of determining their costs.
7. Explain the problems faced in determining the ‘cost of capital’. How is it relevant in capital expenditure decisions?
8. X Ltd. Is considering to issue 8,000 10% debentures of Rs. 500 each. These debentures are repayable after 10 years. The company has to incur Rs. 22 per debenture as issue expenses. Assume 60% corporate tax rate.

Calculate the cost before tax and after tax if the debentures are issued:

(i) at par (ii) at a discount of 5% (iii) at a premium of 10%

(Ans. Before tax (i) 10.67% (ii) 11.48% (iii) 9.18%

After tax (i) 4.27% (ii) 4.59% (iii) 3.67%

9. Compute the after tax cost of 14% debentures from the following data :which are redeemable after 10 years :

No. of debentures issued	1,000
Face value	Rs. 100
Issue price	Rs. 90
Redeemable price .	Rs. 105
Floatation cost	Rs. 2,000
Tax rate	40%

Ans. : 9.76%

10. A Ltd., issued 1,000 10% preference share of Rs. 100 each, cost of issue is Rs. 2 per share. Calculate cost of preference share capital if these shares are issued :

(i) at par (ii) at 5% premium (iii) at 2% discount.

Assume 50% tax rate.

(Ans. : Aftertax (i) 10.2% (ii) 9.7% (iii) 10.4%

Before tax (i) 20.4% (ii) 19.4% (iii) 20.8%)

11. Vimal Ltd issued 50,000, 12% preference shares of Rs. 100 each at 10% premium. The cost of issue was Rs. 4 per share. These shares are redeemable at par after 6 years from date of issue. Corporate tax rate applicable to this company is 35%. Compute pre and post tax cost of preference shares.

(Ans. : After tax 10.68% and before tax 16.43%)

12. Sagar Ltd. requires Rs. 50,00,000 for a project. The following proposals are under consideration:

(i) To issue 12% debentures of Rs. 100 each.

(ii) To issue 9% preference shares of Rs. 100 each.

Issue expenses will be Rs. 1,00,000 in each case. Assume tax rate 35%. Both are redeemable after 8 years. You are required to compute post tax cost of debt and post tax cost of preference shares and suggest which proposal is better and why.

(Ans. : Cost of debt 8.04% and cost of preference shares 9.34%.

Issue of debentures should be preferred.)

13. Capital structure of C Ltd. is as under:

Equity shares of Rs. 100 each	10,00,000
10% Preference shares of Rs. 100 each	5,00,000
8% Debentures of Rs. 100 each	3,00,000
Retained Earnings	6,00,000
	<b>24,00,000</b>

The company earned a profit before interest and tax Rs. 4,74,000. The market price of equity share is Rs. 160 and preference share is Rs. 120 each. Company maintains dividend pay out ratio at 50%. Tax rate is 35%.

You are required to calculate cost of equity shares on the basis of:

- (i) Earnings Yield Method,  
(ii) Dividend Yield Method.  
(Ans. : After tax (i) 15.16% (ii) 8.08%)

14. The average rate of dividend paid by Anima Ltd. for the last five years is 21%. The earnings of the company have recorded a growth rate of 3% per annum. The market value of the equity shares is estimated to be Rs. 105. Find out the cost of equity share capital.

(Ans. : 23%)

15. From the following information find out cost of retained earnings:

Dividend per share	Rs. 3
Personal income tax rate	30%
Personal Capital gain tax rate	20%
Market price per share	Rs. 25
Brokerage on investment of dividend	3%

(Ans. 10.185%)

16. Ashutosh Limited company has the following capital structure :fc,

Equity Shares (Rs. 10 each)	4,00,000
Retained Earnings	2,00,000
9% Preference share capital (Rs. 100 each)	1,00,000
12% Debentures (Rs. 100 each)	3,00,000
	<b>10,00,000</b>

The equity shares of the company sales for Rs. 25. It is expected that company will pay dividend of Rs. 2 per share this year. Corporate tax rate is 50%. Assume 25% as income tax rate of individual shareholders. Calculate the weighted average cost of capital.

(Ans. : 7.1%)

17. PawanManufacturers Ltd. has total assets of Rs. 16,00,000 which has been financed with Rs. 5,20,000 of debt, Rs., 9,00,000 of equity share capital and Rs. 1,80,000 of general reserve. Company's current year profit before interest and tax is Rs. 1,35,000. It pays 8% interest on borrowed funds. Company has 9,000 equity shares of Rs. 100 each selling at a market price of Rs. 120 per share. Tax rate for the company is 35%.

You are required to compute weighted average cost of capital.

(Ans. : 10.1275%)

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## 10.10 Reference Books

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## Unit - 11 : Capital Budgeting

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### Structure of Unit:

- 11.0 Objectives
- 11.1 Introduction
- 11.2 Meaning and Definition of Capital Budgeting
- 11.3 Characteristics of Capital Budgeting
- 11.4 Need and Significance of Capital Budgeting
- 11.5 Capital Budgeting Process
- 11.6 Components of Capital Budgeting
- 11.7 Capital Budgeting Techniques
  - 11.7.1 Traditional Techniques
  - 11.7.2 Discounted Cash flow Techniques
- 11.8 Comparison of Net Present Value and Internal Rate of Return
- 11.9 Summary
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### 11.0 Objectives

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After completing this unit, you would be able to:

- Meaning and Definition of Capital Budgeting
- Characteristics of Capital Budgeting
- Need and Significance of Capital Budgeting
- Capital Budgeting Process
- Components of Capital Budgeting
- Capital Budgeting Techniques
- Traditional Techniques and Discounted Cash flow Techniques :
- Comparison of Net Present Value and Internal Rate of Return

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### 11.1 Introduction

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Capital budgeting is the process of making investment decisions in capital expenditures. A capital expenditure may be defined as an expenditure the benefit of which are expected to be received over period of time exceeding one year. Capital budgeting deals exclusively with major investment proposals which are essentially long term projects and is concerned with the allocation of firm's scarce financial resources among the available market opportunities. It is many sided activity which includes a search for new and more profitable investment proposals and the making of an economic analysis to determine the profit potential of each investment proposal. Capital budgeting is also known as capital expenditure decisions. Long term investment decisions, management of fixed assets etc.

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### 11.2 Meaning and Definition of Capital Budgeting

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Capital budgeting may be defined as the decision making process by which a firm evaluates the purchase of major fixed assets including land, building, plant and machinery, equipments. It refers to long term planning process that involves investing the firm's resources for a period longer than a year. Some important definitions

are as follows :

“Capital budgeting is long term planning for making and financing proposed capital outlay”.

**Charles T. Horngren**

“Capital budgeting consists in planning the development of available capital for the purpose of maximising the long term profitability (return on investment) of the firm”.

**R. M. Lynch**

“Capital budgeting involves the planning of expenditures for assets, the returns from which will be realised in future time periods”.

**Milton H. Spencer**

“Capital budgeting is concerned with the allocation of the firm’s scarce financial resources among the available market opportunities. The consideration of investment opportunities involves the comparison of the expected future streams of earnings from a project, with the immediate and subsequent expenditures for it”.

**G.C. Phillippats**

“The capital budgeting is essentially a list of what management believes to be worth while projects for the acquisition of new capital assets together with the estimated cost of each project.”

**Robert N. Anthony**

“The capital expenditure budget represents the plans for the appropriations and expenditures for fixed assets during the budget period.

**Keller & Ferrara**

**Conclusion:** Capital budgeting is long term planning for making and financing proposed capital outlay. It is a process by which available resources are allocated among competitive long term investment opportunities so as to promote the greatest profitability of a firm over a period of time. It refers to the total process of generating, evaluating, selecting and following up on capital expenditure alternatives.

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### **11.3 Characteristics of Capital Budgeting**

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The main characteristics of capital budgeting are as follows :

- (1) Capital budgeting is concerned with expenditure of capital nature.
- (2) Capital budgeting deals with benefits over a number of years future.
- (3) Capital expenditure plans involve a huge investment in I assets.
- (4) Capital expenditure once approved represents long I investment that can not be reversed or withdrawn without sub staining a loss.
- (5) Any error in evaluation of investment projects may lead to sum consequences.

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### **11.4 Need and Significance of Capital Budgeting**

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Capital budgeting decisions are of paramount importance in financial decision making. These decisions are related with fixed assets which in generating earnings of the firm. These decisions are the most crucial and critical and they have significant impact on the profitability aspect of the firm. Capital expenditure decisions have placed greater emphasis due following :

#### **Need and Significance of Capital Budgeting:**

1. **Long Term Planning :**Capital expenditure is a strategic investment :of some magnitude and is of a non-routine nature. It has economic life and its benefits continue over series of years.



2. **Optimum use of Funds :**Capital investment decisions require an amount of funds. Capital is a scarce resource of business. So it is essential to utilize capital in such a manner so that wealth of shareholders may be increased Capital budgeting ensures optimum utilization of larger the business.
3. **Analysis of Risk :**Capital budgeting helps in analysing the risk involved in various projects under consideration. Capital expenditure involve a greater risks as they require huge investment.
4. **Replacement Decisions :** Capital budgeting helps in taking decisions regarding replacement of old asset by a new one. The new asset may be useful and profitable for the business. A comparative study is made between these options and profitable decisions may be taken.
5. **Selection of Best Proposal :**Capital budgeting suggest the best proposal available. This is done by using various modern techniques of capital budgeting
6. **Maximization of Profit :** Fixed assets generate earnings and require huge investment. Capital budgeting decisions ensure the best utilization of fixed assets. Cost control and reduction in cost ensure maximization of profit of the business.
7. **Arrangement of Funds :** There are many sources for collecting funds and each has its own cost and merits and demerits. Capital budgeting decision helps in determining economic source of capital.
8. **Helps in Cash Budgeting :** Capital budgeting helps in preparing cash budget of the firm. It is helpful in forecasting of cash requirements.
9. **Protection from Losses :** Capital expenditure decisions are not reversible. A wrong decision may be cause of business failure. Capital budgeting protects from such: may occur due to lack of knowledge.
10. **Control over Capital Expenditure :** Capital budgeting helps in controlling the capital expenditures. Actual performance may be compared with budgeted results and necessary actions may be taken by management.
11. **Helps in Formulation of Depreciation Policy :**Capital budgeting helps in determining depreciation policy of fixed assets. A proper method of depreciation should be adopted to calculate correct cost of product and also to reduce tax liability.

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## 11.5 Capital Budgeting Process

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Capital budgeting process involves the following steps:

### Capital Budgeting Process:

1. **Origination of Investment Proposals :** The first step in capital budgeting process is the conception of a profit making idea. The idea may originate from the top management level taking for longer view in the interest of the company. A periodic review and comparison of earnings, cost, procedures and product line should be made by the management to facilitate the origination of such idea.
2. **Evaluation of Projects :** Appraisal of capital projects is important aspect of capital budgeting. Capital appraisal is concerns with evaluating the costs involved in a capital investment proposal and benefits that accrual from it. The costs and benefits are estimated in the form of cash outflows and cash inflows. This step also involves the selection of an appropriate criterion for judging the desirability of the projects.

3. **Screening and Selection :** Capital expenditure requests should be properly screened. The budget committee screens the requests in order to weed out those projects which are obviously undesirable, the projects which are under consideration are divided into three categories : (i) Most essential projects (ii) Projects which should be accepted (iii) Desirable and deferrable projects.

After screening the projects selection is made on the basis of criteria of the firm. Such criteria should encompass the supply and cost of capital the expected returns from alternative investment opportunities.

4. **Project Execution :** The funds are appropriated for capital expenditure after the final selection of investment proposals. The project execution committee must ensure that the funds are spent in accordance with appropriations made in the capital budget.
5. **Follow up :** Systematic procedure should be developed to review the performance of project during their life and also after completion, follow up comparison of actual performance with original estimates not only ensures better forecasting but also helps sharpen the technique; improving future forecasts. Such an evaluation also has advantage of forcing department heads to be made realistic and careful.

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## 11.6 Components of Capital Budgeting

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The following are the basic components of capital budgeting analysis:

- (1) **Estimating Cash Outflows :** Initial investment or outflows at zero time period refers to the sum of all cash outflows invest the project initially or during the life time of the project. It includes cost of asset, transportation costs, installation costs, and working capital requirements etc.
- (2) **Estimating Cash Inflows :** Cash inflow refers to estimated future earnings or annual operating savings accruing from the investment proposal. The earnings will be the difference of estimated revenues earned and estimated costs to be incurred during the life of the project: earnings or annual savings should be calculated on cash basis, However, cash inflows are estimated on after tax basis. Since the depreciation considered as an allowable expenditure under tax law, so it should be deducted from the accounting profit for computation of tax. For computation of cash inflows depreciation should be added to net earnings after tax depreciation. It can be expressed as follows:  
Cash Inflow = Net Profit after tax + Depreciation

Computation of Cash Inflows :

- (i) **On the basis of Sales.**

		Rs.
Annual Sales Revenue		.....
Less : <b>Operating Expenses</b>		
Direct Material	.....	
Direct Wages	.....	
Factory Overheads (including depreciation)	.....	
Office overheads	.....	
Selling and Distribution costs	.....	
Fixed Expenses (including interest on borrowings)	.....	.....
Income before tax or EBT		.....
Less: Income Tax		.....
Net Income after tax or EAT		.....
Add: Depreciation		.....
Net Cash inflows (EAT + Depreciation)		.....

**(ii) On the basis of Savings**

		Rs.
(a) <b>Estimated Savings</b>		
Estimated Savings in Wages	.....	
Estimated Savings in Scrap	.....	.....
(b) <b>Estimated Additional Costs</b>		
Additional Cost of Maintenance	.....	
Additional Cost of supervision	.....	
Cost of indirect materials	.....	
Net Savings before tax and depreciation (a)-(b)		.....
Less: Depreciation		.....
Net Savings before tax		.....
Less :Income Tax		.....
Net Savings after tax		.....
Add: Depreciation		.....
Net Savings after tax and before depreciation or Annual Cash inflow		.....

**Depreciation** : Depreciation is an item of non cash cost. There are different methods of charging depreciation viz. straight line method, diminishing balance method, sum of digits methods etc.

**(i) Straight Line Method** — Under straight line method equal an of depreciation is charged every year, under this method depreciation calculated as follows:

$$\text{Deprecation (Annual)} \equiv \frac{\text{Cost of Asset - Scrap Value}}{\text{Estimated Life in Years}}$$

**(ii) Written Down Value Method** : Under this method depreciation is provided in initial years and less in later years. According this method, the depreciation is charged on the remaining value of the at the beginning of that period. Every year the charge for depreciation is deducted from the book value and thus the book value and sub depreciation charge go on diminishing every year. This method is also as diminishing balance method.

- (3) Determining Cut-off Rate** : The minimum rate of return the firm would expect to have for accepting a particular proposals pre-determined. Generally, it is the firm's marginal cost of capital.
- (4) Ranking the Proposals** : Ranking the different investment proposals in order of priority will help management in taking decisions.
- (5) Analysing Risk** : Before selecting the proposal, risk uncertainty should be assessed properly and suitable steps should be to evaluate the profitability on the basis of the assessment of inherent risk and uncertainty.
- (6) Non-monetary Aspects** : Non-monetary considerations also be weighted such as image of the firm, moral of employees etc.

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## 11.7 Capital Budgeting Techniques

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The capital budgeting requires an estimate of future events expressed in the form of cash flows. The capital budgeting techniques assist the firm to know which proposal would contribute the maximum value to the firm. There are many techniques for evaluating and ranking the investment proposals. These techniques can

be categorized as follows:

### 11.6.1 Traditional Techniques

- (a) **Urgency Method:** Under this method, decisions for investing the funds are taken on the basis of urgency of the situation and not on the basis of any well conceived plan, because situation demands immediate action in order to avoid disruption in production process. For example, if there is a breakdown in production process due to loss of any component of the machinery which requires immediate replacement in order to avoid disruption in the production. It shall be given first priority without any delay on the part of management. In this way urgency is the sole criterion for investing the funds in the project.
- (b) **Pay-back Period Method:** Pay back period is the simplest method of evaluating the projects. **Pay back period represents the number of years required to recover the original cash outlay invested in a project.** It shows the period where total cash inflows equals the total cash outflows. In making a comparison between two or more projects, the projects having the lesser number of pay back years will be accepted. According to this method, various projects are ranked according to the length of their pay back period in such a manner that the investment with a shorter pay back period is preferred to the one which has longer pay back period.

#### Computation of Pay-back Period :

(a) **Even Cash Inflows :** If the cash inflow is uniform from year to year, the pay back period is calculated by simply dividing the initial investment by the annual cash inflow. It can be calculated as follows :

$$\text{Pay back Period} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflows}}$$

**Illustration 1 :** Following are the details of the two projects :

	Project A	Project B
Initial Investment	Rs. 2,00,000	Rs. 3,00,000
Estimated life [ in years)	5 years	6 years
Estimated scrap value	Rs. 10,000	Rs. 30,000
Annual Net earnings before tax but after depreciation	Rs. 24,000	Rs. 30,000
Tax rate	50 %	50%

Calculate pay back period and suggest which project should be selected.

**Solution :**

#### Calculation of Cash Inflows

	Project A	Project B
Net Earnings Before Tax	Rs. 24,000	Rs. 30,000
Less : Income Tax @ 50%	12,000	15,000
Net Earnings After Tax	12,000	15,000
Add : Depreciation	38,000	45,000
Annual Cash Inflows	50,000	60,000

$$\text{Pay Back Period} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflows}}$$

$$\text{Pay back Period for Project A} = \frac{\text{Rs. 2,00,000}}{\text{Rs. 50,000}} = 4 \text{ years}$$

$$\text{Pay back Period for Project B} = \frac{\text{Rs. 3,00,000}}{\text{Rs. 60,000}} = 5 \text{ years}$$

**Suggestion :** According to pay back period method project A should be selected because it has shorter pay back period.

**Illustration 2 :** Mehta Engineering Company is considering purchase of a new machine for its expansion programme. There are possible machines suitable for the purpose. Their details are as follows:

Particulars	Machine X	Machine Y	Machine Z
	Rs.	Rs.	Rs.
Capital Cost	1,00,000	1,00,000	1,00,000
Sales at standard price	1,80,000	1,60,000	1,50,000
<b>Net Cost of Production :</b>			
Direct Material	12,000	10,000	9,000
Direct Labour	13,000	14,000	16,000
Factory Overheads	20,000	18,000	19,000
Administration Overheads	16,000	22,500	17,000
Selling and Distribution Overheads	14,000	8,000	24,000

**Solution :**

**Statement Showing the Cash Inflows of Three Machines**

Particulars	Machine X	Machine Y	Machine Z
	Rs.	Rs.	Rs.
Sales at Standard Price (i)	1,80,000	1,60,000	1,50,000
<b>Less : Cost of Production :</b>			
Direct Material	12,000	10,000	9,000
Direct Labour	13,000	14,000	16,000
Factory Overheads	20,500	18,000	19,000
Administration Overheads	16,000	2,500	17,000
Distribution Overheads	14,000	8,000	24,000
Depreciation	19,000	22,500	24,000
Total Cost (ii)	94,000	95,000	1,09,000
Profit before Tax (i) - (ii)	86,000	65,000	41,000
Less : Income Tax 50%	43,000	32,500	20,500
Profit after Tax	43,000	32,500	20,500
Add: Depreciation	19,000	22,500	24,000
Annual Cash Inflows	62,000	55,000	44,500

Pay Back Period =  $\frac{\text{Initial Investment}}{\text{Annual Cash Inflows}}$

Machine X =  $\frac{\text{Rs. 1,00,000}}{\text{Rs. 62,000}} = 1.61 \text{ years}$   
 $\frac{\text{Rs. 1,00,000}}{\text{Rs. 55,000}} = 1.82 \text{ years}$

Machine Y =  $\frac{\text{Rs. 1,00,000}}{\text{Rs. 55,000}} = 1.82 \text{ years}$

Machine Z =  $\frac{\text{Rs. 1,00,000}}{\text{Rs. 44,500}} = 2.25 \text{ years}$

**Machine 'X'** is maximum profitable because its pay back period is minimum.

**Illustration 3 :** Raja Industries Limited is producing articles mostly on hand labour and is considering to replace it by a new machine. There are two alternative models A and B of the new machine. Prepare a statement of profitability showing the pay back period from the following information :

	<b>Machine A</b>	<b>Machine B</b>
Estimated Life of Machine	4 years	5 years
Cost of Machine	Rs. 90,000	Rs. 1,80,000
Estimated Savings in Scrap	Rs. 5,000	Rs. 8,000
Estimated Savings in Direct Wages	Rs. 60,000	Rs. 80,000
Additional Cost of Maintenance	Rs. 8,000	Rs. 10,000
Additional Cost of Supervision Ignore taxation.	Rs. 12,000	Rs. 18,000

**Solution :**

**Statement Showing Annual Cash Inflows**

	<b>Machine A</b>	<b>Machine B</b>
	Rs.	Rs.
Estimated Savings in Scrap	5,000	8,000
Estimated Savings in Direct Wages	60,000	80,000
<b>Total Savings (a)</b>	<b>65,000</b>	<b>88,000</b>
Additional Cost of maintenance	8,000	10,000
Additional Cost of Supervision	12,000	18,000
<b>Total Additional Cost (b)</b>	<b>20,000</b>	<b>28,000</b>
<b>Net Cash Inflow (a) - (b)</b>	<b>45,000</b>	<b>60,000</b>

**Original Investment**

Pay Back Period =  $\frac{\text{Original Investment}}{\text{Annual Cash Inflows}}$

Rs. 90,000

Machine A =  $\frac{\text{Rs. 45,000}}{\text{Rs. 1,80,000}}$  = 2 years

Rs. 1,80,000

Machine B =  $\frac{\text{Rs. 60,000}}{\text{Rs. 1,80,000}}$  = 3 years

Machine A has shorter pay back period, hence it should be preferred.

**(b) Uneven Cash Inflows :** If the annual cash inflows are uneven then the calculation of pay back period takes a cumulative form. We accumulate the annual cash inflows till the recovery of initial investment. In case the investment is recovered in between a year, it is presumed that cash inflows accrue evenly throughout the year. In such a case pay back period is calculated on proportionate basis. The pay back period can be calculated as follows:

No. of completed Years +  $\frac{\text{Original Outlay remaining to be recovered}}{\text{Annual Cash inflow of next year}}$

**Evaluation of the Project :** The pay back period can be used as an accept or reject criterion. It can be used as a method of ranking projects. It gives highest ranking to the project which has the shortest pay back period and the lowest ranking to the project which has the highest pay back period.

In case of evaluation of a single project, it may be accepted if the pay back period is less than the period fixed by the management.

**Illustration 4 :** From the following information rank the investment proposals according to pay back period.

Project	Initial Outlay	Annual Cash flow	Life (in years)
	Rs.	Rs.	
A	25,000	3,000	10
B	3,000	1,000	5
C	12,000	2,000	8
D	20,000	5,000	10
E	40,000	8,000	7

**Solution:**

**Ranking According to Pay back Period Method**

	Initial Outlay	Annual Cash Inflow	Pay back period (2)÷(3)	Rank
(1)	(2)	(3)	(4)	(5)
A	25,000	3,000	8.33 years	5
B	3,000	1,000	3 years	1
C	12,000	2,000	6 years	4
D	20,000	5,000	4 years	2
E	40,000	8,000	5 years	3

**Merits of Pay back Period :**

Pay back period is the most popular and widely recognized traditional method of evaluating capital projects. Some merits of this method are as follows:

- 1. Easy and Simple :** It is easy to calculate and simple to understand. The simplicity of pay back period is considered as a virtue by business executives which is evident from their heavy reliance on it for appraising investment proposals in practice.
- 2. Fear of Obsolescence :** This method is useful in the projects with short economic lives and those with high rate of obsolescence.
- 3. Liquidity :** This method gives importance to the speedy recovery of investment in capital assets. It stresses the liquidity as well as solvency of a firm as a guiding principle in the capital budgeting decisions.
- 4. Uncertainty:** It is useful in the industries which are subject to uncertainty, instability or rapid technological changes because the future uncertainty does not permit projection of annual cash inflows beyond a limited period.
- 5. Handy Device :** It is handy device for evaluating investment proposals, where precision in estimates of profitability is not important.

**Demerits of Pay back Period :**

Used alone pay back period may lead to incorrect conclusions. Demerits of this method are as follows:

- 1. Considers only period of Pay back :** A major limitation of pay back period method is

that it ignores all cash flows after the pay back period. It ignores, the fact that projects may have different profit stream after the pay back period is over and may lead to serious under-investment as the post pay back period profitability is not considered.

**2. Ignores Profitability:** It does not an appropriate method of measuring the profitability of an investment project, as it does not consider the entire cash inflows generated by the project.

**3. Overlooks Capital Cost:** This method overlooks the cost of capital which is an important consideration in making sound investment decisions.

**4. Over Emphasis on Liquidity:** This method gives undue weight age to short-term considerations to the exclusion of long-term objects. A project with long pay back period may be preferable if its economic life is also longer and the total surplus during the entire life of the projects is substantial.

**5. Determination of Minimum Pay Back Period :** There is no rational basis determining the minimum acceptable pay back period. It is generally a subjective decision of the management which creates so many administrative difficulties.

**6. Ignores Present Value of Cash Flows:** Pay back period ignores the present value of future cash flows. It gives equal weight to returns of a equal amounts even though they occur in different periods.

**7. Ignores Size and Cost of Project :** This method ignores the size and cost of the projects because it gives emphasis on pack back period only.

### **Improvement in Pay-back Period :**

In spite of many limitations, pay back period method is much popular in western countries. To increase the utility of pay back period, the following refinements should be applied:

**(i) Post Pay Back Profitability :** It considers returns receivable beyond the pay back period. It recognizes the entire life of the project and quantum of profits. According to this method the project which has greatest post back profitability may be accepted.

### **Computation of Post Pay Back Profitability :**

(a) When cash inflows accrue evenly throughout the life of project:

$$\text{Post pay back profitability} = \text{Annual Cash inflow (Estimated life of project - Pay back period)} + \text{Scrap value}$$

(b) When cash inflows accrue unevenly throughout the life of project.

$$\text{Post pay back profitability} = \text{Total Cash inflow in life of project} + \text{Scrap value} - \text{Initial Investment}$$

**Illustration 5 :** Two projects X and Y are before consideration of the management of Syntex Ltd. The particulars are as under:

	<b>Project X</b>	<b>Project Y</b>
Initial Investment	Rs. 1,00,000	Rs. 1,00,000
Estimated Life in years	5	6
Net Earnings after tax before depreciation		



Year	Rs.	Rs.
1	50,000	25,000
2	40,000	30,000
3	35,000	34,500
4	23,000	40,500
5	12,000	50,000
6	—	30,000

You are requested to suggest the better project using (i) Pay back period (b) Post pay back profitability.

**Solution :**

**(i) Calculation of Pay back Period**

Year	Project X		Project Y	
	Cash Inflows	Cumulative Cash Inflows	Cash Inflows	Cumulative Cash Inflows
	Rs.	Rs.	Rs.	Rs.
1	50,000	50,000	25,000	25,000
2	40,000	90,000	30,000	55,000
3	35,000	1,25,000	34,500	89,500
4	23,000	1,48,000	40,500	1,30,000
5	12,000	1,60,000	50,000	1,80,000
6	—	—	30,000	2,10,000

$$\begin{aligned} \text{Pay back Period (Project X)} &= \frac{\text{Rs. 1,00,000} - \text{Rs. 90,000}}{2 + \text{Rs. 35,000}} \\ &= 2 + \frac{10,000}{35,000} = 2.86 \text{ years} \end{aligned}$$

$$\begin{aligned} \text{Pay back Period (Project Y)} &= \frac{\text{Rs. 1,00,000} - \text{Rs. 89,500}}{3 + \text{Rs. 40,500}} \\ &= \frac{10,500}{40,500} = 3.26 \text{ years} \end{aligned}$$

According to pay back period project X is better because it has shorter period than project Y.

**(ii) Calculation of Post Pay back Profitability :**

Post pay back Profit = Total Cash inflows in life - Initial Investment

Project X = Rs. 1,60,000 - Rs. 1,00,000 = Rs. 60,000

Project Y = Rs. 2,10,000 - Rs. 1,00,000 = Rs. 1,10,000

Project Y shows greater post pay back profitability than project X. Hence, it may be preferred.

**(ii) Pay back Reciprocal Method :** Pay back reciprocal is the time adjusted rate of return on investment. It is used as a method of evaluating capital expenditure proposals. It gives a rough approximation of the internal rate of return. It can be expressed as follows :

$$\begin{aligned} \text{Pay back Reciprocal} &= \frac{\text{Annual Cash Inflows}}{\text{Initial investment}} \times 100 \\ &\text{OR} \\ &= \frac{1}{\text{Pay back Period}} \times 100 \end{aligned}$$

This method is used when the project generates even cash inflows and the project has a long economic life it must be at least twice the pay back period.

**Illustration 6 :** A project cost Rs. 5,00,000 and generates annual cash inflow Rs.1,25,000. Calculate pay back period and pay back reciprocals.

**Solution :**

	<u>Initial Investment</u>
(i) Pay back Period	<u>Annual Cash Inflow</u>
	Rs. 5,00,000 = 4 years
	Rs. 1,25,000
	<u>Annual Cash Inflow</u>
(ii) Pay back Period	<u>Initial Investment</u> x 100
	<u>Rs. 1,25,000</u> x 100 = <u>25%</u>
	Rs. 5,00,000

**(c) Average Rate of Return Method:** The average rate of return is defined as the ratio of average profit to average investment. The general aim of investment is to maximize net profit after tax, it is appropriate to consider net profit after tax for the purpose of accounting rate of return. Average rate of return method is also known as accounting method, unadjusted rate of return method and return on investment method. According to this method capital projects are ranked in order of their earnings. Project which yields the highest earnings is selected. The return on investment can be expressed in two ways :

(i) **Rate of Return on Original Investment :** Under this method average annual earnings is divided by original investment. It is expressed in percentage. It can be calculated as follows:

$$\frac{\text{Average Annual Earnings after tax} \times 100}{\text{Original Investment}}$$

(ii) **Rate of Return on Average Investment :** This is most appropriate method of rate of return on investment. Under this method, average profit after depreciation and tax is divided by the average investment. The rate of return on average investment can be computed as follows:

$$\text{ARR} = \frac{\text{Average Annual Earnings after Tax} \times 100}{\text{Average Investment}}$$

OR

**Average Annual Earnings:** Average annual earnings is computed by adding whole earnings over the entire economic life of the project and dividing the total by number of years of economic life of the project. Net earnings or earnings are taken after tax and depreciation.

**Average Investment :** Average investment is calculated by dividing original investment by two or by a figure representing the mid point between the original outlay and the salvage value of the investment. It can be calculated as follows :

$$\text{Average Investment} = \frac{\text{Original Investment} - \text{Scrap Value}}{2}$$

OR

$$\frac{\text{Original Investment}}{2}$$

**Illustration 7 :** Finolex Pipes Ltd. is contemplating an investment of Rs. 1,00,000 in a new plant, which will provide a salvage value of Rs. 8,000 at the end of its economic life of 5 years. The profits after depreciation and tax are estimated to be as under:

Year	Rs.
1	5,000
2	7,500
3	12,500
4	13,000
5	8,000

Calculate accounting rate of return.

**Solution :**

$$ARR = \frac{\text{Average annual profits after depreciation and tax}}{\text{Average Investment}}$$

$$Rs. 9,200 \times 100 = 17.04\%$$

$$= Rs. 54,000$$

$$\text{Average Annual Profits} = \frac{Rs. 5,000 + Rs. 7,500 + Rs. 12,500 + Rs. 13,000 + Rs. 8,000}{5}$$

$$= Rs. 9,200$$

$$\text{Average Investment} = \frac{\text{Original Investment} + \text{Scrap Value}}{2}$$

$$= \frac{Rs. 1,00,000 + Rs. 8,000}{2} = Rs. 54,000$$

**Illustration 8 :** A project costs Rs. 1,50,000 and has a scrap value of Rs. 30,000. Its streams of income before depreciation and taxes during first five years is Rs. 30,000; Rs. 36,000; Rs. 42,000; Rs. 48,000 and Rs. 60,000. Assuming tax rate at 50% and depreciation on straight line basis. Calculate the average rate of return (ARR) for the project.

**Solution :**

**(i) Computation of Average Net Income after tax**

Average Net Income before Depreciation and Tax	Rs.
$\frac{Rs. 30,000 + 36,000 + 42,000 + 48,000 + 60,000}{5}$	43,200

Less: Depreciation (Annual)

$\frac{Rs. 1,50,000 - Rs. 30,000}{5}$	24,000
---------------------------------------	--------

Average Net Income before tax	19,200
Less : Income tax 50%	<u>9,600</u>
Average Net Income after tax	<u>9,600</u>

**(ii) Computation of Average Investment :**

$$\frac{\text{Initial Investment} + \text{Scrap Value}}{2}$$

$$= \frac{\text{Rs. } 1,50,000 + \text{Rs. } 30,000}{2} = 90,000$$

$$\text{ARR} = \frac{\text{Average Net Income after Tax} \times 100}{\text{Average Investment}}$$

$$= \frac{\text{Rs. } 9,600 \times 100}{\text{Rs. } 90,000} = 10.67\%$$

**Illustration 9 :** From the following particulars of a capital project, calculate unadjusted rate of return :

Initial Capital outlay	Rs. 1,20,000
Salvage Value	Nil
Annual Cash inflows	Rs. 30,000
Life in years	8

**Solution :**

$$\text{Unadjusted Rate of Return} = \frac{\text{Annual Cash Inflow} - \text{Depreciation} \times 100}{\text{Average Investment}}$$

$$= \frac{\text{Rs. } 30,000 - \text{Rs. } 15,000}{\text{Rs. } 60,000} \times 100 = 25\%$$

$$\text{Average Investment} = \frac{\text{Initial Investment}}{2} = \frac{\text{Rs. } 1,20,000}{2} = \text{Rs. } 60,000$$

### Merits of Average Rate of Return (ARR)

The following are the merits of the average rate of return method :

1. **Simple :** It is very simple and easy to understand and to use
2. **Considers Profitability :** It gives due weightage to the profitability of the project. Under this method projects having higher rate of return will be accepted. These are comparable with returns on similar investment derived by other firms.
3. **Appropriate Method :** This method takes into account savings over the entire economic life of the project. Therefore, it provides a better means of comparison of projects than pay back method.

### Demerits of Average Rate of Return :

The following are demerits of the average rate of return method :

1. **Ignores Time Factor :** It ignores the time value of money. A project having low initial inflows and high future inflows would have the same average return as a project having the inflows in the reverse order.
2. **Use of Accounting Profit :** It uses accounting profits and not the cash inflows in appraising the investment projects.
3. **Ignores Re-investment of Profits :** This method ignores the fact that profits can be reinvested and profits can be earned on such reinvestment, which in turn will affect the rate of return.
4. **Determination of Fair Rate of Return :** The method does not determine the fair rate of return on investment. The use of arbitrary rate of return may cause serious distortions in the selection of capital projects

**5. Incremental Cash Outflows :** It considers only net investment and not the incremental cash outflows i.e. new investment minus the sale proceeds of the old equipment. The concept of incremental cash outflows should be taken to arrive at a correct financial decision.

### 11.7.2 Discounted Cash Flow Techniques

Discounted cash flow method is also known as time adjusted method. The methods are improvements over pay back period and the accounting rate of return since these consider return after pay back period as well as time value of money. In recent years, the method has been recognized as the most meaningful technique for financial decisions.

The method is based on the assumption that rupee one received today is worth more than rupee one to be received in future. The following methods are used to judge the profitability of different proposals on the basis of this method:

**(a) Present Value Method:** Present value method recognizes that cash flow streams at different time periods differ in value and can be compared only when they are expressed in terms of a common denominator. The following steps are involved in this method :

1. Determination of cash outflows i.e. initial investment and subsequent outlay.
2. Determination of future cash inflows for different periods.
3. Determination of discounting rate i.e. cut off rate. It is generally taken to be equal to cost of capital.
4. Computation of Present Value Factor (P.V.F.) with the help of discounting rate.
5. Compute present value of all cash inflows for different periods and add them together. Salvage value and working capital released at the end of the project's economic life are also considered as cash inflows and are duly discounted to present value. It is calculated as follows : -

Present Value = Cash Inflows x P.V.F.

6. Cash outflows at zero period of time are not discounted, initial amount is taken as present value of cash outflows, however, cash outflows at subsequent periods are discounted by the same present value factor.

#### Computation of Present Value Factor (P.V.F.)

The present value of cash inflows can be calculated with the help of following formula:

$$P.V.F. = \frac{1}{(1+r)^n}$$

P.V.F. = Present value factor of rupee one

r = Required earning rate or discounting rate

n = Number of years

**Acceptance Criterion :** The present value of the future cash inflows or streams are compared with the present value of the outlays. If the present of the cash inflows is equal to or greater than the investment proposal/outlay, the project may be accepted. If, however, it is less, the proposal may be rejected. It can be shown as under:

When  $PV > I$ , Accept the proposal

When  $PV < I$ , Reject the proposal

Here,  $I$  = Initial Investment or Capital Outlay  
 $PV$  = Present Value of Future Cash Inflows.

**(b) Net Present Value Method:** Net present value (NPV) method is also known as excess present value or net gain method. The net present value of the project is the difference between the sum of the present value of its cash inflows and present value of cash outflows (i.e. initial investment or capital outlays).

It can be expressed as follows :

$$\text{Net Present Value (NPV)} = \frac{\text{Total Present Value of Cash Inflows}}{\text{Initial Investment}} - \text{Investment}$$

The following steps are involved under this method :

(1) The present value of cash inflows and the present value of investment outlay (i.e. cash out flows) should be calculated using discounting rate.

(2) The Net Present Value (NPV) is found out by subtracting the present value of cash outflows from the present value of cash inflows.

**Acceptance Criterion :** If the net present value is positive, the project should be accepted; if negative it should be rejected. Symbolically

If  $NPV > \text{Zero}$  Accept the proposal

If  $NPV < \text{Zero}$  Reject the proposal.

If the two projects are mutually exclusive, the one with higher net present value should be chosen. Under this method, projects can be ranked in order of net present value i.e., first rank will be given to the project with the highest positive NPV.

**Illustration 10 :** Project M initially costs Rs. 50,000. It generates the following cash flows:

Year	Cash Inflows	Present Value of Re 1 at 10%
	Rs.	
1	18,000	0.909
2	16,000	0.826
3	14,000	0.751
4	12,000	0.683
5	10,000	0.621

Taking the cut off rate at 10%, suggest whether the project should be accepted or not. Use net present value method.

**Solution**

Calculation of Present Value of Cash Inflows

Year	Cash Inflows	P.V. factor @ 10%	Present Value of Cash Inflow
	Rs.		Rs.
1	18,000	0.909	16,362
2	16,000	0.826	13,216
3	14,000	0.751	10,514
4	12,000	0.683	8,196
5	10,000	0.621	6,210
	Total Present Value		54,498

$$\begin{aligned}\text{Net Present Value} &= \text{Total Present Value of Cash Inflows} - \text{Initial Investment} \\ &= \text{Rs. } 54,498 - \text{Rs. } 50,000 = \text{Rs. } 4,498\end{aligned}$$

Suggestion:.. Project should be accepted.

**Illustration 11 :** Pawan Brothers is considering the purchase of a machine. Two machines X and Y each costing Rs. 1,00,000 are available. Earnings after taxation (EAT) are expected to be as under:

Year	Machine X	Machine Y	Discount Factor at 10%
	Rs.	Rs.	
1	30,000	10,000	0.909
2	40,000	20,000	0.826
3	50,000	30,000	0.751
4	35,000	35,000	0.683
5	15,000	40,000	0.621
	1,70,000	1,35,000	

Calculate Net Present Value (NPV) of two alternatives assuming depreciation is charged on straight line basis.

**Solution :**

(i) Calculation of Cash inflows of Machine X and Machine Y

	Machine X			Machine Y		
Year	EAT	Depreciation	Cash	EAT	Depreciation	Cash
			Inflow			Inflow
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1	30,000	20,000	50,000	10,000	20,000	30,000
2	40,000	20,000	60,000	20,000	20,000	40,000
3	50,000	20,000	70,000	30,000	20,000	50,000
4	35,000	20,000	55,000	35,000	20,000	55,000
5	15,000	20,000	35,000	40,000	20,000	60,000

(ii) Calculation of Present Value of Cash Inflows :

Year	Discount Factor @ 10%	Machine X		Machine Y	
		Cash Inflow	Present Value	Cash Inflow	Present Value
		Rs.	Rs.	Rs.	Rs.
1	0.909	50,000	45,450	30,000	27,270
2	0.826	60,000	49,560	40,000	33,040
3	0.751	70,000	52,570	50,000	37,550
4	0.683	55,000	37,565	55,000	37,565
5	0.621	35,000	21,735	60,000	37,260
	0.909	2,70,000	2,06,880	2,35,000	1,72,685

$$\text{Net Present Value} = \text{Total Present Value} - \text{Initial Investment}$$

$$\text{Machine X} = \text{Rs. } 2,06,880 - \text{Rs. } 1,00,000 = \text{Rs. } 1,06,880$$

$$\text{Machine Y} = \text{Rs. } 1,72,685 - \text{Rs. } 1,00,000 = \text{Rs. } 72,685$$

**Working Notes:**

- (i) It is assumed that economic life of the both machines is 5 years
- (ii) It is assumed that after the expiry of economic life salvage of both machines will be nil.
- (iii) Depreciation has been calculated as under :

$$\text{Depreciation} = \frac{\text{Initial Investment}}{\text{Estimated Life}}$$

$$= \frac{\text{Rs.1,00,000}}{5} = \text{Rs.20,000}$$

**Illustration 12 :** DCM Ltd. is considering an investment proposal. The project will cost Rs. 50,000. The project has a life expectancy of five years and no salvage value. The company's tax rate is 55%. The company uses straight line depreciation. The estimated cash flows before tax (CFBT) from the proposed investment proposal are as follows :

Year	CFBT (Rs.)
1	10,000
2	11,000
3	14,000
4	15,000
5	25,000

Calculate Net Present Value (NPV) at 10% discount rate and suggest whether the proposal should be accepted or not.

First of all we should determine annual depreciation to compute net profits (CFBT - Depreciation) on which the company is to pay taxes. This will be shown as follows :

**(i) Calculation of Cash Inflows (CFAT)**

Year	C FBT	Depreciation	Net Profits (2)-(3)=	Taxes @ 55 %	Net Profit after Tax	Cash inflows (CFAT) (6)+(3)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1	10,000	10,000	Nil	Nil	Nil	10,000
2	11,000	10,000	1,000	550	450	10,450
3	14,000	10,000	4,000	2,200	1,800	11,800
4	15,000	10,000	5,000	2,750	2,250	12,250
5	25,000	10,000	15,000	8,250	6,750	16,750
					11,250	61,250

**(ii) Calculation of Net Present Value (NPV)**

Year	Cash Inflows (CFAT)	Present Value Factor @ 10 %	Total Present Value CFAT x P.V. Factor
	Rs.	Rs.	Rs.
1	10,000	0.909	9,090
2	10,450	0.826	8,632
3	11,800	0.751	8,862
4	12,250	0.683	8,367
5	16,750	0.621	10,401
Total Present Value of CFAT			45,352
Less : Initial Investment			50,000
Net Present Value (NPV)			-4,648



Since Net Present Value (NPV) is negative so the proposal should not be accepted.

**Illustration 13 :** A company is examining two mutually exclusive investment proposals. The management uses Net Present Value (NPV) method to evaluate new investment proposals. Advice the company to which proposal should be taken up by it. Depreciation is charged at straight line method:

Year	Proposal A (CFBT)	Proposal B (CFBT)
	Rs.	Rs.
1	19,000	19,000
2	19,000	23,000
3	19,000	25,000
4	19,000	19,000
	76,000	86,000

Cost of Capital	10%	10%
Cost of the project	Rs.23,000	Rs.25,000
Life	4 years	4 years
Salvage Value	Rs. 3,000	Rs. 5,000
Tax Rate	50%	50%

**Solution :**

Determine CFAT (Cash inflows). For this purpose calculate depreciation and find out net profit before tax on which the company is to pay taxes.

**Calculation of Cash Inflows (CFAT) for Proposal A**

Year	CFBT	Depreciation	Net Profits before tax (2)-(3)	Taxes @ 50%	Net Profit after Tax	Cash inflows (CFAT) (6)+(3)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1	19,000	5,000	14,000	7,000	7,000	12,000
2	19,000	5,000	14,000	7,000	7,000	12,000
3	19,000	5,000	14,000	7,000	7,000	12,000
4	19,000	5,000	14,000	7,000	7,000	12,000
						3,000
	<b>76,000</b>	<b>20,000</b>	<b>56,000</b>	<b>28,000</b>	<b>28,000</b>	<b>51,000</b>

**Calculation of Cash Inflows (CFAT) for Proposal B**

Year	CFBT	Depreciation	Net Profits before tax (2)-(3)=	Taxes @ 50%	Net Profit after Tax	Cash inflows (CFAT) (6)+(3)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1	19,000	5,000	14,000	7,000	7,000	12,000
2	23,000	5,000	18,000	9,000	9,000	14,000
3	25,000	5,000	20,000	10,000	10,000	15,000
4	19,000	5,000	14,000	7,000	7,000	12,000
						5,000
	<b>86,000</b>	<b>20,000</b>	<b>66,000</b>	<b>33,000</b>	<b>33,000</b>	<b>58,000</b>

### Calculation of Present Value of Cash Inflows

Year	P.V. Factor @ 10%	Proposal A		B	
		Cash inflow	Present Value	Cash Inflow	Present Value
		Rs	Rs,	Rs.	Rs.
1	0.909	12,000	10,908	12,000	10,908
2	0.826	12,000	9,912	14,000	11,564
3	0.751	12,000	9,012	15,000	11,265
4	0.683	12,000	8,196	12,000	8,196
5	0.683	3,000	2,049	5,000	3,415
		(Salvage value)		(Salvage value)	
			40,077		45,348

Net Present Value = Total Present Value - Initial Investment

Proposal A (NPV) = Rs. 40,077 - Rs. 23,000 = Rs. 17,077

Proposal B (NPV) = Rs. 45,348 - Rs. 25,000 = Rs. 20,348

Proposal B shows greater NPV, Hence, it should be chosen.

**Illustration 14 :** No project is acceptable unless the yield is 10%. Cash inflows of a certain project along with cash outflows are given below :

Year	Outflow (Rs.)	Inflows (Rs.)
0	1,50,000	-
1	30,000	20,000
2		30,000
3		60,000
4		80,000
5		30,000

The salvage value at the end of 5th year is Rs.40,000. Calculate net present value.

Year	1	2	3	4	5
Discount factor at 10%	.909	.826	.751	.683	.621

**Solution**

Calculation of Present Value of Cash Outflows

Year	Outflows	P.V. Factor at 10%	Present Value
	Rs.		Rs.
0	1,50,000	1.00	1,50,000
1	30,000	0.909	27,270
			1,77,270

Calculation of Present Value of Cash Inflows

Year	Cash Inflows	P.V. Factor at 10%	Present Value
	Rs.		Rs.
1	20,000	.909	18,180
2	30,000	.826	24,780
3	60,000	.751	45,060
4	80,000	.683	54,640
5	30,000	.621	18,630
5	40,000	.621	24,840
	(Salvage)		
			1,86,130

$$\begin{aligned}
 \text{Net Present Value (NPV)} &= \text{Total Present Value} - \text{Present value of Cash Outflows} \\
 &= \text{Rs. } 1,86,130 - \text{Rs. } 1,77,270 \\
 &= \text{Rs. } 8,860
 \end{aligned}$$

### **Merits of Net Present Value Method :**

The following are the merits of net present value method :

- 1. Considers Entire Economic Life :** This method takes into account the entire economic life of an investment and income there from. It gives the true rate of return offered by a new project.
- 2. Weightage to Time Factor :** it gives due weight to time factor of financing. In the words of **Charles T. Horngren**, "Because the discounted cash flow method explicitly and rountenely weights the time value of money, it is the best method to use for long range decisions".
- 3. Suitable Method for Uneven Cash Inflows :** It is the most suitable method for evaluating project where the cash flows are uneven.
- 4. Maximum Profitability :** It takes into consideration the objective of maximum profitability.

### **Demerits of Net Present Value Method :**

The following are the demerits of net present value method :

- 1. Complicated Method :** It is difficult and complicated. It involves a large amount of calculations.
- 2. Determination of Discount Rate :** It is difficult to determine the exact rate of discount to be applied. The cost of capital which is commonly used is by it self difficult of assessment.
- 3. Size of Projects :** When projects involve different amounts of investment, the method may not provide satisfactory answers.
- 4. Computation of Economic Life of Project :** The economic life of an investment is very difficult to forecast exactly

**(c) Profitability Index or Present Value Index (PVI):** The profitability index is the relationship that exists between the present values of net cash inflows and the net present values of cash outflows. To obtain correct result in comparing projects of unequal size, the calculation of present value can be extended to compute the 'Present Value Index'. It can be calculated as follows :

$$\text{Present Value Index (PVI)} = \frac{\text{Present Value of Cash Inflows}}{\text{Present Value of Cash Outflows}}$$

The project is viable if the ratio is equal to or greater than 1. Projects can be ranked on the basis of profitability index. Highest rank will be assigned to the project with highest profitability index, while the lowest rank will be given to the project having lowest profitability index.

This method is also known as Benefit Cost ratio because the numerator measures benefits and the denominator costs.

**(d) Internal Rate of Return (IRR):** Internal Rate of Return (IRR) is the rate of discount which equates the aggregate present value of expected future cash inflows with the aggregate present value of cash outflows of a project. In other words, it is the rate at which net present value of the project is zero.

It is called internal rate because it depends mainly on the outlay and proceeds associated with the project and not on any rate determined outside the investment. This method is known as Time adjusted rate of return, Discounted cash flow rate of return method, marginal efficiency of capital etc.

As we have discussed earlier, the present value method in which required earning rate is selected in advance, but under internal rate of return method, rate of discount or interest is determined.

### Computation of Internal Rate of Return

**(a) When the annual cash inflows are equal over the life of the asset :** In the case of those projects which result in uniform or even cash inflows the internal rate of return can be calculated by locating present value factor as follows :

$$\text{Present Value Factor} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflow}}$$

After the P.V. Factor is calculated as above, it is located in the annuity table on the line representing the number of years corresponding to the economic life of the project. In case the factor is in between two rates, the actual rate of return can be interpolated by applying the following formula:

$$\text{IRR} = \text{LDR} + \frac{P_1 - O}{P_1 - P_2} (\text{HDR} - \text{LDR})$$

IRR	=	Internal Rate of Return
HDR	=	Higher discount rate
LDR	=	Lower discount rate
P <sub>1</sub>	=	Present values of cash inflows at LDR
P <sub>2</sub>	=	Present value of cash inflows at HDR
O	=	Initial investment or capital outlay

**Illustration 15 :** A project cost Rs. 50,000 and is expected to generate annual cash inflow of Rs. 12,500. The project has an expected life of 5 years.

Calculate “Internal Rate of Return (IRR).

**Solution :**

#### Calculation of Internal Rate of Return (IRR)

Firstly, we find present value factor as follows

$$\begin{aligned} \text{Present value factor} &= \frac{\text{Initial Investment}}{\text{Annual Cash Inflow}} \\ &= \frac{\text{Rs. 50,000}}{\text{Rs. 12,500}} = 4 \end{aligned}$$

Now see present value annuity table for 5 years period at present value factor of 4. As we see from the table at 8% for 5 years period, the present value is 3.993 which is nearly equal to 4. Thus, internal rate of return (IRR) is 8% approx.

**(b) When the annual cash inflows are unequal or uneven over the life of the asset:** When the annual cash inflows are not equal the internal rate of return is calculated by making trial calculations in an attempt to compute the exact interest rate which equates the present value of cash inflows with the present value of cash outflows. In the process, cash inflows are to be discounted by a number of trial rates. The following steps are involved in the process of computation of internal rate of return:

**(i) Determining First Trial Rate :** The first trial rate is determined on the basis of present value factor, which is calculated as follows :

$$\text{Present Value Factor} = \frac{\text{Initial Investment}}{\text{Average Annual Cash Inflow}}$$

$$\text{Here Average Annual Cash Inflow} = \frac{\text{Total Cash Inflows}}{\text{Economic Life of the Project}}$$

After calculating present value factor, use annuity table and find estimated arbitrary internal rate of return. Thereafter calculate the total present value of cash inflows for different periods.

**(ii) Applying Second Trial Rate :** After applying the first trial rate, if the Net Present Value (NPV) is positive, apply higher rate of discount. If the higher discount rate still gives a positive net present value, increase the discount rate further until the NPV becomes negative. If the NPV is negative at this higher rate, the internal rate of return must be between these two rates. To calculate exact internal rate of return (IRR), apply formula given earlier.

**Illustration 16 :** Project A and Project B cost Rs. 1,00,000 and Rs. 50,000 respectively. Their cash flows are given below, you are required to find out internal rate of return for each project and decide on that basis which project is more profitable :

Year	Cash Inflows	
	Project A	Project B
	Rs.	Rs.
1	10,000	20,000
2	30,000	20,000
3	60,000	20,000
4	40,000	20,000
5	20,000	-

**Solution :**

The internal rate of return will have to be calculated by trial and error method and interpolation technique will have to be used in order to get exact internal rate of return, which will equate the present value of the total cash inflows with the initial cost of each project. Firstly, we calculate present value factor for both the projects :

$$\text{Present Value Factor} = \frac{\text{Initial Cost of Project}}{\text{Average Annual Cash Inflow}}$$

$$\text{P.V. Factor for Project A} = \frac{\text{Rs. 1,00,000}}{\text{Rs. 32,000}} = 3.125$$

$$\text{P.V. Factor for Project B} = \frac{\text{Rs. 50,000}}{\text{Rs. 20,000}} = 2.5$$

To determine first trial rate, we see that present value factor for project A for 5 years comes to 18% (Present value for 5 years is 3.127 which is nearly equal to 3.125).

Similarly, For Project B, It comes to 22% for 4 years period.

### **Merits of Internal Rate of Return :**

The Internal Rate of return method has the following advantages :

- 1. Considers Time Factor :** Like the net present value method, it takes into account the time value of money and can be usefully applied in situations with even as well as uneven cash flow at different periods of time.
- 2. Considers the Entire Economic Life :** It considers the profitability of the project for its entire economic life.
- 3. Determination of Cost of Capital not Essential :** Under this method, the calculation of the cost of capital is not a prerequisites for applying this method of appraisal.
- 4. More Realistic :** The internal rate of return is more realistic and is consistent with the rate of interest paid on borrowings or the yield from shares.
- 5. Risk and Uncertainty :** This approach provides for risk and uncertainty by recognizing the time factor. Projects having different degrees of risk can be easily compared.

### **Demerits of Internal Rate of Return :**

The following are the demerits of internal rate of return method

- 1. Complicated :** This method involves a good amount of calculations. In spite of that computation of IRR is quite tedious and complicated and also difficult to understand.
- 2. Unjustified Assumption :** This method is based upon the assumption that earnings are reinvested at the internal rate of return for remaining life of the project which is not a justified assumption.
- 3. Multiple Rates :** It gives multiple rates when the cash flows alternate between positive and negative. In such cases, in the absence of a single rate of return, it is difficult to evaluate the project.

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## **11.8 Comparison of Net Present Value and Internal Rate of Return**

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The Net Present Value method and the Internal Rate of Return method are similar in the sense that both take into account the time value to money.

In fact, both these methods are discounted cash flow techniques. However, there are certain basic difference between these two methods of capital budgeting :

	Basis of Difference	Net Present Value Method	Internal rate of Return Method
1.	Interest Rate	Under this method interest is an known factor.	Under this method interest is an unknown factor.
2.	Re-investment Assumption	Re-investment is assumed to be at the cut off rate.	Re-investment of funds is assumed to be at the IRR.
3.	Objective of Rate of Return	NPV Method attempt to find out the amount which can be invested in a particular project so that its projected earnings may suffice to repay this amount with interest at the market rate.	It seeks to find out the maximum rate of interest at which the amount interest at which the amount invested in the project could be repaid out of the cash inflows arising from that project.
4.	Desired Rate of Return	Under this method present value is determined by discounting the future cash inflows at a predetermined rate called cut off rate.	Under IRR method cash flows are discounted at a suitable rate by trial and error method which equates the present value of cash inflows to the amount of initial investment.
5.	Different conclusions	NPV method is more appropriate than IRR because of the consistency in application to all proposals.	It may give results inconsistent with NPV method especially in case of mutually exclusive projects.

### Limitations of Capital Budgeting

- 1. Estimation of Cash Inflows:** The techniques of capital budgeting require estimation of future cash inflows and outflows. The future is always uncertain and data collected for future may not be exact. Obviously the results based upon wrong data may not be fruitful.
- 2. Un-measurable Factors:** There are certain factors like morale of the employees, goodwill of the firm, etc., which can not be correctly quantified but which otherwise substantially influence the capital decision.
- 3. Influence of Government Policies :** Cash inflows are spread over a longer period. Difficulties arise in estimating the effect of taxation which is subject to changes in the government policies.
- 4. Ascertainment of Cost of Capital :** Ascertainment of cost of capital is essential for the capital budgeting decisions. Cost of capital is ascertained on the basis of various assumptions. Hence ascertainment of cost of capital is not an easy task.
- 5. Different Results:** Different evaluation techniques show different results. The selection of most appropriate method is very difficult task.

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## 11.9 Summary

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**1. Net Cash Inflows** = Net Sales – Operating Expenses – Depreciation – Tax + Depreciation

OR

EBIT – Interest – Tax + Depreciation

OR

EBT – Tax + Depreciation

OR

EAT + Depreciation

**2. Pay back Period :**

$$(i) \quad \text{Pay back Period} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflows}}$$

(ii) Post pay back period :

**(a) If cash inflows are even**

Annual Cash Inflows (Economic Life of Project – Pay back Period)

**(b) If cash inflows are uneven**

Total Cash inflows – Initial Investment

Criterion :

If pay back period < Standard pay back : Accept the proposal

If pay back period > Standard pay back : Reject the proposal

**3. Average Rate of Return or Accounting Rate of Return**

$$\text{ARR} = \frac{\text{Net Annual Earnings after tax} \times 100}{\text{Initial Investment}}$$

$$\text{ARR} = \frac{\text{Net Annual Earnings after tax} \times 100}{\text{Average Investment}}$$

OR

$$\text{ARR} = \frac{\text{Net Annual Cash Inflows} - \text{Annual Depreciation} \times 100}{\text{Average Investment}}$$

$$\text{Average Investment} = \frac{\text{Initial Investment} + \text{Scrap Value}}{2}$$

Criterion :

IF ARR > Minimum Desired Rate Accept the Proposal

IF ARR < Minimum Desired Rate Reject the Proposal

**4. Present Value Method**

$$(i) \quad \text{Net Present Value (NPV)} = \frac{\text{Total Present Value. of Cash Inflows}}{\text{Initial Investment}} - \text{Investment}$$

Criterion :

If NPV > Zero Accept the Proposal

If NPV < Zero Reject the Proposal



- (ii) Profitability Index or Present Value Index (PVI)

Present Value of Cash Inflows

Present Value Index (PVI) = Present Value of Cash Outflows

### 5. Internal Rate of Return (IRR)

(i) When cash inflows are Even =  $\frac{\text{Initial Investment}}{\text{Annual Cash Inflow}}$

(ii) When cash inflows are Uneven =  $\frac{\text{Initial Investment}}{\text{Average Annual Cash Inflow}}$

$$\text{IRR} = \text{LDR} + \frac{P_1 - P_2}{P_1 - P_2} (\text{HDR} - \text{LDR})$$

IRR = Internal Rate of Return

HDR = Higher discount rate

LDR = Lower discount rate

$P_1$  = Present values of cash inflows at LDR

$P_2$  = Present value of cash inflows at HDR

O = Initial investment or capital outlay

Criterion :

If IRR > Cost of Capital Accept the Proposal

If IRR < Cost of Capital Reject the Proposal

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## 11.10 Self Assessment Questions

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1. Tiny Ltd., is considering three projects A, B and C. Following are the particulars in respect of them.

	Project A	Project B	Project C
Initial Cost (in Rs.)	1,00,00	1,50,00	1,80,0
	0	0	0
Economic life (in years)	7	10	15
Estimated Scrap Value (in Rs.)	2,000	10,000	Nil
Annual Savings after tax (in Rs)	11,000	16,000	28,000

Using pay back period method state which of the three projects should be given preferences.

(Ans. : A-4 years; B-5 years; C-4.5 years)

Project A should be preferred

2. The following is the data regarding two machines X and Y :

Particulars	X Machine Rs.	Y Machine Rs.
Capital Cost Sales	1,50,000	1,50,000
Sales	2,50,000	2,00,000
Direct Labour	25,000	15,000
Direct Material	20,000	25,000
Factory Overhead	30,000	25,000
Office Cost	10,000	5,000

Selling Costs	5,000	5,000
Expected life	2 years	3 years

Rate of sales is the same throughout the life. Tax rate is 50% of net earnings. Calculate pay-back period and post-pay-back profitability. Also suggest which machine is better.

(Ans. : Pay back period : 1.28 years; 1.71 years; Post pay back profitability: Rs. 84,600; Rs. 1,12,875)

3. Bharati Watch Company is considering the purchase of a machine. Two machines are available in the market. A and B, each costing Rs 1,00,000. Earnings after tax but before depreciation are expected to be as follows:

Cash Inflows

Year	Machine ARs.	Machine BRs.
1	25,000	12,500
2	37,500	37,5000
3	50,000	50,000
4	25,000	37,500
5	12,500	25,000

Evaluate the two alternatives according to pay back method and per pay back profitability.

(Ans. : (i) Pay back period : 2.75 years; 3 years (ii) Post pay back profitability: Rs. 50,000; Rs. 62,500)

4. Jain Industries Ltd. is preparing to take up a project which will need an investment of Rs. 1,05,000. It will have a scrap value of Rs. 5,000 at the end of its useful life of five years. The net income before depreciation and tax is estimated as follows :

Year	Net Income (in Rs.)
1	20,500
2	25,000
3	37,500
4	40,000
5	<u>45,000</u>
	<u>1,68,000</u>

Depreciation is to be charged according to the straight line method. Tax rate is 35%. Calculate accounting rate of return.

(Ans. : ARR-16.07%; 8.42%)

5. Z Ltd. is considering the purchase of a machine. Two machines are available A and B. The cost of Machine is Rs, 60,000. Each machine has an expected life of 5 years. Net profits before tax but after depreciation during the expected life of machine are given below :

Year	A Machine	B Machine
	Rs.	Rs.
1	15000	5,000
2	20,000	15,000

3	25,000	20,000
4	15,000	30,000
5	10,000	20,000
<b>Total</b>	<b><u>85,000</u></b>	<b><u>90,000</u></b>

Using the method of return on investment ascertain which of the alternatives will be more profitable. The average rate of tax may be taken at 50%.

(Ans. : A-14.17%, 28.33%; B-15%, 30%)

6. Shivam Book Company has two options of investment at the beginning of the year. Using the Net Present Value method evaluate the profitability of the investment. The details of which are as follows :

	Project I	Project II
	Rs.	Rs.
Investment	1,40,000	1,50,000
Projected Income (After depreciation and tax)	Rs.	Rs.
1st year	50,000	32,500
2nd year	45,000	32,500
3rd year	25,000	32,500
4th year	<u>10,000</u>	<u>32,500</u>
	1,30,000	1,30,000

The economic life of both projects is estimated to be 4 years. The present value of Re. 1.00 to be received at the end of the year at 10% p.a. is given below :

Year	1	2	3	4	5
Present Value Factor	.909	.826	.751	.683	.621

Also give your recommendations in the above projects under the profitability index.

(Ans. : NPV-Project I: Rs. 79,140; Project II: Rs. 71,830

PVI-Project: 1.57; Project II-1.48 Project I should be preferred)

7. An investor who must have a minimum rate of return of 12% per annum has two projects in view, both requiring an initial outlay of Rs.30,000. Project A gives annual excess of receipts over disbursements equal to Rs. 6,000 and has a salvage value of Rs.10,000 at the end of 10 years. Project B gives an annual excess of receipts over disbursements equal to Rs. 5,000 but has salvage value of Rs. 20,000 at the end of 10 years. Which project should be preferred? At 12% p.a. the present value of Re. 1 received annually for 10 years is Rs.5.650 and the value of Re. 1 received at the end of 10th years is Rs.0.322.

(Ans. : NPV : A Rs. 7,120; B Rs. 4,690; Project A should be preferred).

8. X Ltd. is planning to increase its present capacity and is considering the purchase of new machines. Machines A and B are available at a price of Rs. 70,000 and Rs. 80,000 respectively. The company can buy either of two machines. The cut off rate required by the company is 20%. Cash flows have been estimated as follows :

### Cash Flows

Year	Machine A Rs.	Machine B Rs.
1	22,000	16,000
2	30,000	24,000
3	40,000	36,000
4	32,000	48,000
5	<u>- 16,000</u>	<u>30,000</u>
	1,40,000	1,54,000

Present value of Re. 1 at the discount rate of 20% p.a. for the first five years is 0.833, 0.694, 0.579, 0.482 and 0.402 respectively. Which of the two machines should the company buy and why?

(Ans. : NPV: A-Rs. 14,162; B-Rs. 6,024; PVI: A-1.2023; B-1.0753)

9. Kiran Papers Ltd. is planning to start a new project with following data .

Project cost	Rs. 1,40,000
Estimate life	5 years
Salvage value	Nil

Projected annual profit after charging depreciation and all other charges but before taxation is as follows :

	Rs.
1st year	40,000
2nd year	45,000
3rd year	48,000
4th year	52,000
5th year	<u>54,000</u>
	2,39,000

Depreciation is charged @ 20% p.a. on straight line method. Tax rate is 40%. Calculate internal rate of return by using the following interest rates:

Year	P.V. Factor at 28%	P.V. Factor at 30%
1	.781	.769
2	.610	.591
3	.477	.455
4	.373	.350
5	.291	.269

(Ans. IRR: 28.33%)

10. A Ltd. desires to purchase a new machine in order to increase present level of production. The cost of machine will be Rs.70,000 and the net cash flows during its life will be as under:

Year	Net Cash Flow (Rs.)
1	50,000
2	40,000
3	20,000
4	10,000
5	10,000

Minimum rate of return laid down by the management is 25% p.a. Is the investment desirable? Discuss it according to Internal rate of return method.

Discount Factor

Year	35%	40%
1	.741	.714
2	.549	.510
3	.406	.364
4	.301	.260
5	.223	.186

(Ans. : IRR 37.62%)

11. Ajay Steel Ltd. is considering for purchase of a machine. There are two possible machines which will produce the additional output. Details of these machines are as follows :

	Machine XRs.	Machine YRs.
Cost of Machines	60,000	60,000
Sales	1,000,000	80,000
Cost of Production:		
Materials	8,000	10,000
Labour	10,000	6,000
Factory Overheads	12,000	10,000
Administration Costs	4,000	2,000
Selling Costs	2,000	2,000
Expected life of machines in years	2	3

Other informations—

- (i) The costs shown above relate to annual expenditure resulting from each machine,
- (ii) Sales are expected to continue at the rates shown for each for the full life of each machine,
- (iii) Tax to be paid may be assumed at 50% of net earnings. : interest on capital,
- (iv) The appropriate rate of interest for converting to present value may be taken at 10%.

On the basis of the facts given above, show the most prof: investment using the following methods:

- (i) Pay back period
- (ii) Return on investment
- (iii) Net present value method (P.V. factors at 10% rate are 0.909, 0.826, 0.751 for I, II and III year respectively)

(Ans. : (i)X-1.28 years; Y-1.71 years; (ii) X-56.67%; Y-50%

(iii) X-Rs. 21,545; Y-Rs. 27,010; Machine Y is better).

12. Two alternative capital expenditure proposals, each costing rupees one lakh, provide the following net cash inflows :

Year	1	2	3	4	5
Project X (Rs.)	30,000	40,000	50,000	30,000	20,000
Project Y (Rs.)	10,000	30,000	40,000	60,000	40,000

Evaluate these proposals on the basis of:

- (i) Pay-back period method
- (ii) Post-pay-back profitability
- (iii) Return on investment method
- (iv) Net present value method.

Use a discount rate of 10% per annum. Discount factor at 10% various years is as follows:-

Year	1	2	3	4	5
Discount Factor	0.909	0.826	0.751	0.683	0.621

(Ans. : (i) X-  $2^{3/5}$  years; Y-  $3^{1/3}$  years; (ii) X-Rs. 70,000; Y-Rs. 80,000  
(iii) X-28%; Y-32%; (iv) X-Rs. 30,770; Y-Rs. 29,730

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## 11.11 Reference Books

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## Unit - 12 : Dividend Policy

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### Structure of Unit:

- 12.0 Objectives
- 12.1 Introduction
- 12.2 Concept and Meaning of Dividend Policy
- 12.3 Determinants of Dividend Policy
- 12.4 Types of Dividend
- 12.5 Dividend Models and Value of Firm
- 12.6 Summary
- 12.7 Self Assessment Questions
- 12.8 Reference Books

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### 12.0 Objectives

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After completing this unit, you would be able to understand:

- Meaning of Dividend
- Meaning of Dividend Policy
- Different types of dividends
- Determinants of dividend policy
- Different dividend models
- The value of firm
- Computation of value of firm
- Characteristics and utility of leverages

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### 12.1 Introduction

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When a company makes profit at the end of the year from its operating activities, the management of company must decide that what to do with those profits. They can decide to retain the profits within the company or may be decide to partly remain in company and remaining profits distribute to the shareholders of the company. If they decide to pay profits to the shareholders, then they have to determine appropriate ratio of distribution and amount retain in the business. The part of profits which have to be distribute among the owners of the company i.e. shareholders, is called as dividend. For distribution of dividend, company frame a dividend policy according which company takes decision in respect of payment of dividend in present and in future. On the basis of dividend policy a company determines that in what proportion profit should be distribute to the shareholders and to be retained in the business. The retained portion of the profits in business is use in long term finance.

In simple terms, a company runs its business during any previous year and at the end of the previous year company's net result of operating activities is profit. The shareholders are owner of a company so they have right on such profits. Company may be distributing such profits among the shareholders or may be retained in the business. If company decides to distribute whole or a part of this profit among the shareholders, such distributable profit is Dividend. The board of directors declares the dividend. In other words we can say that the dividend may be defined as divisible profits which are distributed amongst the members of company in proportion of their share holding in the company. According to ICAI, New Delhi, **“a dividend is a distribution to shareholders out of profits or reserves available for this purpose.”**(Source: Guidance

notes on 'Terms used in Financial Statements', ICAI) The dividend declared by the board in annual general meeting (AGM). Quantum of the dividend depends on the company's financial requirements and also depends on the availability of the divisible profits.

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## 12.2 Concept and Meaning of Dividend Policy

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For the financial manager of a company, it is crucial to take decision regarding to dividend because s/he have to determine about the amount of profit to be distributed among the shareholders and the amount of retained earnings. Amount of dividend and retained earnings have a reciprocal relationship. Market value of shares depends on the payout ratio. While taking the dividend decision the management takes into account the effect of the decision on the shareholders' wealth.

A dividend policy is a company's approach to distributing profits back to its owners or stockholders. If a company is in a growth mode, it may decide that it will not pay dividends, but rather re-invest its profits (retained earnings) in the business. If a company does decide to pay dividends, it must then decide how often to do so, and at what rate. Large, well-established companies often pay dividends on a fixed schedule, but sometimes they also declare "special dividends." The payment of dividends impacts the perception of a company in financial markets, and it may also have a direct impact on its stock price. A company takes three major decisions i.e. Investments, financing and dividend. Dividend decision is most significant decision in all of these.

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## 12.3 Determinants of Dividend Policy

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The main determinants of dividend policy of a firm can be classified into:

1. **Capital Market Considerations:** Capital market consideration is also a determinant of dividend policy. If the company has easy access to the capital market in such case company should follow a liberal dividend policy and if company has limited access to capital market, it can opt a low dividend payout ratio. Such companies rely on retained earnings as a major source of financing for future growth.
2. **Dividend Payout Ratio:** Dividend payout ratio refers to the percentage of the net earnings distributed to the shareholders as dividends. On the basis of dividend policy owners of the company takes the decision to pay out earnings or to retain them for reinvestment in the firm. A sufficient amount of dividend creates satisfaction among the shareholders and the retained earnings constitute a source of finance. So, it is necessary that a) dividend policy should maintain a balance between current dividends and future growth which maximizes the price of the firm's shares and b) The dividend payout ratio of a firm should be optimum so that firm can able to maximize the wealth of the firm's owners and providing sufficient funds to finance growth.
3. **Legal, Contractual and Internal Constraints and Restrictions:** A company is not legally bounded for declaration of dividend but, they have to specify the conditions under which dividends must be paid. Such conditions pertain to capital impairment, net profits and insolvency. It may be that a company accepts important contractual restrictions (when the company obtains external funds) in respect of payment of dividends. These restrictions may cause the firm to restrict the payment of cash dividends until a certain level of earnings has been achieved or limit the amount of dividends paid to a certain amount or percentage of earnings. Internal constraints are unique to a firm and include liquid assets, growth prospects, financial requirements, availability of funds, earnings stability and control.



4. **Inflation:** In case of situation of inflation, the funds generated from depreciation may not be sufficient to replace obsolete equipments and machinery. In such situation, a company should rely upon retained earnings as a source of fund to replace those assets. Thus, dividend payout ratio negatively affected due to inflation.
5. **Age of Corporation:** A newly establish company will invest their earning for expansion and plant improvement and may adopt a rigid dividend policy. But if company is well established, it can frame a more consistent policy in respect of dividend. So, we can say that dividend policy is also affected by the age of the corporation.
6. **Stability of Earnings:** If a company having stability of earnings, such company can maintain consistency in its dividend policy. Stability of earnings depends on nature of business e.g. firms dealing in luxurious or fancy goods can earn more profits. So, we can say that the nature of business has an important bearing on the dividend policy.
7. **Requirement of Additional Capital:** In case of small companies, they face the difficulties of additional finance for expansion programs. Every company retains a part of their profits for strengthening their financial position. Thus, such Companies distribute dividend at low rates and retain a big part of profits
8. **Liquidity of Funds:** If a company decides to pay dividend in cash then it may be only if company has sufficient funds. So, availability of cash and sound financial position is equally affected to dividend policy. Payment of dividend represents a cash outflow. More availability of funds and good liquidity position of company show the better ability to pay dividend. If cash position is weak, stock dividend will be distributed and if cash position is good, company can distribute the cash dividend.
9. **Trade Cycles:** Business cycles also exercise influence upon dividend Policy. Dividend policy is adjusted according to the business oscillations. During the boom, prudent management creates food reserves for contingencies which follow the inflationary period. Higher rates of dividend can be used as a tool for marketing the securities in an otherwise depressed market. The financial solvency can be proved and maintained by the companies in dull years if the adequate reserves have been built up.
10. **Government Policies. Various Government Policies:** Fiscal, industrial, taxation etc. affect to the earnings capacity of the enterprise. The dividend policy has to be modified according to the changes in government policies.
11. **Taxation Policy:** Taxation policy of government also affects the decision of distribution of dividend. In case of high taxation rate a major part of earnings will be paid to government by way of tax, hence rate of dividend will be lowered down. In case of low taxation, the company will be able to pay dividend at higher rate.
12. **Policy of Control:** Policy of control is another determining factor is so far as dividends are concerned. If the directors want to have control on company, they would not like to add new shareholders and therefore, declare a dividend at low rate. Because by adding new shareholders they fear dilution of control and diversion of policies and programs of the existing management. So they prefer to meet the needs through retained earnings. If the directors do not bother about the control of affairs they will follow a liberal dividend policy. Thus control is an influencing factor in framing the dividend policy.

13. **Legal Requirements:** The companies' act 1956 prescribes guidelines in respect of declaration and payment of dividend. These guidelines issued in order to protect the interest of creditors e.g. a company is required to provide for depreciation on its fixed and tangible assets before declaring dividend on shares. It proposes that Dividend should not be distributed out of capita, in any case.

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## 12.4 Types of Dividend

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- I. Dividend on the Basis of Security:** There are two types of securities on which company pays dividend i.e. 1) Preference shares 2) Equity shares. Company pays following two types dividend on these securities:
- a) **Preference Dividend-** On preference Share Company pays dividend at fix rate. At the time of issue of preference shares, company declares the rate of dividend on these shares. Since dividend on these shares is fixed, so, mostly discussion on dividend policy is relates to the equity dividend.
  - b) **Equity Dividend-** In case of equity shares the rate of dividend cannot be pre determined. Dividend on equity shares is paid at the rate recommended by the board of directors and approved by the shareholders in Annual General Meeting (AGM). The board of directors has the right in respect of payment of dividend, the rate of dividend and the medium of dividend.
- II. Dividend on the Basis of Time:** On the basis of time, there are two types of dividend-
- a) **Interim Dividend-** When a company earns huge profits or we can say that abnormal profits during any particular year and directors wish to distribute these profits among the shareholders, then company declares dividend at any time between two AGM. It is called interim dividend. In other words, we can say that interim dividend is the dividend which can be declare and distribute at any time within the financial year. Interim dividend may be declare if, Article of association permits for it. Interim dividend is an extra dividend paid in cash within the year without requirement of approval in AGM.
  - b) **Regular Dividend-** It is annual dividend declares after approval in AGM. This dividend pays by the company after completion of financial year. The rate of dividend depends on the financial performance of the company in particular year.
- III. Dividend on the Basis of Mode of Payment:** On the basis of mode of payment, dividend may be classified in following three categories-
- a) **Cash Dividend-** Mostly, shareholders are interested in cash dividend. When company pays dividend in cash, it indicates outflows of cash from company to its shareholders. Company pays cash dividend out of current sources available in the company or by taking short term loans from banks and other financial institutions. A company may take decision of cash payment of dividend, when sufficient funds are available and liquidity position of company is sound. Cash dividend is most desirable mode of payment of dividend. It built confidence and faith in investor's mind about company.
  - b) **Stock Dividend-** If any company has a huge amount of reserves & surplus but suffering from problem of shortage of liquidity of funds. In such case, if company wants to distribute reserves & surplus among the shareholders, then the company issue new shares to existing

shareholders at free of cost. Shareholders receive shares in place of cash dividend. Such shares are known as “Bonus shares” or “Stock dividend”. In this process whole or a part of profits converts into share capital, so, it is also called as “Capitalisation of profits”.

- c) **Scrip or Bond Dividend:** If any company is facing a financial crisis, in such circumstances company pays dividend in the form of shares and debentures of other companies. This form of dividend is called as scrip or bond dividend. The main difference of scrip dividend and bond dividend is of time period. In case of scrip dividend, securities belong to short term securities and in case of bond dividend it is long term securities.

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## 12.5 Dividend Models and Value of Firm

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- (A) **Walter’s Dividend Model:** Walter’s model supports the principle that dividends are relevant. The investment policy of a firm cannot be separated from its dividend policy and both are inter-related. The choice of an appropriate dividend policy affects the value of an enterprise.

Assumptions of This Model: The company does not rely upon external funds. It means that retained earnings are the only source of finance.

1. Internal rate of return (r) and cost of capital (k) are constant.
2. There is no change in the key variables, namely, beginning earnings per share (E), and dividends per share (D). The values of D and E may be changed in the model to determine results, but any given value of E and D are assumed to remain constant in determining a given value.
3. The firm has an infinite life.

Formula: Walter’s model

$$P = \frac{D}{K_e - g}$$

Where: P = Price of Equity share

D = Dividend Per share

$K_e$  = Cost of equity shares

G = Growth rate in dividend

After accounting for retained earnings, the model would be:

$$P = \frac{D}{K_e - rb}$$

Where: r = Expected rate of return on firm’s investments

b = Retention rate  $(E - D)/E$

Equation showing the value of a share (as present value of all dividends plus the present value of all capital gains) – Walter’s model:

$$P = \frac{D}{K_e} + \frac{r(E-D)}{K_e}$$

Where: D = Dividend per share and

E = Earnings per share

**Example 1:**

Tanoo Ltd. has the following facts:

Cost of capital ( $k_e$ ) = 0.10

Earnings per share (E) = Rs. 10

Rate of return on investments ( $r$ ) = 8%

Dividend payout ratio: Case A: 50% Case B: 25%

Show the effect of the dividend policy on the market price of the shares.

**Solution:**

Case A:

D/P ratio = 50%

When EPS = Rs. 10 and D/P ratio is 50%,  $D = 10 \times 50\% = \text{Rs. } 5$

$$P = \frac{5}{.10} + \frac{.08(10-5)}{.10} \Rightarrow \text{Rs. } 90$$

Case B:

D/P ratio = 25%

When EPS = Rs. 10 and D/P ratio is 25%,  $D = 10 \times 25\% = \text{Rs. } 2.5$

$$P = \frac{2.5}{.10} + \frac{.08(10-2.5)}{.10} \Rightarrow \text{Rs. } 85$$

**Example 2:** The details regarding to three companies are below:

**A Ltd.**

$r = 15\%$

$K_e = 10\%$

E = Rs. 50

**B Ltd.**

$r = 10\%$

$K_e = 10\%$

E = Rs. 50

**C Ltd.**

$r = 12\%$

$K_e = 10\%$

E = Rs. 50

Compute the value of an equity share of each company applying Walter's formula when dividend payout ratio is (a) 0% (b) 20% (c) 40% (d) 80%.

A Ltd.	B Ltd.	C Ltd.
(a) When dividend payout ratio is 0% $P = \frac{0}{.10} + \frac{.15(50-0)}{.10}$ = Rs. 750	$P = \frac{0}{.10} + \frac{.10(50-0)}{.10}$ = Rs. 500	$P = \frac{0}{.10} + \frac{.12(50-0)}{.10}$ = Rs. 600
(b) When dividend payout ratio is 20% $P = \frac{10}{.10} + \frac{.15(50-10)}{.10}$ = Rs. 700	$P = \frac{10}{.10} + \frac{.10(50-10)}{.10}$ = Rs. 500	$P = \frac{10}{.10} + \frac{.12(50-10)}{.10}$ = Rs. 580
(b) When dividend payout ratio is 40% $P = \frac{20}{.10} + \frac{.15(50-20)}{.10}$ = Rs. 650	$P = \frac{20}{.10} + \frac{.10(50-20)}{.10}$ = Rs. 500	$P = \frac{20}{.10} + \frac{.12(50-20)}{.10}$ = Rs. 560
(b) When dividend payout ratio is 80% $P = \frac{40}{.10} + \frac{.15(50-40)}{.10}$ = Rs. 550	$P = \frac{40}{.10} + \frac{.10(50-40)}{.10}$ = Rs. 500	$P = \frac{40}{.10} + \frac{.12(50-40)}{.10}$ = Rs. 520

**Conclusions of Walter's Model:** Prof. Walter's concept may be summarized as under:

1. **Growth Firms (When  $r > k_e$ ):** The value of shares is inversely related to the Dividend Payout ratio. As the Dividend Payout ratio increases, the market value of shares decline. Its value is the highest when Dividend Payout ratio is 0 and should re-invest their entire earnings. So, if the firm retains its earnings entirely, it will maximize the market value of the shares. The optimum payout ratio is zero.
2. **Declining Firms (When  $r < k_e$ ):** The Dividend Payout ratio and the value of shares are positively correlated. In such case the firms are called declining firms. As the Dividend Payout ratio increases, the market price of the shares also increases. The optimum payout ratio is 100%. Such firms should distribute their entire earnings.
3. **Normal Firms (When  $r = k_e$ ):** The market value of shares is constant irrespective of the Dividend Payout ratio. In this case, there is no optimum D/P ratio.

**Limitations of this model:**

1. This model can be applicable only to all equity owned firms because Walter's model assumes that the firm's investments are purely financed by retained earnings.
2. The assumption of  $r$  as constant is not realistic because the risk factor of a firm is not always uniform.
3. The assumption of a constant  $K_e$  ignores the effect of risk on the value of the firm.

**(B) Gordon's Dividend Capitalization Model:** Gordon's dividend model contends that dividends are relevant. This model is of the view that dividend policy of a firm affects its market value of shares.

**Assumptions of This Model:** The firm is an all equity firm. No external financing is used and investment programmes are financed exclusively by retained earnings.

1. Return on investment ( $r$ ) and Cost of equity ( $K_e$ ) are constant.
2. The firm has perpetual life.
3. The retention ratio, once decided upon, is constant. Thus, the growth rate, ( $g = br$ ) is also constant.
4.  $K_e > br$
5. Corporate taxes do not exist.

**Arguments of This Model:**

1. Dividend policy of the firm is relevant and that investors put a positive premium on current incomes/ dividends.
2. Market value of shares is equal to the present value of its expected future dividends.
3. This model assumes that investors are risk averse and they put a premium on a certain return and discount uncertain returns.
4. Investors are rational and want to avoid risk.
5. The rational investors can reasonably be expected to prefer current dividend. They would discount future dividends. The retained earnings are evaluated by the investors as a risky promise. In case

the earnings are retained, the market price of the shares would be adversely affected. In case the earnings are retained, the market price of the shares would be adversely affected.

6. Investors would be inclined to pay a higher price for shares on which current dividends are paid.

**Dividend Capitalization Model:** According to Gordon, the market value of a share is equal to the present value of the future streams of dividends.

$$P = \frac{E(1-b)}{K_e - br}$$

Where:

P = Price per share

E = Earnings per share

B = Retention ratio

1-b = Dividend payout ratio

$K_e$  = Cost of Equity

br = g = Growth rate

**Example 3:** Determination of value of shares, given the following data:

	Case A	Case B
D/P Ratio	40	30
Retention Ratio	60	70
Cost of Capital	17%	18%
Return on investments	12%	12%
EPS	Rs. 20	Rs. 20

**Solution:**

**Case A**

$$P = \frac{\text{Rs. } 20 (1-.6)}{0.17 - (0.60 \times 0.12)} = \text{Rs. } 81.63$$

**Case B**

$$P = \frac{\text{Rs. } 20 (1 - 0.70)}{0.18 - (0.70 \times 0.12)} = \text{Rs. } 62.50$$

Gordon's model thus asserts that the dividend decision has a bearing on the market price of the shares and that the market price of the share is favorably affected with more dividends.

**Example 4:** The details regarding to three companies are below:

Palki Ltd.	Shivang Ltd.	Rrudraksh Ltd.
$R > K_e$	$R = K_e$	$R < K_e$
$r = 15\%$	$r = 10\%$	$r = 8\%$
$K_e = 13\%$	$K_e = 10\%$	$K_e = 10\%$
$E = \text{Rs. } 20$	$E = \text{Rs. } 20$	$E = \text{Rs. } 20$

Compute the market value of an equity share of each company applying Gordon's formula when dividend payout ratio is (a) 30% (b) 20% (c) 50%.

<b>Palki Ltd.</b>	<b>Shivang Ltd.</b>	<b>Rrudraksh Ltd.</b>
(a)When dividend payout ratio is 30% and b=70% $G=br = .7 \times .15 = .105$ $P = \frac{20(1-.7)}{.13 - 0.070} = \text{Rs. } 240$	$G=br = .7 \times .10 = .07$ $P = \frac{20(1-.7)}{.10-.07} = \text{Rs. } 200$	$G=br = .7 \times .08 = .056$ $P = \frac{20(1-.7)}{.10-.056} = \text{Rs. } 136.36$
(a)When dividend payout ratio is 20% and b=80% $G=br = .8 \times .15 = .12$ $P = \frac{20(1-.8)}{.13-.12} = \text{Rs. } 240$	$G=br = .8 \times .10 = .08$ $P = \frac{20(1-.8)}{.10-.08} = \text{Rs. } 200$	$G=br = .8 \times .08 = .064$ $P = \frac{20(1-.8)}{.10-.064} = \text{Rs. } 111.11$
(a)When dividend payout ratio is 50% and b=50% $G=br = .5 \times .15 = .075$ $P = \frac{20(1-.5)}{.13-.075} = \text{Rs. } 181.82$	$G=br = .5 \times .10 = .05$ $P = \frac{20(1-.5)}{.10-.05} = \text{Rs. } 200$	$G=br = .5 \times .08 = .04$ $P = \frac{20(1-.5)}{.10-.04} = \text{Rs. } 166.67$

**Conclusions of Gordon's Model:** Gordon's concept may be summarized as under-

- 1. Growth Firms (When  $r > k_e$ ):** In this case dividend payout ratio decreases so price per share also decrease. A growth firm should distribute less dividend and should retain maximum earnings.
- 2. Normal Firms (When  $r = k_e$ ):** In this case there are no any effect of dividend policy on price of shares. The price of shares remains unchanged. In this case, there is no optimum D/P ratio.
- 3. Declining Firms (When  $r < k_e$ ):** As the Dividend Payout ratio increases, the market price of the shares also increases. The optimum payout ratio is 100%. Such firms should distribute their entire earnings.

**(C) Miller and Modigliani Model (MM Model):** Miller and Modigliani Model assume that the dividends are irrelevant. Dividend irrelevance implies that the value of a firm is unaffected by the distribution of dividends and is determined solely by the earning power and risk of its assets. Under conditions of perfect capital markets, rational investors, absence of tax discrimination between dividend income and capital appreciation, given the firm's investment policy, its dividend policy may have no influence on the market price of the shares, according to this model.

**Assumptions of MM Model:**

1. Existence of perfect capital markets and all investors in it are rational.
2. Information is available to all free of cost, there are no transactions costs, securities are infinitely divisible, no investor is large enough to influence the market price of securities and there are no flotation costs.
3. There are no taxes. Alternatively, there are no differences in tax rates applicable to capital gains and dividends.
4. A firm has a given investment policy which does not change. It implies that the financing of new investments out of retained earnings will not change the business risk complexion of the firm and thus there would be no change in the required rate of return.
5. Investors know for certain the future investments and profits of the firm (but this assumption has been dropped by MM later).

**Argument of This Model:** By the argument of arbitrage, MM Model asserts the irrelevance of dividends. Arbitrage implies the distribution of earnings to shareholders and raising an equal amount externally. The effect of dividend payment would be offset by the effect of raising additional funds. MM model argues that when dividends are paid to the shareholders, the market price of the shares will decrease and thus whatever is gained by the investors as a result of increased dividends will be neutralized completely by the reduction in the market value of the shares. The cost of capital is independent of leverage and the real cost of debt is the same as the real cost of equity, according to this model. Those investors are indifferent between dividend and retained earnings imply that the dividend decision is irrelevant. With dividends being irrelevant, a firm's cost of capital would be independent of its dividend-payout ratio. Arbitrage process will ensure that under conditions of uncertainty also the dividend policy would be irrelevant.

MM Model:

Market price of the share in the beginning of the period = Present value of dividends paid at the end of the period + Market price of share at the end of the period.

$$P_0 = \frac{D_1 + P_1}{1 + K_e}$$

Where:

$P_0$  = Prevailing market price of a share

$K_e$  = Cost of Equity

$D_1$  = Dividend to be received at the end of period 1 and

$P_1$  = Market price of a share at the end of period 1.

The Market price of shares at the end of the period can be calculated by using the following formula:

$$P_1 = P_0 (1 + K_e) - D_1$$

Value of the firm can also be calculated by applying the following formula:

$$nP_0 = \frac{(n + m)P_1 - (I - X)}{(1 + K_e)}$$

Where:

$n$  = number of shares outstanding at the beginning of the period

$m$  = number of shares to be issued at the ending of the period

$P_1$  = Market price of the share at the end of the period

$K_e$  = Cost of equity

$I$  = Total amount required for investment

$X$  = Total net profit of the firm during the period

**Example 5:** Bhagwati Ltd. whose capitalization rate is 10% has outstanding shares of 25,000 selling at Rs. 100 each. The firm is expecting to pay a dividend of Rs. 5 per share at the end of the current financial year. The company's expected net earnings are Rs. 250,000 and the new proposed investment requires Rs. 500,000. Prove that using MM model, the payment of dividend does not affect the value of the firm.

**Solution:**

1. Value of the firm when dividends are paid:

i. Price per share at the end of year 1:



$$P_0 = 1/(1 + k_e) \times (D_1 + P_1)$$

$$\text{Rs. } 100 = 1/(1 + 0.10) \times (\text{Rs. } 5 + P_1)$$

$$P_1 = \text{Rs. } 105$$

- ii. Amount required to be raised from the issue of new shares:

$$n P_1 = I - (E - n D_1)$$

$$\Rightarrow \text{Rs. } 500,000 - (\text{Rs. } 250,000 - \text{Rs. } 125,000)$$

$$\Rightarrow \text{Rs. } 375,000$$

- iii. Number of additional shares to be issued:

$$n = \text{Rs. } 375,000 / 105 \Rightarrow 3571.42857 \text{ shares or } 3572 \text{ shares}$$

- iv. Value of the firm:

$$nP_0 = \frac{(n + m) P_1 - (1 - X)}{(1 + K_e)}$$

$$= \frac{(25,000 + 3572) \times 105 - (\text{Rs. } 5,00,000 - \text{Rs. } 2,50,000)}{(1 + 0.10)}$$

$$= \text{Rs. } 25,00,000$$

2. Value of the firm when dividends are not paid:

- i. Price per share at the end of year 1:

$$P_0 = 1/(1 + k_e) \times (D_1 + P_1)$$

$$\text{Rs. } 100 = 1/(1 + 0.10) \times (\text{Rs. } 0 + P_1)$$

$$P_1 = \text{Rs. } 110$$

- ii. Amount required to be raised from the issue of new shares:

$$\Rightarrow \text{Rs. } 500,000 - (\text{Rs. } 250,000 - 0) = \text{Rs. } 250,000$$

- iii. Number of additional shares to be issued:

$$\Rightarrow \text{Rs. } 250,000 / \text{Rs. } 110 = 2273$$

- iv. Value of the firm:

$$nP_0 = \frac{(n + m) P_1 - (1 - X)}{(1 + K_e)}$$

$$= \frac{(25,000 + 2273) \times 110 - (\text{Rs. } 5,00,000 - \text{Rs. } 2,50,000)}{(1 + 0.10)}$$

$$= \text{Rs. } 25,00,000$$

Thus, according to MM model, the value of the firm remains the same whether dividends are paid or not. This example proves that the shareholders are indifferent between the retention of profits and the payment of dividend.

### Limitations of MM Model:

1. The assumption of perfect capital market is unrealistic. Practically, there are taxes, floatation costs and transaction costs.

2. Investors cannot be indifferent between dividend and retained earnings under conditions of uncertainty. This can be proved at least with the aspects of i) near Vs distant dividends, ii) informational content of dividends, iii) preference for current income and iv) sale of stock at uncertain price.

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## 12.6 Summary

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- The part of profits which have to be distribute among the owners of the company i.e. shareholders, is called as dividend.
- A dividend policy is a company's approach to distributing profits back to its owners or stockholders.
- In case of inflation a company should rely upon retained earnings as a source of fund to replace those assets.

- Walter's Formula

$$P = \frac{D}{K_e - g}$$

- Gorden' formula

$$P = \frac{E(1-b)}{K_e - br}$$

- Modigliani – Miller formula

$$P_0 = \frac{D_1 + \frac{P_1}{1 + K_e}}$$

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## 12.7 Self Assessment Questions

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1. What do you understand by Dividend?
2. What do you understand by Retained earnings?
3. Define dividend policy.
4. State any four determinants of dividend policy.
5. Explain assumptions of Walter's model.
6. Explain various types of dividend.
7. State assumptions of M-M Model.
8. X ltd. earns Rs. 10 per share is capitalized at 10% and has a return on investment of 15%. Using Walter's formula, determine – (1) the optimum payout and (2) the price of share at this payout.
9. Following are the details regarding three companies:

The details regarding to three companies are below:

A Ltd.	B Ltd.	C Ltd.
$R > K_e$	$R = K_e$	$R < K_e$
$r = 15\%$	$r = 10\%$	$r = 8\%$
$K_e = 12\%$	$K_e = 10\%$	$K_e = 10\%$
$E = \text{Rs. } 15$	$E = \text{Rs. } 15$	$E = \text{Rs. } 15$

You are required to calculate the effect of dividend payment on the value of shares of each of the above companies under the following situations by using Walter's formula.

- (a) When no dividend is paid.
- (b) When dividend is paid at Rs. 8 per share.

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## **12.8 Reference Books**

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- Ravi M. Kishore - "Financial Management" 6<sup>th</sup> edition, 2005 - Taxmen's, New Delhi.
- M. R. Agrwal – "Financial Management (Principles & practices)" - Garima publications, Jaipur, 2010.
- Dr. R. P. Rustagi – "Basic Financial Management" 4<sup>th</sup> edition, 2012 – Sultan Chand & Sons, New Delhi.
- Dr. S. N. Maheshwari – "Elements of Financial Management" 10<sup>th</sup> revised edition, 2012 - Sultan Chand & Sons, New Delhi.

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## Unit -13 : Operating and Financial Leverages

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### Structure of Unit:

- 13.0 Objectives
- 13.1 Introduction and Meaning of Leverage
- 13.2 Operating Leverage
- 13.3 Financial Leverage
- 13.4 Combined Leverage
- 13.5 Summary
- 13.6 Self Assessment Questions
- 13.7 Reference Books

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### 13.0 Objectives

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After completing this unit, you would be able to understand:

- Meaning of Leverage
- Different types of leverages
- Meaning of Operating leverage and degree of Operating leverage
- Meaning of Financial leverage and degree of Financial leverage
- Meaning of Combined leverage and degree of Combined leverage
- Computation of different types of leverages and degree of Leverages
- Characteristics and utility of leverages

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### 13.1 Introduction and Meaning of Leverage

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**Leverage** is a business term that refers to borrowing. If a business is “leveraged,” it means that the business has borrowed money to finance the purchase of assets. The other way to purchase assets is through use of owner funds, or Equity.

Organizations in today’s fast changing environment face intense competition, economic fluctuations, changing profile of developing and developed economies, technological breakthroughs and developments, changing social values, demographic profiles, legal system, regulatory mechanisms, government policies, cultural profiles, etc. Originally the word ‘Leverages’ is come from Physics. In Physics the word Leverages refers to ‘Weight’. If we convert it into commercial term ‘The weight’ for any businessmen is of fixed expenses. So, we can say that leverage can be calculated of any firm in a case when fixed expenses are in existing in that firm. If any firm does not incurs any amount of fixed expenses then leverage can’t be calculate of this firm.

Leverage is a ratio which shows a relationship between *Revenue before charging fixed expenses* and *Revenue after charging fixed expenses*. So, we can say that leverage may be calculated in case of existence of fixed expenses in the firm. If there are no any fixed expenses then we can’t calculate leverages.

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### 13.2 Operating Leverage

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#### 13.2.1 What is Operating Leverage?

In any business concern there are two types of fixed expenses- 1) Fixed expenses of operating nature e.g. Salaries, Rent, etc. 2) Fixed expenses of financial nature e.g. Interest on loan. Essentially, operating leverage boils down to an analysis of fixed cost and variable cost. Operating leverage is highest in companies that have a high proportion of fixed operating costs in relation to variable operating costs. This kind of company

uses more fixed assets in the operation of the company. Conversely, operating leverage is lowest in companies that have a low proportion of fixed operating costs in relation to variable operating costs.

Operating leverage increases as the ratio of fixed costs to variable costs increases. With a high ratio of fixed costs to variable costs, a small percentage change in sales will lead to a large percentage change in operating profits. In other words, the percentage increase in sales is magnified. Technically, operating leverage is defined as the percentage change in EBIT divided by the percentage change in sales.

For understanding the different types of leverage, we have to learn about Income Statement. It can be explained with the help of following Example:

X & Sons sells 20,000 Units of a product. The selling price per unit is Rs. 10 and variable cost is Rs. 4. If fixed cost for the year is Rs. 60,000 then, what will be the effect on profit if sales are of (1) 30000 Units; (2) 15000 Units.

#### Income Statement at Different Levels of Sales

Particulars	Units Sold		
	20,000	30,000	15,000
Sales	2,00,000	3,00,000	1,50,000
Less- Variable Costs	80,000	1,20,000	60,000
Contribution	1,20,000	1,80,000	90,000
Less- Fixed Cost	60,000	60,000	60,000
EBIT	60,000	1,20,000	30,000
% Change in Sales	-	$\frac{1,00,000}{2,00,000} \times 100 = (+)50\%$	$\frac{50,000}{2,00,000} \times 100 = (-)25\%$
% Change in profits	-	$\frac{60,000}{60,000} \times 100 = (+)100\%$	$\frac{30,000}{60,000} \times 100 = (-)50\%$

In the above example, a 50% increase in sales from Rs. 2,00,000 to Rs. 3,00,000 result a 100% increase in profits i.e. from Rs. 60,000 to Rs. 1,20,000. Simultaneously, a decrease of 25% in sales i.e. from Rs. 2,00,000 to Rs. 1,50,000 results a decrease of 50% in profits i.e. from Rs. 60,000 to Rs. 30,000. It is clear from this example that if a firm incurs fixed cost and there are an increase in sales volume, resultant there will be more than proportionate increase in profits and if there are decrease in sales volume, resultant there will be more than proportionate decrease in profits. It is operating leverage and it works in both directions.

#### 13.2.2 Computation of Operating Leverage

For computation of Operating Leverage, first we have to calculate Contribution i.e. Contribution = Sales – Variable Expenses. Now, contribution will be divided by Earning before interest and tax

(EBIT) and we get Operating Leverage. Expressed as formula :

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}}$$

EBIT= Earnings before interest & tax

### Illustration 1:

The installed capacity of X & Sons is 3000 Units and actual production is 2000 units. Selling price per unit is Rs. 12 and Variable cost is Rs. 7 per unit. Calculate Operating Leverage in following cases:

1. When Fixed Cost is Rs. 2,000
2. When Fixed Cost is Rs. 3,000
3. When Fixed Cost is Rs. 4,000

### Solution:

#### Computation of Operating Leverage

Particulars	Case 1	Case 2	Case 3
Sales	24,000	24,000	24,000
Less- Variable Cost	14,000	14,000	14,000
Contribution	10,000	10,000	10,000
Less- Fixed Cost	2,000	3,000	4,000
EBIT	8,000	7,000	6,000
OL = $\frac{\text{Contribution}}{\text{EBIT}}$	10,000/8,000= 1.25	10,000/7,000= 1.42	10,000/6,000= 1.67

From this illustration, it is clear that Operating Leverage will be increased, if there are an increment in fixed cost.

### 14.2.3 What is Degree of Operating Leverage?

The degree of operating leverage measures the responsiveness of EBIT to change in level of output and it indicates the response in profits with the alteration of output and sales level. Degree of operating leverage shows multiplier effect resulting from the use of fixed operating costs. DOL can be expressed as *ratio of the percentage change in operating profit to percentage change in sales*. The following formula can be used for computation of Degree of operating leverage-

$$\text{Degree of Operating Leverage (DOL)} = \frac{\% \text{ Change in profits}}{\% \text{ Change in Sales}}$$

or

$$(\text{DOL}) = \frac{\% \text{ Change in EBIT}}{\% \text{ Change in Sales}}$$

**Note:** In the question, if different levels of sales are not given then, DOL will be computed by using the following formula:

$$\text{DOL} = \frac{\text{Contribution}}{\text{EBIT}}$$

### Illustration 2:

Y Corporations has estimated for a new product that, its BEP is 3000 units, if the items sold at Rs. 14; the variable cost per unit is Rs. 9 and fixed cost per annum is Rs. 15,000. Calculate the degree of operating leverage if sales volume is 4000 units and 5000 units.

**Solution:****Computation of Degree of Operating Leverage**

Particulars	When sales is 4000 units	When sales is 5000 units
Sales	56,000	70,000
Less- Variable Cost	36,000	45,000
Contribution	20,000	25,000
Less- Fixed Cost	15,000	15,000
EBIT	5,000	10,000
OL = $\frac{C}{EBIT}$	20,000/5,000= 4	25,000/10,000= 2.5
% Change in EBIT	-	$\frac{5,000}{5,000} \times 100 = 100\%$
% Change in Sales		$\frac{14,000}{56,000} \times 100 = 25\%$

$$(DOL) = \frac{\% \text{ Change in EBIT}}{\% \text{ Change in Sales}}$$

$$= 100/25 = 4$$

A 25% increase in sales results in 100% change in operating profits i.e. 4 times increment. It clearly shows that increase in profits in comparison of increase in sales due to operating leverage. It shows that a 20% increase in sales will increase the profits by 4 times and 20% reduction in sales volume will reduce the profit by 4 times.

**Illustration 3:**

Shivang Limited is producing 10,000 units at present. Other informations are as under:

Selling price	Rs. 10 p.u.
Fixed operating expenses	Rs. 25,000 per annum
Variable expenses	Rs. 5 p.u.

On the basis of said information, calculate the degree of operating leverage, if the company sells

(a) 5,000 units and (b) 15,000 units.

<b>Solution:</b> Particulars	<b>Present situation</b>	<b>Assumed situation (a)</b>	<b>Assumed situation (b)</b>
Sales in units	10,000	5,000	15,000
Sales @ Rs. 10 per unit	1,00,000	50,000	1,50,000
Less: Variable cost	50,000	25,000	75,000
Contribution	50,000	25,000	75,000
Less: Fixed Cost	25,000	25,000	25,000
EBIT	25,000	Nil	50,000
% change in EBIT		(-)100%	(+)100%
% change in sales		(-)50%	(+)50%
Degree of operating leverage		$\frac{(-)100\%}{(-)50\%} = 2$	$\frac{(+100\%}{(+50\%} = 2$
$\frac{\% \text{ Change in EBIT}}{\% \text{ Change in Sales}}$		Unfavorable	favorable

### 13.2.4 Characteristics of Operating Leverage

1. It is related to assets side of the balance sheet.
2. Operating leverage is directly related to sales and variable cost. It depends on the gap between Sales and variable expenses. A less gap between sales and variable expenses is a cause of high degree of operating leverage. The degree of operating leverage cannot be computed at BEP because at this point denominator value i.e. EBIT will be Zero.
3. There is a direct relationship between DOL and Break Even Point. If the sales value at which DOL is to be calculated is near to BEP, it is a sign of high degree of DOL.
4. Operating leverage related to the fixed cost of operating nature like Salary to employees, Rent etc. If there are no any such fixed costs, then there will be no operating leverage.
5. Due to increase in sales there will be an increase in operating leverage and high reduction in operating profits. So, we can say that operating leverage raise a firm's operating profits but on the other side it raises business risk of increasing losses.

### 13.2.5 Utility of Operating Leverage

1. Operating leverages helpful for decision making. Since, it is related to fixed cost so it is helpful in respect of long term investment decisions. Capital budgeting is essential for long term profit planning. Operating leverage is essential tool in capital budgeting.
2. Since, it is related to fixed costs which have to be compensating against the operating income. So we can say that it decide the capacity of the firm to bear the burden of payment of interest on debts and repayment of certain portion of debts.

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## 13.3 Financial Leverage

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### 13.3.1 What is Financial Leverage?

Financial leverage refers to the use of debt to acquire additional assets. Financial leverage is also known as trading on equity. There are two types of capital in any firm 1) Fixed cost bearing capital 2) Variable cost bearing capital. So, if fixed cost capital exists in any firm then financial leverage is present at there. According to James C. Vane Horn "Financial leverage involves the use of funds obtained at a fixed cost in the hope of increasing the return to common stock holders." Financial leverage directly related to capital structure of company. If proportion of variable cost capital is high than financial leverage will be low and if proportion of fixed cost capital is high, which also called as trading on equity, then financial leverage will be high.

### 13.3.2 Computation of Financial Leverage

For computation of financial leverage, first we have to calculate EBIT. Now by we can calculate financial leverage by using following formula:

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

EBIT = Earnings before interest & tax

EBT = Earnings before tax



**Illustration 4:**

A company has a choice of the following three financial plans. You are required to calculate the financial leverage in each case:

Denomination	Financial plan (Rs.)		
	X	Y	Z
Equity Capital	40000	20000	60000
Debt	40000	60000	20000
Operating Profit (EBIT)	8000	10000	8000

Interest @10% on the debts in all the cases.

**Solution:**

Particulars	Financial plan (Rs.)		
	X	Y	Z
EBIT	8000	10000	8000
Less- Interest	4000	6000	2000
EBT	4000	4000	6000
Financial Leverage (FL) = $\frac{\text{EBIT}}{\text{EBT}}$	$8000/4000 = 2$	$10000/4000 = 2.5$	$8000/6000 = 1.33$

In the above illustration it can be observed that the financial leverage of plan X is 2. It means that if EBIT increases by 1% there will be 2% increase in EBT.

**13.3.3 What is Degree of Financial Leverage?**

Degree of financial leverage shows a relation between % changes in EBIT to % change in EBT. The DFL can be measured by using the following formula:

$$\text{Degree of Financial Leverage (DFL)} = \frac{\% \text{ change in EBT}}{\% \text{ change in EBIT}}$$

**Or**

$$\frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}}$$

Here,

EBT = Earnings before taxes

EPS = Earnings per Share

**13.3.4 Computation of Degree of Financial Leverage****Illustration 5:**

A company's per year earnings before interest & taxes amount to Rs. 60,000. It has 10% Debentures of Rs. 50000, 10% Preference Shares of Rs. 30000 and 4000 Equity shares of Rs. 40000. The tax rate is 50%. Assuming that the EBIT being Rs. 96 000 and Rs. 24000. What would be the earning per share (EPS) and degree of financial leverage?

**Solution:**

Particulars	Present situation	Assumed situation (i)	Assumed situation (ii)
Earnings before interest & taxes (EBIT)	Rs. 60000	Rs. 96000	Rs. 24000
Less: Interest	5000	5000	5000
Earnings before taxes (EBT)	55000	91000	19000
Less: Taxes	27500	45500	9500
Earnings after taxes	3000	3000	3000
Less: Preference dividend	24500	42500	6500
Profit for equity shareholders (A)	4000	4000	4000
No. of equity shares (B)	Rs. 6.125	Rs. 10.625	Rs. 1.625
Earnings per share (A/B)	-	+60%	-60%
% change in EBIT	-	73.46%	-73.46%
% change in EPS		73.46/60 = 1.22	73.46/60 = 1.22
DFL = $\frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}}$			
Financial Leverage (FL) = $\frac{\text{EBIT}}{\text{EBIT} - \text{I} - \frac{\text{PD}}{1-t}}$	60000/49000 = 1.22	96000/85000 = 1.13	24000/13000 = 1.85

Here, EBT has been calculated after deducting grossed up value of Preference share dividend i.e. Rs. 6000 (3000 x 100/50) and interest on debentures from EBIT.

#### Illustration 6:

The financial manager of Arpit Ltd. expects that its earnings before interests & taxes in the current year would amount to Rs. 1, 00,000. The company has 10% debentures of Rs. 2, 00,000, while the 5% Preference shares amounting to Rs. 4, 00,000. The company has 10,000 equity shares of Rs. 10 each. What would be the degree of financial leverage in the case if EBIT being-

(a) Rs. 60,000 (b) Rs. 1, 40,000? The tax rate may be assumed at 50%.

#### Solution:

#### Computation of Degree of Financial Leverage

Particulars	Present situation	Assumed situation (a)	Assumed situation (b)
Earnings before interest & taxes (EBIT)	1,00,000	60,000	1,40,000
Less- Interest	20,000	20,000	20,000
Earnings before tax (EBT)	80,000	40,000	1,20,000
Less- Taxes	40,000	20,000	60,000
Earnings after taxes (EAT)	40,000	20,000	60,000
Less- Preference dividend	20,000	20,000	20,000
Earnings available for equity shareholders	20,000	-	40,000
Earnings per share	Rs.2	-	Rs. 4
% change in EBIT		(-)40%	(+)40%
% change in EPS		(-)100%	(+)100%
Degree of financial leverage		$\frac{(-)100\%}{(-)40\%} = 2.5$	$\frac{(+100\%}{(+40\%} = 2.5$
$\frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}}$		Unfavorable	Favorable

### 13.3.5 Characteristics of Financial Leverage

From the above discussion, we can say that financial leverage have the following characteristics:

1. Financial leverage is related to liability side of the balance sheet.
2. Financial leverage shows that what effect has been made on EPS of the company due to changes in its operating profits.
3. Low financial leverage indicates a low interest outflow and consequently lower borrowings. High financial leverage indicates high outflow of interest due to higher borrowings.
4. High ratio of financial leverage is risky for the firm and it constitutes a strain on the profits.
5. Degree of financial leverage is an attribute of the firm's exposure to financial risk.

### 13.3.6 Utility of Financial Leverage

1. Financial leverage is useful to determine an optimum capital structure of the firm, where cost of debts would be minimize and return on equity shareholders fund is maximum.
2. Since, the financial leverage effects to EPS and EBIT. So, we can do a careful analysis of profitability of the firm at various levels of sales. Since break even point is an important tool of profit planning and BEP is also used in understanding the concept of financial leverage. Therefore, we can say that the financial leverage is also an important tool of financial planning.
3. If financial leverage is low it shows that a low amount is distributing by way of interest. Therefore, a major part of earnings is available for equity shareholders and company can be declared more dividends. Consequently, goodwill of the company will increase and due to increased goodwill company can obtain more funds/loans at low interest rates.

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## 13.4 Combined Leverage

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### 13.4.1 What is Combined Leverage?

As we have discussed earlier that the operating leverage measures the change in operating profits due to changes in sales and it also affects the business risk. Financial leverage measures % change in EBIT and % change in EBT and it also shows financial risk of the firm. Operating leverage shows the effect of fixed cost of operating nature and financial leverage shows effects of fixed cost of financial nature. But the total leverage or combined leverage is not concentrate on particular fixed cost. While we compute the combined leverage, we compute the potential use of both types of fixed costs, operating fixed cost and financial fixed cost. It define combined effect of fixed cost whether it is of operating or financial nature.

### 13.4.2 Computation of Combined Leverage

For computation of combined leverage, first we have to calculate contribution and EBT. Now by we can calculate financial leverage by using following formula:

$$\text{Combined Leverage (CL)} = \frac{\text{Contribution}}{\text{EBT}}$$

*Or*

Combined Leverage = Operating Leverage x Financial Leverage

$$\text{CL} = \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBT}} = \frac{\text{Contribution}}{\text{EBT}}$$

### Illustration 7:

Consider the following information of Wales Ltd. and Calculate combined leverage and Earning per share.

Selling Price per unit	Rs. 200
Variable cost per unit	Rs. 120
Fixed cost	Rs. 10,00,000
Interest on debt	Rs. 6,00,000
Preference dividend	Rs. 4,00,000
Tax rate	40%
Number of units produced and sold	60,000

### Solution:

Selling Price per unit	Rs. 200
Less: Variable cost per unit	<u>Rs. 120</u>
Contribution per unit	<u>Rs. 80</u>
Total Contribution (60,000 Units x Rs. 80)	Rs. 48,00,000
Less: Fixed Cost	<u>Rs. 10,00,000</u>
Earning before interest & Taxes	Rs. 38,00,000
Less: Interest	<u>Rs. 6,00,000</u>
Earning before taxes	Rs. 32,00,000
Less: Taxes (40%)	<u>Rs. 12,80,000</u>
Earning after taxes	Rs. 19,20,000
Less: Preference dividend	<u>Rs. 8,00,000</u>
Profit for equity shareholders	<u>Rs. 11,20,000</u>

Combined Leverage (CL) =  $\frac{\text{Contribution}}{\text{EBT}}$

EBT

$$= 48,00,000 / 32,00,000 = 1.5$$

Earnings per Share (EPS) =  $11,20,000 / 60,000 = \text{Rs. } 18.67$

In the above illustration the combined leverage is 1.5. What will the effect on EPS? If sales increase by 10% then EPS will be increased by 15% i.e. (1.5 x 10%).

### 13.4.3 What is Degree of Combined Leverage?

Degree of combined leverage indicates the effect of % change in sales on % change in EPS. DCL can be calculated by using the following formula:

Degree of Combined Leverage (DCL) =  $\frac{\% \text{ change in EBT}}{\% \text{ change in sales}}$

Or

$$\text{DCL} = \text{DOL} \times \text{DFL}$$

$$\text{DCL} = \frac{\% \text{ change in EBIT}}{\% \text{ change in sales}} \times \frac{\% \text{ change in EBT}}{\% \text{ change in EBIT}} = \frac{\% \text{ change in EBT}}{\% \text{ change in sales}}$$

### 13.4.4 Computation of Degree of Combined Leverage

**Illustration 8:** The capital structure of X Ltd. consists of an equity share capital of Rs.4,00,000 @ Rs. 10 each and Rs. 4,00,000 7.5% Debentures. Sales increased by 20% from 40000 to 48000 units. The selling price is Rs.7.5 per unit. Variable cost is Rs. 4.5 per unit and fixed cost amount to Rs. 50,000. The corporate tax rate is 50%.

You are required to compute the degree of operating leverage, degree of financial leverage and degree of combined leverage.

Particulars	40000 units	48000 units
Sales @ Rs. 7.5 p.u.	3,00,000	3,60,000
Less: Variable cost @ Rs. 4.5 p.u.	1,80,000	2,16,000
Contribution (C)	1,20,000	1,44,000
Less: Fixed Cost	50,000	50,000
EBIT	70,000	94,000
Less: Interest	30,000	30,000
Earnings before taxes (EBT)	40,000	64,000
Less: Tax @ 50%	20,000	32,000
Earnings after tax (A)	20,000	32,000
No. of Equity shares (B)	40,000	40,000
Earnings per share (A/B)	Re. 0.50	Re. 0.80
% change in sales	-	$\frac{\text{Rs. } 60,000}{\text{Rs. } 3,00,000} \times 100 = 20\%$
% change in EBIT	-	$\frac{\text{Rs. } 24,000}{\text{Rs. } 70,000} \times 100 = 34.29\%$
% change in EPS	-	$\frac{\text{Re. } 0.80 - \text{Re. } 0.50}{\text{Re. } 0.50} \times 100 = 60\%$
Degree of operating leverage (DOL) = $\frac{\% \text{ change in EBIT}}{\% \text{ change in sales}}$	-	$\frac{34.29}{20} = 1.71$
Degree of Financial leverage (DFL) = $\frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}}$	-	$\frac{60}{34.29} = 1.75$
Degree of Combined leverage (DCL) = DOL x DFL	-	$1.71 \times 1.75 = 2.99$

### 13.4.5 Characteristics of Combined Leverage

1. Combined leverage shows combined effect on profits of both types of fixed expenses i.e. Operating fixed expenses and financial fixed expenses.
2. It shows the potential use of both types of fixed expenses.
3. Due to combined leverage we can identify the relationship between contribution and taxable income.
4. Combined leverage explains the effect of change in sales over change in taxable profits.

## 13.5 Summary

- Leverages refers to the ability of a firm in employing long term funds bearing a fixed interest charges, to enhance returns to the owners.
- Operating leverages refers to the effect of fixed charges on the profitability of the firm.

- Higher operating leverage shows that the firm has a high business risk and there will be reduction in profits due to high amount spent on fixed cost.
- Financial leverage shows an existence of debt capital in capital structure of the firm.
- Financial leverage shows effect of fixed interest charges on profitability of the firm.
- If debt capital is in high volume then financial leverage will be high because of a more amount paid by the company by way of interest on such debts.
- Financial leverage refers financial risk of the firm.
- Combined leverage refers the potential use of both types of fixed expenses.
- Combined leverage indicates the effect of % change in sales on % change in EPS.

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### 13.6 Self Assessment Questions

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1. What do you understand by Operating Leverage and Financial Leverage?
2. “Financial leverage is two-edged sword”. How?
3. What is the difference between favorable and unfavorable financial leverage?
4. The following information is available for Roshan Ltd.:

	Rs.
EBIT	5, 60,000
Profit Before tax	1, 60,000
Fixed Expenses	3, 50,000
Calculate % change in EPS if sales are expected to increase by 5%.	

5. A company has sales of Rs. 2, 00,000. The variable costs are 40% of the sales and fixed operating expenses are amount to Rs. 60,000. The amount of interest on long term loans is Rs. 20,000.

You are required to calculate the operating leverage, financial leverage and composite leverage.

6. From the following information available for four companies, Calculate-

- |                       |                       |
|-----------------------|-----------------------|
| a. EBIT               | b. Operating Leverage |
| c. Financial leverage | d. EPS                |

Particulars		A	B	C	D
Selling Price per unit	Rs.	20	25	30	35
Variable cost per unit	Rs.	15	20	25	30
Quantity	Nos.	40000	50000	60000	80000
Fixed Cost	Rs.	35000	45000	55000	65000
Interest	Rs.	15000	30000	30000	45000
Tax Rate	%	40	40	40	40
No. of equity shares		6000	10000	12000	15000

7. What is the relationship between financing by fixed cost bearing capital and financial leverage?
8. State the characteristics of operating leverage and financial leverage?

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### 13.7 Reference Books

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## Unit -14 : Capital Structure: Theories

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### Structure of Unit:

- 14.0 Objectives
- 14.1 Introduction
- 14.2 Meaning and Definition
- 14.3 Features of Capital Structure
- 14.4 Equations and Notations
- 14.5 Theories of Capital Structure
  - 14.5.1 Net Income (NI) Approach
  - 14.5.2 Net Operating Income (NOI) Approach
  - 14.5.3 Traditional Approach
  - 14.5.4 Modigliani-Miller (MM) Approach
- 14.6 Summary
- 14.7 Self Assessment Questions
- 14.8 Reference Books

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### 14.0 Objectives

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The purpose of this unit is to introduce the theories of capital structure of a company.

After you have studied this unit, you should be able to:

- Appreciate the concept of capital structure and its importance
- Understand the features of the capital structure of a firm
- Define and explain the various theories of capital structure
- Critically examine and distinguish the various approaches to capital structure
- Relate the capital structure with the cost of capital and the value of the firm
- Calculate the market value of the firm using appropriate formulae

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### 14.1 Introduction

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Often corporate officers, professional investors, and analysts discuss a company's capital structure. The concept is extremely important because it can influence not only the return a company earns for its shareholders, but whether or not a firm survives in recession or depression.

Every business enterprise, whether big, medium or small, needs finance to carry on its operations smoothly and to achieve its targets. Finance is needed for working capital and for permanent investment. Ideally, it should neither be more or less than required and should gainfully be employed.

Finance is obtained by businesses from various sources of long term and short term funds. Long term funds comprise of equity and long term borrowings (debt). Equity is in the form of common stock or preferred stock and long term borrowings (debt) are in the form of debentures or bonds. The profit earned from operations is owners' funds which may be retained in the business or distributed to the owners (shareholders) as dividend. The portion of profits retained in the business is a reinvestment of owners' funds and hence a source of long-term funds. Short-term funds are the working capital requirements of the firm. The short-term borrowings often keep shifting and thus the proportion of the sources for short-term funds cannot be rigidly laid down. So, the firm follows a flexible approach. A more definite policy is often laid down for the composition of long-term funds.



The entire composition of these funds constitutes the overall financial structure of the firm.

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## 14.2 Meaning and Definition

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**Meaning:** The capital structure is how a firm finances its overall operations and growth by using different sources of funds. It refers to how much of each type of funds a company holds as a percentage of its total financing. In other words, Capital Structure is referred to as the ratio of different kinds of securities raised by a firm as long-term finance. Therefore, it is a mix of a company's long-term debt, specific short-term debt, common equity and preferred equity.

When people refer to capital structure they are mostly referring to a firm's debt-to-equity ratio, which provides insight into how risky a company is. Usually a company more heavily financed by debt poses greater risk, as this firm is relatively highly levered.

**Definitions:** According to Gerestonbeg, "capital structure of a company refers to the composition or make up of its capitalization and it includes all long term capital resources i.e. loans, reserves, shares and bonds."

Weston and Brigham define, "capital structure is permanent financing of the firm represented by long term debts."

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## 14.3 Features of Capital Structure

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While developing a capital structure the finance manager should aim at maximizing the long term market price of equity shares. An appropriate capital structure should have the following features. The relative importance of each of these feature differ from company to company and may change with changing conditions.

1. **Returns:** The capital structure should be such that it gives maximum return to the shareholders. Maximum use of leverage at minimum cost should be made so as to obtain maximum advantage of trading on equity at minimum cost.
2. **Solvency:** Company should not use excessive debt in the capital structure, because in times of higher interest rates it can even threaten the solvency of the company.
3. **Flexibility:** The capital structure should be flexible enough that the company can alter the debt equity ratio whenever there is need to alter it. For example banks do not give loans to companies if debt equity ratio is high, in that case it is important to have flexible capital structure.
4. **Goal Oriented:** Capital structure should be in congruence with the goals of the company, which implies that if the policy is that company will not take more debt, than capital structure should be framed accordingly with more equity and less debt.

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## 14.4 Equations and Notations

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In the analysis of capital structure theories, the following basic definitions and equations shall be used.

Market value of Equity = E

Market value of debt = D

Total market value of the firm =  $V = (E + D)$

Interest Payments = I

Tax Rate = T

Net Operating Income or EBIT = NOI =  $X^-$

Net Income or shareholders earnings (EBIT - INT) when taxes do not exist = NI =  $Y^-$

Current Market price per share =  $P_0$

Dividend at Time 0 (now) =  $D_0$   
 Expected dividend at the end of Year 1 =  $D_1$

#### Debt

$$\text{Cost of Debt} = k_d = \text{INT} / D$$

$$\text{Cost of Debt after Tax} = K_d = \frac{I(1-T)}{D}$$

$$\text{Value of Debt} = D = \text{INT} / k_d$$

#### Equity

$$\text{Cost of Equity} = K_e = D_1 / P_0$$

Alternatively:

$$\text{Cost of Equity, } K_e = K_o + (k_o - k_d)(D/E)$$

Overall cost of capital (WACC) =  $K_o$

$$\begin{aligned} K_o &= K_d[D/(D+E)] + K_e[E/(D+E)] \\ &= K_d(D/V) + K_e(E/V) \\ &= \frac{K_d D}{V} + \frac{K_e E}{V} = \frac{K_d D + K_e E}{V} = \frac{\text{EBIT}}{V} \end{aligned}$$

The above equations and definitions are valid under any of the capital structure theories. The controversy is with regard to the behavior of the variables like  $k_e$ ,  $k_o$ ,  $V$  etc with leverage.

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## 14.5 Theories of Capital Structure

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There are four basic Capital Structure theories. They are:

1. Net Income (NI) Approach
2. Net Operating Income (NOI) Approach
3. Modigliani-Miller (MM) Approach
4. Traditional Approach

Generally, the capital structure theories have the following assumptions:

1. The firms employ only two types of capital namely debts and equity
2. The firms pay 100% of the earnings as dividend. This means that the dividend pay-out ratio is 100% and there are no earnings that are retained by the firms.
3. The total assets are given which do not change and the investment decisions are assumed to be constant.
4. Business risk is constant over time and it is assumed that it is independent of the capital structure and financial risk.
5. The firm has a perpetual life.
6. The firm's operating earnings (EBIT) are not expected to grow.
7. The corporate and personal income taxes do not exist. This assumption was relaxed later on.
8. The firm's total financing remains constant. The firm's degree of leverage can be altered either by selling shares to retire debt or by raising more debt and reduce the equity financing.

9. All the investors are assumed to have the same subjective probability distribution of the future expected operating profits for a given firm.

### 14.5.1 Net Income (NI) Approach

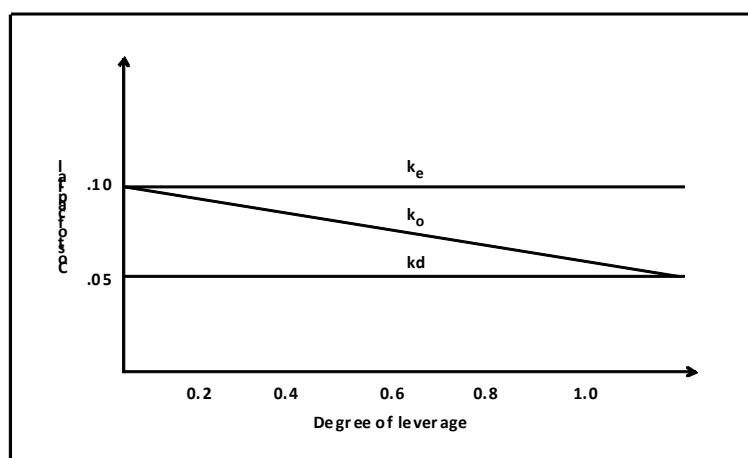
Net Income theory was introduced by David Durand. According to this approach, there is a relationship between the capital structure and the value of the firm. The firm, by increasing the debt proportion in the capital structure can increase its market value or lower the overall cost of capital (WACC).

Debt is cheap source of finance because its interest is deductible from net profit before taxes. After deduction of interest, company has to pay less tax and thus it will decrease the over all cost of capital or weighted average cost of capital (WACC).

High debt content in the debt-equity mix is called financial leverage. Increasing of financial leverage will help in maximizing the firm's value. For example, if the debt: equity mix is increased from 50:50 to 80:20, it will increase the market value of firm and its positive effect on the value of per share.

Assumptions of NI approach:

1. There are no taxes.
2. The cost of debt is less than the cost of equity ( i.e  $k_d < k_e$  )
3. The use of debt does not change the risk perception of the investors, as a result the cost of equity ( $k_e$ ) and the cost of debt ( $k_d$ ) remains constant with the change in leverage.
4. The overall cost of capital ( $k_o$ ) decreases with the increase in leverage.



**Figure - 14.1 : The Effect of Leverage on the Cost of Capital Under NI Theory**

#### Illustration 14.1 - NI Theory

	Firm A	Firm B
Earnings Before Interest and Tax	2,00,000	2,00,000
Interest (I)	-	50,000
Equity Earnings (E)	2,00,000	1,50,000
Cost of Equity ( $K_e$ )	12%	12%
Cost of Debt ( $K_d$ )	10%	10%
Market Value of Equity = $E / K_e$	16,66,667	12,50,000
Market Value of Debt = $Int / K_d$	NIL	5,00,000
Total value of Firm (V)	16,66,667	17,50,000
Overall cost of capital ( $K_o$ ) = $EBIT / V$	12%	11.43%

Conclusion: Firm B: increasing the debt proportion in its capital structure has increased its market value or lowered the overall cost of capital (WACC).

### 14.5.2 Net Operating Income (NOI) Approach

According to this approach the market value of the firm is not affected by the capital structure changes. This theory, contrary to NI theory, does not accept the idea of increasing the financial leverage. It means change in the capital structure does not affect the overall cost of capital and the market value of the firm. Thus at each and every level of capital structure, market value of firm will be same.

The market value of the firm  $V = (D+E) = \text{EBIT}/K_o$

$V$  = Value of firm

$(D+E)$  = Debt + Equity

$K_o$  = Overall cost of capital

EBIT = Earnings before interest and tax.

The overall capitalisation rate ( $k_o$ ) depends on the business risk of the firm and is independent of financial mix. Therefore, the market value of firm will be a constant and independent of capital structure changes. Thus, according to Net Operating Income (NOI) Approach, any capital structure will be optimum.

The critical assumptions of the NOI approach are:

- The market capitalizes the value of the firm as a whole. Thus the split between debt and equity is not important.
- The market uses an overall capitalisation rate to capitalize the net operating income. Overall cost of capital depends on the business risk. If the business risk is assumed to remain unchanged, overall cost of capital is a constant.
- The use of less costly debt funds increases the risk to shareholder. This causes the equity capitalisation rate to increase. Thus, the advantage of debt is offset exactly by the increase in the equity-capitalisation rate.
- The debt capitalisation rate is constant.
- The corporate income taxes do not exist.

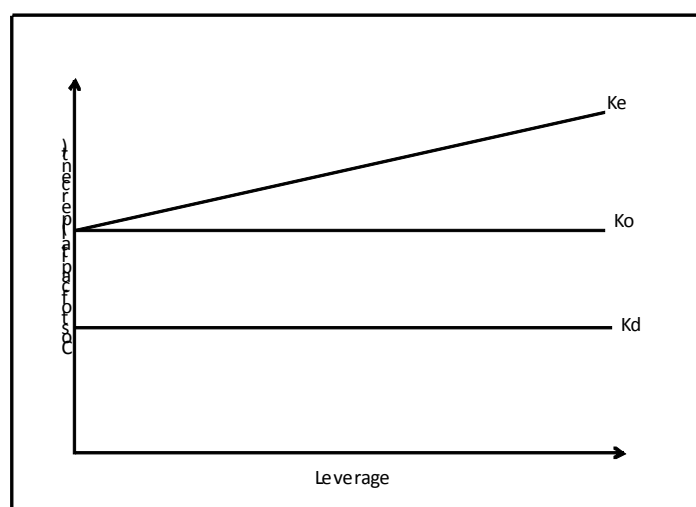


Figure - 14.2 : The Effect of Leverage on the Cost of Capital Under NOI theory

### Illustration 14.2- NOI Theory

A firm has an EBIT of Rs. 5,00,000 and belongs to a risk class of 10%. What is the cost of Equity if it employs 8% debt to the extent of 30%, 40% or 50% of the total capital fund of Rs 20,00,000?

#### Solution

	30%	40%	50%
Debt	6,00,000	8,00,000	10,00,000
Equity	14,00,000	12,00,000	10,00,000
EBIT	5,00,000	5,00,000	5,00,000
Ko	10%	10%	10%
Value of the firm ( $V = EBIT/K_o$ )	50,00,000	50,00,000	50,00,000
Value of Equity ( $E = V - D$ )	44,00,000	42,00,000	40,00,000
Interest @ 6%	36,000	48,000	60,000
Net Profit (EBIT-Int)	4,64,000	4,52,000	4,40,000
Ke (NP/E)	10.545%	10.76%	11%

### 14.5.3 Traditional Approach

Traditional Theory is an intermediate approach between the net income and net operating income theories. This gives the right combination of debt and equity and always leads to enhanced market value of the firm. It states that a firm's value increases to a certain level of debt capital, after which it tends to remain constant and eventually begins to decrease.

The traditional theory assumes changes in cost of equity ( $k_e$ ) at different levels of debt- equity rate and beyond a particular point of debt-equity mix,  $k_e$  rises at an increasing rate, thus reducing the value of the firm.

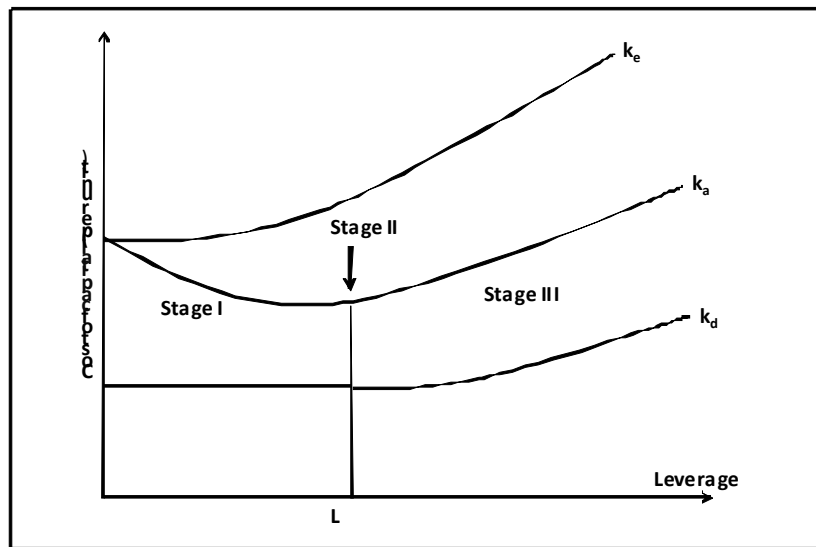
The effect of change in capital structure on the overall cost of capital can be divided into three stages as follows:

**Stage I – Introduction of Debt: Increasing Value** - The overall cost of capital falls and the value of the firm increases with the increase in leverage. This leverage has beneficial effect as debts are less expensive. The cost of equity remains constant or increases negligibly. The proportion of risk is less in such a firm.

**Stage II – Further Application of Debt: Optimum Value** - A stage is reached when increase in leverage has no effect on the value of the firm or the cost of capital. Neither the cost of capital falls nor the value of the firm rises. This is because the increase in the cost of equity due to the added financial risk offsets the advantage of low cost debt. Stage wherein the value of the firm is maximum and cost of capital is minimum -Optimum capital Structure

**Stage III – Further Application of Debt: Declining Value** - Beyond a definite limit of leverage the cost of capital increases with leverage and the value of the firm decreases with leverage. This is because with the increase in debts investors begin to realize the degree of financial risk and hence they desire to earn a higher rate of return on equity shares. As a result the value of the firm reduces.

This theory follows that the cost of capital is a function of the degree of leverage. Hence, an optimum capital structure can be achieved by establishing an appropriate degree of leverage.



**Figure - 14.3 : The Costs of Capital Behavior Under Traditional View**

#### **14.5.4 Modigliani- Miller (M-M) Approach**

Modigliani Millar approach, popularly known as the MM approach is similar to the Net operating income approach. The MM approach favors the Net operating income approach and agrees with the fact that the cost of capital is independent of the degree of leverage and at any mix of debt-equity proportions.

Modigliani and Miller argued that, in the absence of taxes the cost of capital and the value of the firm are not affected by the changes in capital structure.

#### **Assumptions of M-M Approach**

1. Capital markets are perfect. Thus investors are
  - free to buy and sell securities
  - able to borrow funds at the same terms as the firms do
  - well informed and behave rationally
2. All investors have the same expectation of the company's net operating income (EBIT) for the purpose of evaluating the value of the firm.
3. Within similar operating environments, the business risk is equal among all firms.
4. Dividend payout ratio is 100% and therefore no retained earnings.
5. No corporate taxes exist. This was removed later.

#### **Basic Propositions – M-M approach- Without Taxes**

M - M Hypothesis can be explained in terms of two propositions of Modigliani and Miller

**Proposition I:** At any degree of leverage, the company's overall cost of capital ( $k_o$ ) and the Value of the firm ( $V$ ) remains constant. This means that it is independent of the capital structure. The total value can be obtained by capitalizing the operating earnings stream that is expected in future, discounted at an appropriate discount rate suitable for the risk undertaken.

According to M M, for the firms in the same risk class, the total market value is independent of capital structure and is determined by capitalising net operating income by the rate appropriate to that risk class.

Proposition I can be expressed as follows:

Where  $V = (D+E) = \text{NOI}/K_o$   
 $V =$  the market value of the firms,  
 $E =$  market value of equity,  $D =$  market value of debt  
 $\text{NOI} =$  Net operating Income  
 $K_o =$  capitalisation rate appropriate to the risk class of the firm.



**Figure - 14.4 : The Cost of Capital Under M-M Proposition I**

It is evident from this figure that average cost of capital is constant and is not affected by leverage.

**Arbitrage Process:** Why should proposition I hold good? The simple principle of proposition 1 is that two firms identical in all respects except for the capital structures cannot command different market values nor have different cost of capital.

Arbitrage process is the process of purchasing a security in a market where the price is low and selling it in a market where the price is high. This will have an effect of increasing the price of the shares that is being purchased and decreasing the price of the shares that is being sold. This process will continue till the market price of these two firms become equal or identical. This results in restoration of equilibrium in the market price of a security asset. This process is a balancing operation which implies that a security cannot sell at different prices. Thus the arbitrage process drives the value of two homogeneous companies to equality that differs only in leverage.

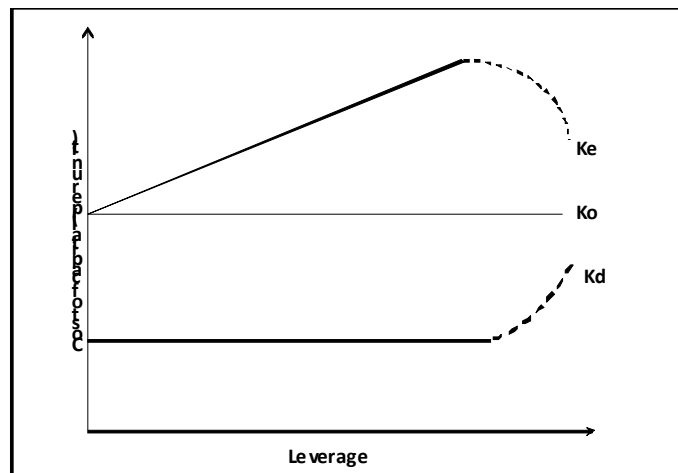
**Proposition II:** For any firm in a given risk class, the cost of equity is equal to the constant average cost of capital ( $K_o$ ) plus a premium for the financial risk, which is equal to debt – equity ratio times the spread between average cost and cost of debt.

Therefore, cost of equity is defined as follows:

$$K_e = K_o + (k_o - k_d) (D/E)$$

- $K_e$  is the required rate of return on equity or cost of equity
- $K_o$  is the company unlevered cost of capital (ie assume no leverage).
- $K_d$  is the required rate of return on borrowings, or cost of debt
- $D/E$  is the debt-to-equity ratio.

A higher debt-to-equity ratio leads to a higher required return on equity, because of the higher risk involved for equity-holders in a company with debt. The formula is derived from the theory of weighted average cost of capital (WACC).



**Figure - 14.5 : The cost of capital under M-M Proposition II**

**M-M approach - With Taxes:** Debt has an important advantage over equity, interest payments on debt are tax deductible, whereas dividend payments and retained earnings are not. Investors in a levered firm receive in the aggregate the unlevered cash flow plus an amount equal to the tax deduction on interest. The value of the levered firm is equal to the value of the unlevered firm plus the interest tax shield which is tax rate times the debt (if the shield is fully usable).

The following assumptions are made in the propositions with taxes:

- corporations are taxed at the rate  $T_c$  on earnings after interest,
- no transaction costs exist, and
- individuals and corporations borrow at the same rate

It is assumed that the firm will borrow the same amount of debt in perpetuity and will always be able to use the tax shield. Also, it ignores bankruptcy and agency cost.

### Proposition I

$$V_L = V_U + T_c D$$

Where

- $V_L$  is the value of a levered firm
- $V_U$  is the value of an unlevered firm
- $T_c D$  is the tax rate  $T_c$  x  $D$  the value of debt
- the term assumes debt is perpetual

### Proposition II:

$$r_E = r_o + D/E (r_o - r_d) (1 - T_c)$$

Where

- $r_E$  is the required rate of return on equity, or cost of levered equity = unlevered equity + financing premium



- $r_o$  is the company cost of equity capital with no leverage (unlevered cost of equity, or return on assets with  $D/E = 0$ )
- $r_d$  is the required rate of return on borrowings, or cost of debt
- $D/E$  is the debt-to-equity ratio
- $T_c$  is the tax rate.

### Limitations of MM Hypothesis:

1. Investors would find the personal leverage inconvenient.
2. The risk perception of corporate and personal leverage may be different.
3. Arbitrage process cannot be smooth due the institutional restrictions.
4. Arbitrage process would also be affected by the transaction costs.
5. The corporate leverage and personal leverage are not perfect substitutes.
6. Corporate taxes do exist. However, the assumption of “no taxes” has been removed later.

**Relaxing MM Assumptions:** The scenarios presented by MM are not necessarily reflective of business reality. Additional factors for consideration include:

- **Financial Distress:** as a firm assumes more debt (i.e. increases its financial leverage), its bankruptcy risk increases. This increased risk should be factored in to any analysis.
- **Agency Costs:** these are the costs incurred by stockholders to monitor company managers; agency costs are increased when monitoring mechanisms fail and equity value losses are absorbed.
- **Asymmetric Information:** MM assumes perfect information, but company managers commonly know more about the firm than the investing public. This is asymmetric information.

**Pecking Order Theory:** This theory states that company management prefers to use internal financing (cash on hand, retained earnings) as these sources are not as readily visible to the public as stock and bond offerings, which invite scrutiny.

Financing comes from three sources, internal funds, debt and new equity. Companies prioritize their sources of financing, first preferring internal financing, and then debt, lastly raising equity as a last resort. Hence, internal financing is used first, when that is depleted, then debt is issued; and when it is no longer sensible to issue any more debt, equity is issued. This theory maintains that businesses adhere to a hierarchy of financing sources and prefer internal financing when available, and debt is preferred over equity if external financing is required.

This model does assume asymmetric information – managers know more than investors, and will only issue equity, the most expensive form of financing, last in order to avoid transferring wealth from old shareholders to new shareholders.

**Static Trade-Off Theory:** Outside the MM construct, this theory views capital structure as a decision that balances costs and benefits. Under static trade-off, the company should continue to capitalize itself with debt until the increased costs associated with financial distress exceed the value of the tax shield.

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## 14.6 Summary

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Capital Structure of a firm is a combination of different sources of securities raised by a firm as long-term finance. It is determined by the mix of debt and equity it uses in financing its operations. The capital structure should aim at maximizing the returns to the shareholders resulting in the increased market value of the firm.

It should be flexible enough that the firm can alter the debt equity ratio at any point of time and need. It is important for a firm to plan the capital structure, initially and on continuous basis, as it has a considerable bearing on its profitability.

Capital structure theories developed under some assumptions show sharp differences in the theoretical relationship between capital structure, cost of capital and value of the firm.

NI Approach at one extreme argues that leverage always affects the cost of capital and the value of a firm. Increasing the debt portion in debt-equity mix will decrease the overall cost of capital resulting in maximizing the firm's value. The NOI Approach, in contrast, is at the other extreme of the spectrum. According to this Approach, capital structure is totally irrelevant.

The Traditional Approach strikes a balance between these extremes. A firm can increase its value ( $V$ ) and reduce its cost of capital ( $k_0$ ) up to a point, but beyond that point, the use of further debt will lead to a rise in the weighted average cost of capital. At that point the capital structure is optimum.

Although the empirical testing has been only suggestive with respect to the true relationship between leverage and cost of capital, the Traditional Approach provides a fairly close approximation of the position. The optimum capital structure would, of course, vary from case to case.

Modigliani and Miller concur with NOI and provide behavioral support to its basic proposition. However, the basic premises of the MM Approach are of doubtful validity. As a result, the arbitrage process is impeded.

Modigliani and Miller also agree that with corporate taxes debt has a definite advantage over equity as the interest is tax-deductible and leverage will lower the overall cost of capital. The value of the levered firm is equal to the value of the unlevered firm plus the interest tax shield which is tax rate times the debt. The scenarios presented by MM are not necessarily reflective of business reality and thus additional factors like financial distress, agency costs are to be considered.

Pecking order theory starts with asymmetric information as managers know more about the firm's prospects, risks and value than outside investors. Asymmetric information affects the choice between internal and external financing and between the issue of debt or equity. Therefore there exists a pecking order for the financing of new projects.

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## 14.7 Self Assessment Questions

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1. Define Capital Structure and explain its features.
2. Explain the assumptions and implications of NI and NOI theories. Illustrate your answer with hypothetical examples.
3. Describe the traditional view on optimum capital structure. Compare this view with NI and NOI approach.
4. Explain the position of M M theory on the issue of an optimum capital structure
  - a. ignoring corporate income taxes
  - b. assuming the existence of taxes
5. How does the cost of capital behave with leverage under traditional and M M approach?
6. X Co has a net operating income of Rs 2,00,000 on an investment of Rs 10,00,000 in assets. It can raise debt at a 16 per cent rate of interest. Assume that taxes do not exist.

- (a) Using the NI approach and an equity capitalization of 18 percent, compute the total value of the firm and the weighted average cost of capital if the firm has (i) no debt, (ii) Rs 3,00,000 debt, (iii) Rs 6,00,000 debt.
- (b) Using the NOI approach and an overall capitalization rate of 18 percent, compute the total value of the firm, value of shares and cost of equity if the firm has (i) no debt, (ii) Rs 3,00,000 debt, (iii) Rs 6,00,000 debt.

**Solution:**

**(a) NI approach**

	(i)	(ii)	(iii)
Net Operating income (EBIT)	200,000	200,000	200,000
Debt (D)		300,000	600,000
Debt rate, $k_d$	16%	16%	16%
Total cost of debt, $INT = D * k_d$		48,000	96,000
Net Income, $NI = EBIT - INT$	200,000	152,000	104,000
Cost of equity, $k_e$	18%	18%	18%
Market value of equity, $E = NI/k_e$	1,111,111	844,444	577,778
Total value of firm, $V = E + D$	1,111,111	1,144,444	1,177,778
Weighted cost of capital	18.0%	17.5%	17.0%

**(b) NOI approach**

	(i)	(ii)	(iii)
Net Operating income (EBIT)	200,000	200,000	200,000
Weighted average cost of capital $k_o$	18%	18%	18%
Total value of firm, $V = NOI/k_o$	1,111,111	1,111,111	1,111,111
Market value of Debt (D)		300,000	600,000
Market value of equity, $E = V - D$	1,111,111	811,111	511,111
Debt rate, $k_d$	16%	16%	16%
Total cost of debt, $INT = D * k_d$	0	48,000	96,000
Cost of equity, $k_e = (EBIT - INT)/E$	18.0%	18.7%	20.3%

7. Two companies A and B are identical except that company A is unlevered while company B has 6 percent Rs 2,00,000 debt outstanding. As per the NI approach, the valuation of the two firms is as follows:

	Company A (Unlevered)	Company B (Levered)
Net operating income EBIT	60,000	60,000
Total cost of debt, $k_d D$	0	12,000
Net earnings, NI	60,000	48,000
Equity capitalization, $k_e$	0.100	0.111
Market value of shares, S	600,000	432,432
Market value of debt, D		200,000
Total value of the firm, V	600,000	632,432

Mr X holds Rs 2,000 worth of Company B shares. Does Mr X have opportunity for arbitrage and thereby reduce his outlay to earn same return?

*Solution:*

*Mr X can reduce his outlay and earn the same return through arbitrage.*

1. *He can sell shares in company B for Rs 2,000*
2. *He can then create a personal leverage equal to the share of debt in company B by borrowing Rs. 926 (=Rs 2,000 \*Rs 2,00,000/ Rs 4,32,000)*
3. *He can then buy Rs 2,778 (=Rs 6,00,000 \* Rs 2,000 / Rs 4,32,000) of company A shares*

Return on Company A shares: Rs 2,778*10%	Rs 277.80
Less: Interest on Rs 926 *6%	Rs 55.56
Net return	Rs 222.24

*His return from Company B (Levered company) is Rs 2000 \*11.1% = Rs 222.22 which is same as in Company A (unlevered company). However the funds involved in the unlevered company are Rs 2778 – Rs 926 = Rs 1852 which is less than Rs 2000 cash outlay involved in the levered company.*

8. The following are the costs and values for the firms X and Y according to the traditional approach

	X Rs	Y Rs
Total value of firm, V	100,000	120,000
Market value of debt, D	0	60,000
Market value of equity, E	100,000	60,000
Expected net operating income, X	12,000	12,000
Cost of debt, $INT = k_d D$	0	4,800
Net income, $X - k_d D$	10,000	7,200
Cost of equity, $K - (X - k_d D)/E$	10.00%	12.00%
Debt-equity ratio, D/E	0	0.5
Average cost of capital, $k_a$	12.00%	10.00%

Compute the equilibrium value for Firms A and B in accordance with the M-M thesis. Assume that (i) taxes do not exist and (ii) the equilibrium value of  $k_a$  is 9.4 per cent.

***Solution:***

***The equilibrium values for Firms X and Y is as below***

	X Rs	Y Rs
Net operating income (EBIT)	12000	12000
Cost of Debt, $INT = k_d * D$	0	4800
Net income (NI)	12000	7200
Average cost of capital	9.50%	9.50%
Total value of firm, $V = EBIT/k_o$	126316	126316
Market value of debt, D	0	60000
Market value of shares, $E = V - D$	126316	66316
Cost of equity, $k_e = NI/E$	9.5%	10.9%

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## Unit -15 : Capital Structure: Planning

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### Structure of Unit:

- 15.0 Objectives
- 15.1 Introduction
- 15.2 Meaning of Capital Structure
- 15.3 Factors Determining Capital Structure
- 15.4 Approaches to Establish Appropriate Capital Structure
  - 15.4.1 EBIT-EPS Approach
  - 15.4.2 Cost of Capital and Valuation Approach
  - 15.4.3 Cash Flow Approach
- 15.5 Practical Considerations in Determining Capital Structure
- 15.6 Summary
- 15.7 Self Assessment Questions
- 15.8 Reference Books

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### 15.0 Objectives

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After you have studied this unit, you should be able to:

- Appreciate the need for capital structure planning
- Understand the factors determining the capital structure of a firm
- Relate the components of capital structure with risk, return and value of the firm
- Explain and relate the various approaches of capital structure planning
- Critically examine and distinguish between the alternate approaches
- Discuss a number of practical considerations in determining a firm's capital structure

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### 15.1 Introduction

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**Capital structure planning** is very important for survival of the business in long run. Companies which do not plan their capital structure may prosper in the short-run, but in a long run they may face considerable difficulties in raising funds to finance their activities. With unplanned capital structure, these companies may also fail to economize the use of their funds. Consequently, it is being increasingly realized that a company should plan its capital structure to maximize the use of the funds and to be able to adapt more easily to the changing conditions.

Capital structure refers to the mix of long-term sources of funds, such as debentures, long-term debt, preference share capital and equity share capital including reserves and surpluses (i.e. retained earnings). Planning the capital structure is one of the most complex areas of financial decision making because of the inter-relationships among components of the capital structure and also its relationship to risk, return and value of the firm. Two similar companies can have different capital structures if the decision makers differ in their judgment of the significance of various factors.

The optimum capital structure is obtained when the market value per share is maximum. Theoretically, a company needs to plan out an optimum capital structure. But in practice, it is difficult to determine an optimum capital structure as one needs to go beyond theories. The capital structure should be planned generally keeping in view the interests of the equity shareholders and the financial requirements of a company.

The equity shareholders, being the owners of the company and the providers of risk capital (equity) would be concerned about the ways of financing a company's operations. However, the interests of other groups, such as employees, customers, creditors, society and government, should also be given reasonable consideration.

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## 15.2 Meaning of Capital Structure

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The capital structure is how a firm finances its overall operations and growth by using different sources of funds. It refers to how much of each type of funds a company holds as a percentage of its total financing. In other words, Capital Structure is referred to as the ratio of different kinds of securities raised by a firm as long-term finance. Therefore, it is a mix of a company's long-term debt, specific short-term debt, common equity and preferred equity.

The capital structure involves two decisions-

- a. Type of securities to be issued (equity shares, preference shares and long term borrowings)
- b. Relative ratio of securities that can be determined by process of capital gearing.

On this basis, the companies are divided into two-

- a. **Highly Geared Companies-** Those companies whose proportion of equity capitalization is small. A company with high gearing (high leverage) is more vulnerable to downturns in the business cycle because the company must continue to service its debt regardless of how bad sales are. A greater proportion of equity provides a cushion and is seen as a measure of financial strength. In high gearing companies, interest paid on debts reduces profits available to shareholders, and if interest rates increase, the cost of the business can rapidly increase. But high gearing is not necessarily bad. It may indicate that a company is adventurous in its expansion plans, and may have taken the opportunity to invest by borrowing at low rates.
- b. **Low Geared Companies-** Those companies whose equity capital dominates total capitalization. A company with low gearing is one where the largest proportion of the funding of the business has come from investment by shareholders. As low gearing will be a result of a low level of borrowings, this can indicate that the firm is growing through reinvestment of profits, minimizing risk. But low gearing may indicate that a firm is not aggressive enough to survive, and may not be seeking opportunities for growth.

**Example:** There are two companies A and B. Total capitalization amounts to be Rs. 20 lakhs in each case. The equity capital in the total capitalization of company A is Rs. 5 lakhs, while in company B equity capital is Rs. 15 lakhs. In company A, equity proportion is 25% and in company B, equity proportion is 75%. In such cases, company A is considered to be a highly geared company and company B is low geared company.

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## 15.3 Factors Determining Capital Structure

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The right capital structure is important for the survival of the business in long run. It enhances the power of the company to face the losses and changes in financial markets. Decision regarding what type of capital structure a company should have is of critical importance because of its potential impact on profitability and solvency.

The factors determining the Capital Structure are highly psychological, complex and qualitative and do not always follow accepted theory, since capital markets are not perfect and the decision has to be taken under imperfect knowledge and risk. A theoretical model cannot adequately handle all the factors which affect the capital structure decision.

The following are the factors determining the capital structure in a business enterprise:

1. **Size of the Business Enterprise:** The capital structure of a business enterprise is also influenced by the size of business enterprise. It may be small, medium or large. A large-sized business enterprise requires much more capital as compared to a small-sized business enterprise. Small size business firm's capital structure generally consists of loans from banks and retained profits. While on the other hand, big companies having goodwill, stability and an established profit can easily go for issuance of shares and debentures as well as loans and borrowings from financial institutions. The bigger the size, the wider is total capitalization.
2. **Nature of the Business Organization:** The capital structure of a business enterprise is also influenced by nature of business organization. It may be manufacturing, financing, trading or public utility type.
3. **Period of Finance:** Period of finance, short, medium or long term is also another factor which determines the capital structure of a business enterprise. For example, short-term finances are raised through borrowings as compared to long-term finance which is raised through issue of shares, stocks etc.
4. **The Purpose of Financing:** The purpose of financing should also be kept in mind in determining the capital structure of a business enterprise. The funds may be required either for betterment expenditure or for some productive purposes. The betterment expenditure, being non-productive, may be incurred out of funds raised by issue of shares or from retained profits. On the contrary, funds for productive purposes may be raised through borrowings.
5. **Elasticity of Capital Structure:** The capital structure of a business enterprise should be quite elastic so as to meet the future requirements of the capital also. For this purpose the amount of authorized capital should be fixed at a higher level as compared to present needs.
6. **Capital Market Condition:** In the lifetime of the company, the market price of the shares has got an important influence. During the depression period, the company's capital structure generally consists of debentures and loans. While in period of boons and inflation, the company's capital should consist of share capital generally equity shares.
7. **Trading on Equity:** Trading on equity means taking advantage of equity share capital to borrow funds on reasonable basis. It refers to additional profits that equity shareholders earn because of issuance of debentures and preference shares. It is based on the thought that if the rate of dividend on preference capital and the rate of interest on borrowed capital is lower than the general rate of company's earnings, equity shareholders are at advantage which means a company should go for a judicious blend of preference shares, equity shares as well as debentures. Trading on equity becomes more important when expectations of shareholders are high.
8. **Degree of Control:** In a company, it is the directors who are so called elected representatives of equity shareholders. These members have got maximum voting rights in a concern as compared to the preference shareholders and debenture holders. Preference shareholders have reasonably less voting rights while debenture holders have no voting rights. If the company's management policies are such that they want to retain their voting rights in their hands, the capital structure consists of debenture holders and loans rather than equity shares.
9. **Choice of Investors:** Generally, the company policy is to have different categories of investors



for securities. Therefore, a capital structure should give enough choice to all kind of investors to invest. Bold and adventurous investors generally go for equity shares and loans and debentures are generally raised keeping into mind conscious investors.

- 10. Cost of Financing:** In a capital structure, the company has to look to the factor of cost when securities are raised. It is seen that debentures at the time of profit earning of company prove to be a cheaper source of finance as compared to equity shares where equity shareholders demand an extra share in profits.
- 11. Stability of Sales:** An established business which has a growing market and high sales turnover, the company is in position to meet fixed commitments. Interest on debentures has to be paid regardless of profit. Therefore, when sales are high, thereby the profits are high and company is in better position to meet such fixed commitments like interest on debentures and dividends on preference shares. If company is having unstable sales, then the company is not in position to meet fixed obligations. So, equity capital proves to be safe in such cases.

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## 15.4 Approaches to Establish Appropriate Capital Structure

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Capital structure is formed initially when a company is incorporated. The initial capital structure should be designed very carefully. The management of the company should set a target capital structure and the subsequent financing decisions should be made with a view to achieve the target capital structure. Every time when funds are needed to finance the activities of the firm, the pros and cons of various sources of finance should be weighed and the most advantageous sources should be selected, keeping in view the target capital structure. Thus, the capital structure decision is a continuous one and has to be taken whenever a firm needs additional finances.

The following are the three most common approaches to decide about a firm's capital structure:

1. EBIT-EPS approach for analyzing the impact of debt on EPS
2. Valuation approach for determining the impact of debt on the shareholders' value
3. Cash flow approach for analyzing the firm's ability to service debt

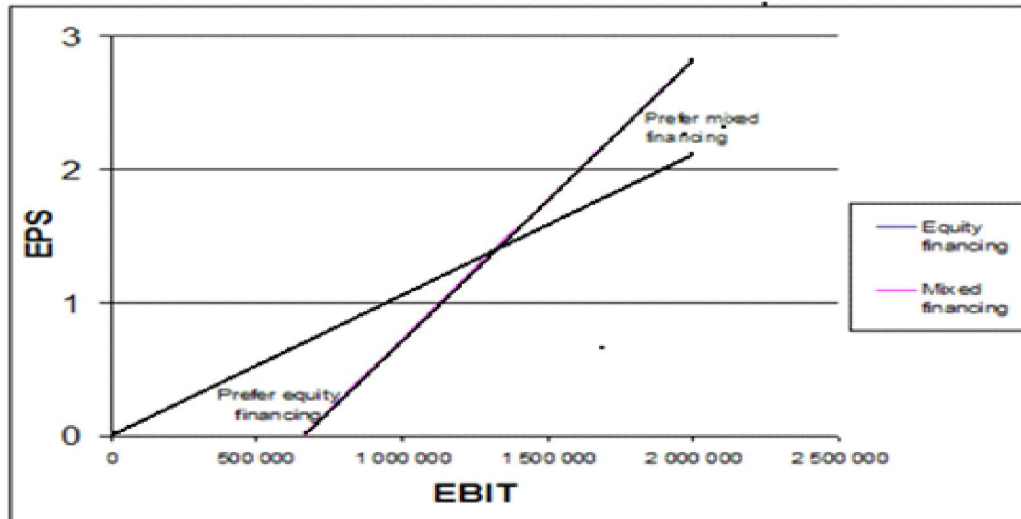
### 15.4.1 EBIT-EPS Approach

The EBIT-EPS capital structure approach focuses on finding a capital structure with the highest EPS (earnings per share) over the expected range of EBIT (earnings before interest and taxes). The reason of finding a capital structure which will permit maximization of the EPS over the expected range of EBIT is because it partially helps to achieve the ultimate objective of the enterprise. The ultimate objective of the enterprise is to maximize shareholders' wealth by maximizing its stock price. Two key variables that affect stock price are return (earnings attributed to owners of the enterprise) and risk (which can be measured by required return). This approach explicitly considers maximization of returns (EPS). However, it is important to note that this approach ignores risk (does not explicitly consider risk).

Financial leverage is an important consideration in planning the capital structure of a company because of its effect on the earnings per share. The use of fixed cost sources of funds such as debt and preference share capital to finance the assets of the company is known as financial leverage or trading on equity. If the assets are financed using debts and the yield is greater than the cost of debt, the earning per share also increases without an increase in the owners' investment. The earnings per share also increase when the preference share capital is used to acquire assets. But the leverage impact is more pronounced in case of debt because (i) the cost of debt is usually lower than the cost of preference share capital and (ii) the interest paid on debt is tax deductible.

One common method of examining the impact of leverage is to analyze the relationship between EPS and various possible levels of EBIT under alternative methods of financing. The companies with high level of the earnings before interest and taxes (EBIT) can make profitable use of the high degree of leverage to increase return on the shareholders' equity.

Figure 16.1 EPS-EBIT approach



**Analysis for Risk and Return:** The relationship between EBIT and EPS is plotted for different capital structures, the investor can analyze the graph, focusing on two key challenges. The level of EBIT where EPS is zero, called the break-even point, and the graph's slope, which visually represents the company's risk. A steeper slope conveys a higher risk — greater loss per share at lower EBIT level. A steeper slope also means a higher return, and that the company needs to earn less EBIT to produce greater EPS. The breakeven point is also important because it tells the business how much EBIT there must be to avoid losses, and varies at different proportions of debt to equity.

**Major Shortcoming of the EBIT-EPS Approach:** This approach is one of the most widely used measures of the company's performance in practice. As a result of this, in choosing between debt and equity in practice, sometimes too much attention is paid on EPS, which however, has some serious limitations as a financing-decision criterion. The fact that this approach fails to explicitly consider risk is the major shortcoming of this method. As firm obtains more debt (its financial leverage increases), the risk also increases and shareholders will require higher returns to compensate for the increased financial risk. Therefore, this approach is not completely appropriate because it does not consider one of the key variables (risk), which is necessary for maximization of shareholders' wealth.

**Illustration: 15.4.1:** Suppose that a firm has an all equity capital structure consisting of 100,000 ordinary shares of Rs.10 per share. The firm wants to raise Rs.250,000 to finance its investments and is considering three alternative methods of financing –

- (i) to issue 25,000 ordinary shares at Rs.10 each,
- (ii) to borrow Rs.2,50,000 at 8 per cent rate of interest,
- (iii) to issue 2,500 preference shares of Rs.100 each at an 8 per cent rate of dividend.

If the firm's earnings before interest and taxes after additional investment are Rs.3,12,500 and the tax rate is 50 per cent, the effect on the earnings per share under the three financing alternatives will be as follows:

**Solution: EPS Under Alternative Financing Favorable EBIT:**

Equity Financing Rs.	Debt Financing Rs.		Preference Financing Rs.
EBIT	3,12,500	3,12,550	3,12,550
Less: Interest	0	20,000	0
PBT	3,12,500	2,92,500	3,12,500
Less: Taxes	1,56,250	1,46,250	1,56,250
PAT	1,56,250	1,46,250	1,56,250
Less: Preference dividend	0	0	20,000
Earning available to ordinary shareholders	1,56,250	1,46,250	1,36,250
Shares outstanding	1,25,000	1,00,000	1,00,000
EPS	1.25	1.46	1.36

The firm is able to maximize the earnings per share when it uses debt financing. Though the rate of preference dividend is equal to the rate of interest, EPS is high in case of debt financing because interest charges are tax deductible while preference dividends are not. With increasing levels of EBIT, EPS will increase at a faster rate with a high degree of leverage. However if a company is not able to earn a rate of return on its assets that is higher than the interest rate (or the preference dividend rate), debt (or preference financing) will have an adverse impact on EPS.

Suppose the firm in illustration above has an EBIT of Rs.75,000/- EPS under different methods will be as follows:

**EPS Under Alternative Financing Methods: Unfavorable EBIT:**

Equity Financing Rs.	Debt Financing Rs.		Preference Financing Rs.
EBIT	75,000	75,000	75,000
Less: Interest	0	20,000	0
PBT	75,000	55,000	75,000
Less: Taxes	37,000	27,500	37,500
PAT	37,500	1,46,250	1,56,250
Less: Preference dividend	0	0	20,000
Earning available to ordinary shareholders	1,56,250	27,500	17,500
Shares outstanding	1,25,000	1,00,000	1,00,000
EPS	0.30	0.27	0.17

It is obvious that under unfavorable conditions, i.e. when the rate of return on the total assets is less than the cost of debt, the earnings per share will fall with the degree of leverage.

**15.4.2 Cost of Capital and Valuation Approach**

A company should have such a mix of debt and equity that its overall cost of capital is minimum. The overall cost of capital is minimum when the cost of various sources of funds is minimum. Measuring the costs of various sources of funds is a complex subject and needs a separate treatment. In order to minimize the cost of capital, cheaper sources of funds should be preferred, other things remaining the same.

The cost of source of finance is the minimum return expected by its suppliers which depends on the degree of risk assumed by them. A high degree of risk is assumed by shareholders than debt-holders. This is because the rate of dividends is not fixed for ordinary shareholders and the board of directors has no legal obligation to pay dividends even if the company has made profits. Besides, the shareholders will have to

share the residue only when the company is wound up. In the case of debt-holders, the rate of interest is fixed and the company is legally bound to pay interest whether it makes profits or not. The loan of debt-holders is returned within a prescribed period. This leads to the conclusion that debt is a cheaper source of funds than equity. This is generally the case even when taxes are not considered; the tax deductibility of interest charges further reduces the cost of debt.

The preference share capital is also cheaper than equity capital, but not as cheap as debt. Thus, using the component or specific cost of capital as a criterion for financing decisions and ignoring risk, a firm would always like to employ debt since it is the cheapest source of funds.

**Pecking Order Hypothesis:** The cost of equity includes the cost of new issue of shares and the cost of retained earnings. The cost of debt is cheaper than the cost of both these sources of equity funds. Between the cost of new issues and retained earnings, the latter is cheaper. The cost of retained earnings is less than the cost of new issues because the company does not have to pay personal taxes which have to be paid by shareholders on distributed earnings, and also because, unlike new issues, no floatation costs are incurred if the earnings are retained. As a result, between these two sources, retained earnings are preferable. It has been found in practice that the firms prefer internal finance and if they are not sufficient to meet the investment outlays, firms go for external finance, issuing the safest security first. They start with debt, then possibly hybrid securities such as convertible debentures and then equity as a last resort. Myers has called it the pecking order theory since there is not a well defined debt equity target and there are two kinds of equity: external and internal, one at the top of pecking order and one at the bottom.

**Trade Off Theory:** It should be realized that a company cannot go on minimizing its overall cost of capital by employing debt. A point is reached beyond which debt becomes more expensive because of the increased risk of excessive debt to creditors as well as to shareholders. When the degree of leverage increases, the risk to creditors also increases. They may demand a higher interest rate and may not further provide loan to the company at all once the debt has reached a particular level. Furthermore, the excessive amount of debt makes the shareholders' position very risky. This has the effect of increasing the cost of equity. Thus, up to a point the overall cost of capital decreases with debt, but beyond that point the cost of capital would start increasing and therefore it would not be advantageous to employ debt further. So there is a combination of debt and equity, which minimizes that firm's average cost of capital and maximizes the market value per share. The trade off between cost of capital and EPS set the maximum limit to the use of debt.

Thus, when we consider the leverage and the cost of capital factors, it appears reasonable that a firm should employ a large amount of debt provided its earnings do not fluctuate very widely. In fact, debt can be used to the point where the average cost of capital is minimum. These two factors taken together set the maximum limit to the use of debt. However, other factors should also be evaluated to determine the appropriate capital structure for a company.

### **15.4.3 Cash Flow Approach**

Cash flow approach hinges on the principle of conservatism which is related to the fixed charge created by use of debt or preference capital and the firm's ability to generate cash to meet these fixed charges. A firm is considered prudently financed if it is able to service its fixed charges under any normally anticipated adverse conditions.

The fixed charges of a company include payment of interest, preference dividends and principal and they depend on the amount of loan securities and the terms of payment. If a company employs large amount of debt, the fixed charges will naturally be high. Whenever a company plans to raise additional debt, it should

analyze the expected future cash flows to meet the fixed charges. Companies expecting larger and stable cash inflows in the future can employ larger debt in their capital structure. On the other hand, companies whose cash inflows are unstable are unpredictable will find it risky to employ large debt.

An important parameter to be examined at the time of capital structure planning is debt servicing ratio which is the ratio of net cash inflows to fixed charges. Greater the ratio, greater is the amount of debt a company can use. However, it should also be noted that it is not the average cash inflows but the yearly cash inflows which are important to determine the debt capacity of a company. Hence companies with predictable and stable cash inflows can take a higher debt than those with varying inflows. Ultimately, it is desirable to do a full cash flow analysis over a longer term to ensure that fixed financial obligations are met.

**Components of Cash Flows:** The cash flows should be analyzed over a long period of time, which can cover the various adverse phases, for determining the firm's debt policy. The cash flow analysis can be carried out by preparing proforma cash flow statements to show the firm's financial conditions under adverse conditions such as a recession. The expected cash flows can be categorized into three groups.

- **Operating Cash Flows** refers to the operations of the firm and can be determined from the projected profit and loss statements. Behavior of sales volume, input and output price over the period of analysis should be examined and predicted.
- **Non-Operating Cash Flows** include capital expenditures and working capital changes. During recession period, the firm may have to specially spend for the promotion of the product and such expenditures as well as unavoidable capital expenditure during adverse conditions should be included in non operating cash flows.
- **Financial Flows** include contractual financial obligations (interest, lease rentals, repayment of debt etc) and policy financial obligations (dividends etc).

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## 15.5 Practical Considerations in Determining Capital Structure

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There are certain considerations in addition to the concerns about EPS, value and cash flow which determine capital structure decisions. Some of these are listed below:

- **Dilution of Control:** In designing the capital structure, the existing management is governed by its desire to continue control over the company. This is particular in case of firms promoted by entrepreneurs. The existing management team not only wants control and ownership but also to manage the company without any outside interference.
- **Maintain Operating Flexibility:** Flexibility means firm's ability to adapt its capital structure to the needs of changing conditions and the company should be able to raise funds without undue delay and cost whenever needed. It should also be in a position to redeem its preference capital and debt under warranted situations. The financial plan should be so flexible to change the composition of the capital structure as required by the firm's operating strategy and needs. This basically depends on loan covenant, option to retire loans early and the excess resources at the command of the firm.
- **Marketability:** Marketability means readiness of investors to purchase security in a given period of time and to demand reasonable return. Though it does not influence the initial capital structure, it is an important consideration to decide about the appropriate timing of security issues. The continuous changes in capital markets is an important input while deciding whether to raise funds with equity or debt issue. The flotation costs is also considered an important factor influencing the capital structure when funds are raised externally.

- **Economies of Scale:** Size of company may influence its capital and availability of funds from different sources. Small firms may find it difficult to raise long term loans and even if they are able to, it will be at a higher rate of interest and inconvenient terms. Therefore they depend on share capital and retained earnings for their long term funds. For those which are able to approach the capital market, the cost of issuing shares is generally more than the large sized companies.

Large sized company has relative flexibility in designing its capital structure. It can obtain loans with ease and also sell shares to the public. Because of its large scale its cost of distributing security is less than that of a small company.

- **Agency Costs:** There exists a conflict of interest among shareholders, debt holders and management which may give rise to agency problems involving agency costs. This has an impact on firm's capital structure. The conflict between shareholders and debt holders arise because of the possibility of shareholders transferring the wealth of debt holders in their favor. The debt holders may lend money in low risk projects while the firm may invest in high risk projects. The conflict between share holders and managers may arise on two aspects – firstly managers may transfer share holders wealth to their advantage by increasing their compensation and perquisites, secondly managers may not act in the best interest of shareholders in order to protect their jobs. So managers may not undertake risk and thus forego profitable investments.

These problems are handled through monitoring and restrictive covenant which involve costs and these costs are called agency costs. The implication of the agency cost of capital structure is that management should use debt to the extent that it maximizes the share holder wealth.

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## 15.6 Summary

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**Capital structure planning** is very important for survival of the business in long run. Planning the capital structure is highly complex as the components of capital structure are inter-related and also related to risk, return and value of the firm. There cannot exist a standard capital structure for all firms since there are lots of factors significantly influencing the determination of the capital structure. Though the primary objective while framing the capital structure is to maximize the returns to the share holders, the interests of other groups, such as employees, customers, creditors, society and government, should also be given reasonable consideration.

There are certain approaches for planning an appropriate Capital structure and each of them have advantages and limitations too. EBIT- EPS approach focuses on finding a capital structure with the highest EPS over the expected range of EBIT, thus helping the firm to achieve its ultimate objective of maximizing shareholders' wealth. This approach fails to explicitly consider risk which is one of the key factors in maximizing the wealth. In Cost of capital and valuation approach, a company should have such a mix of debt and equity that its overall cost of capital is minimum. Measuring the cost of various sources of funds is complex and in order to minimize the cost of capital, cheaper sources of funds should be identified and preferred. Cash flow analysis clearly reveals that a higher debt equity ratio is not risky if the company has ability to generate substantial cash inflows in the future to meet its financial obligations. There are factors influencing cash flow and it is difficult to predict all the possible factors.

In practice, the determination of capital structure involves considerations in addition to the EPS, cash flows, cost of capital and value. Attitudes of managers with regard to financing decisions are quite often influenced by their desire to maintain control, to maintain operating flexibility, and to have convenient and cheaper means of raising funds.

## 15.7 Self Assessment Questions

1. What do you mean by an appropriate capital structure? What are the factors influencing it?
2. Explain the features and limitations of the three approaches to the determination of capital structure.
  - a) EBIT-EPS approach.
  - b) Valuation approach.
  - c) Cash flow approach.
3. If debt is cheaper than equity, why do firms not finance their assets with debt?
4. Write notes on
  - a. Pecking order theory
  - b. Trade off theory.
5. What are the practical considerations in determining the capital structure?
6. A company is considering a most desirable capital structure. The cost of debt (after tax) and of equity capital at various levels of debt equity mix are estimated as follows:

Debt as percentage of total capital employed		Cost of debt (%)	Cost of equity (%)
0	10	15	
20	10	15	
40	12	16	
50	13	18	
60	14	20	

Determine the optimal mix of debt and equity for the company by calculating composite cost of capital?

Solution: For determining the optimal debt equity mix, we have to calculate the composite cost of capital i.e.  $K_o$  which is equal to  $K_d p_1 + K_e p_2$

Where  $K_d$  = Cost of debt

$p_1$  = Relative proportion of debt in the total capital of the firm

$K_e$  = Cost of equity

$p_2$  = Relative proportion of equity in the total capital of the firm

Before we arrive at any conclusion, it would be desirable to prepare a table showing all necessary information and calculations.

Calculating Cost of capital

$K_d$ %	$K_e$ %	$p_1$	$p_2$	$K_d p_1 + K_e p_2 = K_o$
10	15	0.0	1.00	$0.0 + 15.0 = 15$
10	15	0.2	0.8	$2.0 + 12.0 = 14$
12	16	0.4	0.6	$4.8 + 9.6 = 14.4$
13	18	0.6	0.5	$7.8 + 9.0 = 16.8$
14	20	0.6	0.4	$8.4 + 8.0 = 16.4$

The optimal debt equity mix for the company is at a point where the composite cost of capital is minimum. It is evident that a mix of 20% debt and 80% equity gives the minimum composite cost of capital of 14%.

Any other mix of debt and equity gives a higher overall cost of capital. The closest to the minimum cost of capital is a mix of 40% debt and 60% equity where  $K_o$  is 14.4%. It can therefore be concluded that a mix of 20% debt and 80% equity will make the capital structure optimal.

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## Unit - 16 : Sources of Long-term Finance

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### Structure of Unit:

- 16.0 Objectives
- 16.1 Introduction
- 16.2 Share Capital
- 16.3 Debentures/Bonds
- 16.4 Difference Between Shares and Debentures
- 16.5 Retained Earnings
- 16.6 Term Loan
- 16.7 External Commercial Borrowings
- 16.8 Foreign Loan through Depository Receipts
- 16.9 Foreign Currency Convertible Bonds
- 16.10 Euro Bonds and Foreign Bonds
- 16.11 Leasing and Hire Purchase
- 16.12 Venture Capital
- 16.13 Book Building
- 16.14 Debt Securitisation
- 16.15 New Instruments
- 16.16 Summary
- 16.17 Self Assessment Questions
- 16.18 Reference Books

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### 16.0 Objectives

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After completing this unit, you would be able to:

- Understand the long term finance and its purpose for raising the fund from the sources of long term.
- Comprehend the share capital and its feature, advantages and disadvantages.
- Differentiate between the shares and debentures/bonds.
- Point out various forms of foreign loans through depository receipts and differentiation between ADRs and GDRs.
- Know about the different forms of Venture Capital and its growth in India.
- Learn and appreciate the leasing and hire purchase as a source of long term finance.
- Understand the different new long term financial instruments.

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### 16.1 Introduction

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The firm has to maintain adequate amount of funds for successful operation of funds. As there should be adequate blood level in human body, the same is true with finance in business. Long term finance is also called as long term capital, fixed capital or non-movable capital. The firms require long term fund financing for purchasing fixed assets, expansion/improvisation, diversification and acquisition & takeovers etc. Long term finance has two characteristics. I) it is used for fulfilling the long term financial needs of the company, II) they are fixed in nature and these finances can not be encased on will. At the time of inspection of firm fixed assets like land and building, machines, furniture, fittings, patents are purchased from long term finances. Long term finance is not liquid. The long term financial sources are Equity shares, preference shares, retained earnings, debentures and long term debts etc.

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## 16.2 Share Capital

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The company has a statutory right to issue shares to raise funds. Funds procured through floatation of shares are termed as 'ownership capital'. According to Justice Lindle "Share is the proportional of profit of which holder is liable to get." The company can issue two types of shares i.e. Equity shares and Preference shares.

### 16.2.1 Equity Shares

Equity shares are owner's equity having no maturity date. It is known as ordinary shares or common shares, real owners of the company as they have the voting rights and enjoy decision making authority on important matters related to the company. Without these shares the company cannot procure debt and preference share capital from investors. The equity shareholders' return is in the form of dividend depends on the profits of the company and capital gain/loss at the time of their sale. According to Indian Company's Act, any company which issues the shares for the first time must issue it at its par value. However, subsequent shares can be issued at a premium.

#### Features of Equity Shares

- **Maturity:** They provide permanent capital to the firm and no maturity date is fixed for such funds. It is only in the event of liquidation that the shareholders get the profits after meeting all debt obligations. However, the shareholders are free to sell their shares in the secondary market if they require liquidation their investments.
- **Claim on Income:** The shareholders are the residual claimant on the income and the assets of the company. The operating profits are first of all utilized for meeting all the expenses and obligations and thereafter it is distributed in the form of dividend among the preference shareholders. If the profit left after meeting all the above then it is distributed among the equity shareholders as dividend.
- **Claim on Assets:** The equity shareholders are having the residual claim on the assets of the company. When the company goes for winding up, the assets are used to pay all the expenses and outstanding liabilities. Thereafter, if any assets are left over, then the equity shareholders can claim on them.
- **Right to Control or Voting Rights:** The equity shareholders have the right to vote in annual general meeting on any resolution placed in it. It is in the proportion of the paid up capital of each shareholder of the company. The boards of directors are selected by the equity shareholders who appoint the managers who manage the company. The equity shareholders are having the supreme and ultimate control on the affairs of the company.
- **Preemptive Rights:** As and when a public limited company wants to issue fresh equity shares, they are to be offered first to the existing shareholders. This is known as pre-emptive right. The purpose is to enable the shareholders to continue to have proportionate share of ownership. For example, if a shareholder has 5% ownership, he has to be offered 5% of the new shares to be issued.
- **Limited Liability:** The liabilities of the equity shareholders are limited to the face value of the shares. In case the shareholder has paid the full amount of the face value, he is no more liability exists even if the company goes into liquidation and its liabilities are more than its assets.

## Merits of Equity Financing

- **No Cash Outflow:** As the equity financing is a permanent source of capital. The company does not have the fear of redemption and outflow of cash. The funds are available with the company till the company goes for liquidation.
- **Borrowing Base:** lenders feel confident while lending to the company on the basis of its capital. Generally they lend in proportion of the company's equity capital.
- **No Compulsion for Payment of Dividend:** The equity shareholders are the residual claimant and it is not essential requirement to pay the dividend compulsorily. The company may suspend the payment of dividend in the case of financial difficulty.
- **Real Owners and Gainers:** The equity shareholders are having the control on the affairs of the company hence they are the real owner and in case of profit they are the real gainers by way of increased dividend as well as appreciation of market price.

## Demerits of Equity Financing

- **Cost of Equity:** The cost of equity financing is the highest as compared to other source of financing because of dividend is not tax deductible. Floatation cost is also incurred which is comparatively high than the debt. Floatation costs are incurred incidentally by the company at the time of issue of share.
- **Trading on Equity:** It is possible only when debt is issued along with the equity share and it is not happen when the total requirement of the company is met through equity share capital alone. Trading on equity enhances the earnings of equity share.
- **Risk:** The equity is more risky, from the viewpoint of investors, as compared to debt because there is no certainty of return. Raising the fund through equity is more costly and rather difficult.
- **Dilution of Earnings:** As company go for additional issue of shares and proportionately the earnings do not increase in that case the earning per share get diluted.
- **Ownership Dilution:** The company issues further equity to existing shareholders in order to maintain the proportionate ownership. In case of financial difficulty, this existing control is likely to be lost. This is the threat with closely held company.

### Activity A:

1. According to you why equity financing is needed in a company? List out any ten companies who have their financing through equity shares.

### 16.2.2 Preference Shares

As the very name suggests, preference shares have certain preferences compared to equity shares. Preference shareholders enjoy the twin preferences in respect of dividend payment and repayment of principal amount, in the event of liquidation, compared to equity shareholders. In the real sense, preference share capital is a hybrid form security, as it carries some of the features of equity share as well as debentures.

Preference shares have gained importance after the Finance bill 1997 as dividend become tax exempted in the hands of the individual investor and are taxable in the hands of the company as tax is imposed on distributed profits at a flat rate. At present, a domestic company paying dividend will have to pay dividend distribution tax @ 12.5% plus surcharge of 10% plus an education cess equaling 2% (Total 14.025%)

## Features of Preference Shares

- **Maturity:** Preference shares are perpetual. In the normal course of time, they are not repaid, similar to equity share. Their money is returned in the event of liquidation, after payment of debenture holders. But unlike equity it may have a call back arrangement or redemption feature. If it is redeemable or callable preference shares, then it may be redeemed at the time of maturity.
- **Claim on Income and Assets:** Preference shares are a senior security compared to equity share. The preference shareholders are having prior claim on the company's income and repayment of dividend then the equity holders. In the event of liquidation, the holders of the preference shares are prior right then the equity holders on the repayment of the amount of their shares.
- **Nature of Preference Dividends:** The dividend on the preference shares are fixed and if company is having extra earning then no extra dividend are paid to preference share holders. In case the article of association permits then the unpaid amount of dividend in any year due to loss in any particular year of the company, it will be carried forward for further period and paid when there is profit.
- **Convertibility:** Sometimes the preferred stock has the feature of convertibility and if so then the shareholders get a privilege to convert his preference shares into equity shares. The article of association provides the conversion price clearly.
- **Controlling Power:** Preference shareholders have no voting rights in the management of the company. However, they have a right to vote in respect of those matters that affect them directly. In case of dividend is in arrears for two consecutive years, preference shareholders can nominate a member on the board of the company.
- **Hybrid form of Security:** Preference share capital is a hybrid form security, as it carries some of the features of equity share as well as debenture. Preference share is similar to equity share, as non-payment of dividend does not compel the company to go into liquidation. Payment of dividend is not obligatory. However, dividend paid is not tax deductible. The preference share is similar to debenture, as fixed rate of dividend is paid, just like a fixed rate of interest. They can not claim a share in the residual profits of the company.
- **Not Tax Deductible:** Preference dividends are not tax deductible as they are paid after giving the tax on the company's income. Unlike preference dividends Interest paid on debt is deducted before paying tax, hence tax incident is lowered when interest is paid on debt which is known as interest tax shield. Thus preferred capital is costlier than debt borrowed by the company.
- **Participation:** Sometime Company issues participating preference shares and in that case the preference shareholders get a right to participate in the balance of extraordinary profits in a stipulated proportion together with equity shareholders. Thus the preference shareholder gets fixed dividend and flexible dividend which will depend on the extra earnings of the company i.e. extraordinary profits.

## Advantages of Preference Shares

The advantages of Preference shares can be enumerated for both to the company as well as to its investors.

**(A) Company's Point of view:** The company has the below explained advantages by issuing preference shares.

- **Absence of Legal Obligation:** The dividend to the preference shareholders are paid only if the company has the distributable profits. Thus it can be connoted that the company does not have any legal commitment or financial burden.
- **Fixed Rate of Dividend:** The amount of dividend is specified at the time of issue of preference shares hence no surplus amount is paid even if the company has handsome profit except in the case of participating preference shares.
- **Cost of Capital:** The cost incurred on such type of instrument financing capital is less than the equity shares.
- **Long term Capital:** The outflow of cash is negligible as these are treated as permanent source of capital. But redeemable preference shares are to be redeemed at the end of specified period or maturity out of the proceeds of fresh issue of shares or accumulated profits of the company.
- **Trading on Equity:** Raising funds through this source magnifies the earning of the equity shares, paying fixed rate of dividend to preference shareholders. This is a risk-free leverage advantage with preference share capital. Even, default in payment of dividend does not force the company into insolvency.
- **Enhances Creditworthiness/ Borrowing Ability:** It is regarded as a part of net worth hence it enhances the creditworthiness of the company. The company has ability to get more borrowing from outside.
- **Absence of Dilution of Control:** The preference shareholders do not have the voting power except in case where their interests are directly affected. So, there is no threat of dilution of control from preference shareholders.
- **Assets are Not Pledged:** No specific assets are pledged, while issuing preference shares. So, company's mortgage able assets are not disturbed in any manner.

**(B) Investors Point of view:** The investors enjoy the following benefits

- **Fixed Rate of Dividend:** The cumulative preference shareholders are paid dividend at fixed rate but in case the company incurs loss in any year then the dividend at fixed rate is paid in the subsequent year's profits. In case of non cumulative preference share, this is not the case. Dividend is not paid for the year of loss.
- **Treated Superior Security Over Equity Share:** Preference share enjoys preference over dividend and repayment of fund on Equity shares. Hence, investors prefer to invest in preference share.
- **Right to Vote:** Preference shareholder has the right to vote in case when their interest is directly affected by any resolution.

**Disadvantages of Preference Shares:** In spite of numerous advantages, it is not free from shortcomings which is enumerated as below

**(A) Company's Point of View**

**Cost of Source:** The cost of preferred stock & risk is more than the debenture. Hence, from this point, the debenture is more suitable.

- **No Tax Advantages:** The dividend on preference share is not tax deductible, while the interest on debenture enjoys tax shield or advantage.

- **Affects Creditworthiness:** The Company does not have any legal obligation to pay dividend on preference shares but in case of non-payment of dividend affects the creditworthiness of the company.

### **(B) Investor's Point of View**

- **At Management Mercy:** Normally, the preference shareholders do not have any voting rights, they remain at the mercy of management for dividend as well as redemption of capital.
- **Lower Return:** When compared with equity shares, the preference shares are having lower return.
- **No Charge on Assets:** The charges on assets are not available to the preference shares as available on debentures. So, preference share rank after debentures, in case of liquidation of the company.

### **Activity B:**

1. Why preference shares are called as hybrid security? Analyze the situation when preference share are beneficial in general.

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## **16.3 Debentures/Bonds**

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A debenture is a long term promissory note for raising loan capital. It may be either secured or unsecured. Debenture or Bond is a creditor ship security, with a fixed rate of interest and fixed maturity period. Debentures provide low risk capital to the company. Those who invest in debentures are called debenture holders. An alternative form of debenture is Bond in India. Public sector companies in India mostly issue bonds. The interest paid is a charge to the profit and loss account. Debentures are normally secured by a floating charge on the assets of the company. The bond is secured by specific assets of the company. In USA bonds are either secured or unsecured and debentures are unsecured bonds. As we know debentures are long term debts of a company which borrows money on a promise to pay at a later date with specified interest, the interest rate is usually fixed.

According to Indian Companies Act, Section 2(12) "Debenture includes debenture stock, bonds and any other securities of a company whether constituting a charge on the assets of a company or not". As Tophan has defined "Debenture is a document given by a company as evidence of a debt to the holder usually arising out of a loan and most commonly secured by charge."

C.W. Gerstenberg has defined "A corporate bond is a written promise under seal to pay a specified sum of money at a fixed time in future, usually more than ten years after the promise is made with interest at fixed rate, payable at specified interest dates."

Public issue of debentures and private placement to mutual funds now require that the issue be rated by a credit rating agency like CRISIL (Credit Rating and Information Services of India Ltd.). The credit rating is given after evaluating factors like track record of the company, profitability, debt servicing capacity, credit worthiness and the perceived risk of lending.

### **Features of Debentures/Bonds**

**Maturity:** Debentures are issued for a specific period of time and treated as source of long term finance. Generally, debentures are issued for a period of 7 to 10 years and are redeemed on the specific date.

- **Fixed Interest Rate:** The interest rate on debenture is fixed and does not change during the tenure of debenture, irrespective of the profit/loss of the company. Interest is calculated on the face value of the debenture. Interest is tax deductible and it is the income of the debenture holder and taxable in the hands of the debenture holders.

- ***Claim on Income:*** Interest payment is the obligation on the company even if the company incurs loss. Default in payment of interest empowers the debenture holder to move a petition in a court of law for the winding up of the company.
- ***Claim on Assets:*** At the time of liquidation, debenture holders are repaid their claim first before repayment is made to preference and equity shareholders. Debentures may have a specific charge or floating charge on the assets of the company. In the event, they are secured creditors. The sale proceeds of the assets pledged to them go towards repayment of principal and interest to them.
- ***Convertibility:*** The debentures having a conversion clause are known as convertible debentures. These debentures can be converted to equity shares after a certain period of time.
- ***Callable Feature:*** Call feature enables the company to redeem the debentures before the due date of redemption. Generally, the company can go for it when the interest rate payable is high then the current interest rate. In order to save costs, the company redeems the debentures before the due date. Normally, call price is higher than the issue price. It is noteworthy to mention that the company is gaining, hence, it is not an issue to share some gain with the debenture holders.
- ***Indenture or Trust Deed:*** It is a legal agreement between the company issuing the debentures on one hand and the trustees representing debenture holders on the other hand. The trust deed provides the specific terms in respect of the description of debentures, security available, rights of debenture holders and of the issuing company and responsibilities of the trustees. The responsibility of the trustees is to protect the rights of the debenture holders by enforcing the responsibilities of the company that has issued debentures. Normally, a financial institution or insurance company is appointed as a trustee.
- ***Controlling Power:*** A Debenture holder does not have any voting right; therefore, they do not enjoy the controlling power and can not participate in the management of the company. They have only prior claim in repayment over equity and preference shareholders.

### **Benefits of Debentures**

- ***Less Costly:*** The debenture is less costly source of finance than preference and equity shares as the interest is tax deductible. From the perspective of investor, it is less risky investment and offers fixed rate of return.
- ***Absence of Dilution:*** Debenture holder do not enjoy any voting rights, hence, there is not any question of dilution of ownership or control.
- ***Fixed Interest Rate:*** The debenture holders are entitled for the fixed rate of interest as specified in the debenture. They do not have any claim on the extra share in the earnings of the company. So, cost to the company is fixed.

***Beneficial during Inflation:*** Real interest cost declines during the period of inflation.

- ***Easy to Raise Funds:*** At the time of depression or low sentiments in the market, the debenture as a source of finance is easy and comfortable. The investors appreciate the benefits of certainty of income, with low risk during those periods.
- ***Trading on Equity:*** In case the return on investment is higher than the cost of debt, it is advantageous to the company to raise fund through debentures as it can trade on equity and enhances the earnings to the equity holders.

- **Flexibility:** Debenture provides flexibility in the capital structure of the company as company can redeem debentures, as and when it has surplus funds and desires to do so. Generally, company reserves the right in the form of 'call option' at the time of issue to take advantage of the falling interest rates in the market.

### Disadvantages of Debentures

- **Obligatory Payment:** The payment of interest is a legal obligation even in the case of company is incurring loss in any particular year. Redemption of debentures is to be made at the end of maturity. Default in payment may force the company to go into liquidation.
- **Financial Risk:** If a company is having fluctuating sales and earnings than it enhances the financial leverage and financial risk.
- **Stamp Duty:** The cost of stamp duty will increase the cost of financing.
- **Not for All the Companies:** Debenture interest is a fixed commitment. This should be noted that it is not desirable for the companies which do not have stable earnings or who deal in products with elastic demand to issue debentures. The company that cannot offer assets as security cannot use this source of financing.
- **Cash Outflows:** As debentures are to be redeemed at the end of the maturity period. When it is redeemed, the cash outflow occurs. Even if a sinking fund is created to meet the redemption outflow, annual cash outflow occurs.
- **Restrictive Covenants:** The restrictive conditions are contained in the debenture indenture. As a condition can be incorporated in the indenture that the total borrowing by the company cannot exceed a specified limit. Hence, the restrictive covenants limit the operating flexibility of the company in future.

### Activity C:

1. How you would be able to say that the debenture is a cheaper source of finance than the equity or preference share? Enumerate your view with practical example.
2. "In a period of rising prices, debenture issue is advantageous". Justify your answer in the context of above statement.

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## 16.4 Difference Between Shares and Debentures

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The debentures carry a fixed rate of interest, which is to be paid by the company, irrespective of profits. Normally, debentures are secured. Companies offer collateral security to debenture holders to make them comfortable from the view point of security. Debenture holders are unlikely to suffer from the financial failure of the company, in case they are secured and enough money is realized at the time of sale.

Equity shares bear the highest risk as it does not give any guarantee of dividend payment. In case of loss, the equity shareholders do not get any dividend at all. The equity shareholders hardly get back their money when the company goes for liquidation because most of the money would have disappeared from the company towards losses by the time. The dissimilarities between shares and debentures are given as under.



**Table 16.1 Difference Between Shares and Debentures**

<b>Nature of Difference</b>	<b>Shares</b>	<b>Debentures</b>
Type of Capital	Part of ownership capital	Part of borrowed capital
Type of Security	Ownership security	Creditor ship security or debt capital
Return	The equity shareholder gets the variable dividend and which depends on the profits of the company. The preference shares get the stated rate of dividend.	Interest is fixed and depends on the contractual term.
Impact on Profit and Loss	Appropriation of Profit	Treated as Fixed expense and charge on Profit and Loss Account.
Voting Right	The equity shares enjoy voting right on all the matters and preference shares on the matter which directly affect their interest.	Debenture holders do not have any voting right and they do not participate in the management of the company.
Redemption	The equity shares are not redeemed during the life of the company but the redeemable preference shares are redeemed at the end of the specified period.	The debentures are redeemed at the end of the stated period and as per the trust deed.
Priority of Repayment	At the time of liquidation, first of all outside liabilities are repaid. Then preference shares are paid and if balance left, then it goes to equity shares.	It gets priority in repayment over share capital.

**Activity D:**

1. You are required to prepare a comparative chart indicating the risk, return, control and ownership position in case of equity shares, preference shares and debentures.

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**16.5 Retained Earnings**


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Retained earnings are profits retained in the business after distribution of dividends. These are used to acquire permanent fixed assets required either for expansion or for diversification or for takeover/merger. This is somewhat wrong perception at certain quarter that the retained earnings of the Company provide a free source of fund. It is not correct at all. However, cost of funds provided by retained earnings is less than that of funds obtained by issue of new equity capital. The company must consider the income of the shareholders could obtain if the earnings has been distributed instead of being retained. It is obvious that if it cannot earn at least an equivalent amount of income on these funds, it should return them to the shareholders.

There is a belief that all profits of the Company should be distributed as dividend so that the shareholders can reinvest them wherever they think best. But it may be a costly process to distribute all profits and then invite equity holders to subscribe for new issues. Thus, the Company should bear in mind that it should only retain earnings if it can justify doing so, after taking into account the cost differences.

### Activity E:

1. “Retained Earning is a free source of finance.” Do you feel that this statement is correct? If yes, then put your opinion in support of this statement.

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## 16.6 Term Loan

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Companies can raise long term finance through term loans, in addition to share capital and debentures. The term loans are provided by commercial banks, all development financial institutions, State level financial institutions and investment institutions to the industrial sector to encourage industrial development in India. They are obtained for financing large expansion, diversification or modernization projects. Term lending financing is also known as project financing. The major advantage of a term-loan is that it is for a fixed period. Repayment of installment can be paid back from the profit generations of the company. More so, interest liability is fixed and cannot be varied so the profitability of the project is not affected for a long term.

### Features of Term Loan

*Purpose:* It is mostly to meet the capital expenditure.

- **Maturity:** The maturity for long period is granted beyond five year and one to five year is granted for medium term loan.
- **Documentation:** In case of term loan, agreement is entered between the company and the financial institution that sanctions the term loan. The term loan document specifies all conditions of sanction, security, interest as well as repayment etc.
- **Security:** term loan are always secured. The assets purchased through the term loan constitute the security. This is called primary security. The company's current and future assets also generally secure term loans. This is called secondary security.
- **Schedule for Repayment:** Loans are repaid through installment system. Interest is charged on the outstanding balance. So, interest burden declines over the years. Company has to pay interest as well as installment amount fixed in the agreement.
- **Direct Negotiation:** The Company directly negotiates term loan for project finance with the term lending institution. Thus, term loan is private placement. It saves the company underwriting commission and floatation costs. The benefits of term loan are ease of negotiation and low cost of raising funds.
- **Restrictive Covenants:** The lender may like to protect its financial interest apart from the security. This is done through restrictive covenants, incorporated in the agreement while sanctioning term loan.

### Activity G:

1. You are advised to collect the information about term loan from the related institution and prepare the list of elements of the same.

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## 16.7 External Commercial Borrowings

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Indian promoters can also borrow directly from foreign institutions, foreign development bank, World Bank etc. It is also known as Foreign Currency Term Loans. Foreign institutions provide foreign currency loans and financial assistance towards import of plants and equipments. The interest on these loans is payable in foreign currency. On the payment date, interest amount is converted into domestic currency at the prevailing

foreign exchange rate. The borrowings, repayment and interest payments can be tailor-made in view of the cash flow position of the project. This is done through restrictive covenants, incorporated in the agreement while sanctioning term loan.

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## 16.8 Foreign Loan through Depository Receipts

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Depository Receipts means any instrument in the form of a depository receipt or certificate created by the Overseas Depository Bank outside India and issued to the non-resident investors against the issue of ordinary 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 Exchange. These can be American Depository Receipts (ADRs), European Depository Receipts (EDRs) and Global Depository Receipts (GDRs)

**American Depository Receipts (ADRs) in the USA:** ADRs are negotiable receipts issued to investors by an authorized depository (U.S. bank or depository). In general, ADRs are issued in case the funds are raised through retail market in United States. ADRs are listed and traded in a U.S. based stock exchange so it helps in Indian Company going for ADR to be known in the highly liquid U.S. stock exchanges. Indian companies are not allowed by law to list rupee denominated shares directly in foreign stock markets. Hence the company issues the shares to a depository which has an office in India. These shares remain in India with a custodian. Against these shares the depository issues dollar denominated receipts to the foreign investors. The foreign investors can sell these receipts either in the foreign exchange or to the depository and get the rupee denominated shares which can be sold in Indian markets. Thus investors gain by playing with the difference in prices on the U.S. and Indian exchanges. ADRs are instruments that effectively allow non-US corporate to sell equity to the US investors, by virtue of corporate shares being held by a depository bank which issues a receipt. These are marketed and sold by coordinated banks like the bank of New York, Citibank, JP Morgan and bankers trust.

**European Depository Receipts (EDRs) in Europe:** Unlike ADRs, EDRs are denominated in European currency and issued in Europe. However, they are not that popular as ADRs as European markets are dominated by Japanese securities.

**Global Depository Receipts (GDRs) in International Market:** GDRs are multiple market oriented i.e. they can raise equity capital anywhere throughout the world. Unlike ADRs & EDRs, GDRs have the advantage of inter-market trading amongst the different investors in different countries. Through GDRs a firm can raise capital in more than one country simultaneously through only one security.

**ADRs v/s GDRs:** ADRs are listed on American Stock Exchange while GDRs are listed in stock exchanges other than American Stock Exchange; Under ADRs issue the process as governed by American laws and SEC (Securities & Exchange Commission) whereas such laws are not applicable to GDRs; ADRs issue involves adhering to very stringent disclosure and accounting norms i.e. U.S. GAAP, it requires a combined balance sheet of all group companies and not just the single group company going for the issue whereas disclosure requirements for GDRs are comparatively less strict and ADR market is more liquid compared to GDR market. Hence company's going for ADR are able to enhance their shareholders value.

### Activity F:

1. What are the reasons that the depository receipts are becoming popular now-a-days? Elaborate and analyse the situation in the context of LPG (Liberalisation, Privatisation, Globalisation)

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## **16.9 Foreign Currency Convertible Bonds**

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The FCCB means bonds issued in accordance with the relevant scheme and subscribed by a non-resident in foreign currency and convertible into ordinary shares of the issuing company in any manner, either in whole or in part, on the basis of any equity related warrants attached to debt instruments. The FCCBs are unsecured; carry a fixed rate of interest and an option for conversion into a fixed number of equity shares of the issuer company. Interest and redemption price (if conversion option is not exercised) is payable in dollars. Interest rates are very low by Indian domestic standards. FCCBs are denominated in any freely convertible foreign currency.

FCCBs have been popular with issuers. Local debt markets can be restrictive in nature with comparatively short maturities and high interest rates. On the other hand, straight equity issue may cause a dilution in earnings and certainly a dilution in control, which many shareholders, especially major family shareholders would find unacceptable. Thus, the low coupon security which defers shareholders dilution for several years can be alternative to an issuer. Foreign investors also prefer FCCBs because of the dollar denominated servicing, the conversion option and the arbitrage opportunities presented by conversion of the FCCBs into equity at a discount on prevailing Indian market price.

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## **16.10 Euro Bonds and Foreign Bonds**

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International/overseas borrowing/debts are termed as 'euro bonds'. It is issued by international borrowers and is sold to investors in countries with currencies different from the currency in which the bond is denominated. The most popular currency in which such bonds are offered and accepted is 'dollar' denominated. Plain Euro Bonds are nothing but debt instruments. These are not very attractive for an investor who desires to have valuable additions to his investment.

Euro Bonds are issued in a single currency in different countries while foreign bonds are issued in different countries in the respective country's currency by the foreign borrower e.g. Indian firm issuing foreign bonds in America will issue in dollar term. In domestic capital markets of various countries the Bonds issues Foreign Euro Bonds known by different names such as Yankee Bonds in the US, Swiss Francs in Switzerland, Samurai Bonds in Tokyo and Bulldogs in UK.

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## **16.11 Leasing and Hire Purchase**

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Leasing has recently emerged as an important source of long term financing of the business enterprises. This is an arrangement under which a company acquires the right to use the asset without owning it or in other words it is a right to use an equipment/fixed asset on payment of periodical amount known as lease rental. It is in the form of written agreement signed by both the owner of the asset and the user for the economic use of the asset for a definite period of time. Those firms, which do not wish to purchase the asset, instead enter into leasing arrangement and find it profitable in case of highly expensive assets. In case of hire purchase, the assets are acquired on credit and payments are made as per terms and conditions. Peculiar feature of hire purchase is that the person using the asset is the owner of the asset. Full title is transferred to him after he has paid the agreed installments. The asset is shown balance sheet of user and he is entitled to depreciation and other allowances on the asset for computation of tax during the tenure of hire purchase agreement and subsequently.

The growth of leasing business specially equipment leasing is of recent origin (1983) and volume of business till today is not that big. By 1985 there has been massive tendency for public issues for operating leasing business. However, that tendency got subsided by 1987. Apart from many private sectors non-bank financial

companies, some private sector manufacturing companies ICICI, IRBI different subsidiaries of a number of nationalized bank like SBI Capital Market Ltd, Can Bank Financial services, IFCI, LIC, GIC, HDFC, Cater Lease Financing in India. For development of leasing business, favorable Tax Policy is essential. The boom of leasing in 1985 was short-lived because of a) Crowding of so many leasing companies lead to reduction of lease rental and thus profitability got affected, b) Obtaining of fund by so many leasing Companies at reasonable rate became difficult.

The hire purchase credit is medium term credit. A down payment is made ranging from 10% to 25%. Hire purchase financing in commercial vehicle is most popular in India. However, automobiles financing for domestic purpose has also become popular recently. Normally goods are hypothecated in favour of the lenders. When there is long payment schedule (period) and the amount is large, guarantee is generally insisted in addition to hypothecation. In hire purchase financing the peculiarity is that the financier charges simple interest on total loan and not on diminishing balance. This imposes a heavy burden on the borrower.

### **Difference Between Leasing and Hire Purchase**

1. In leasing the person using the asset is not the owner of the asset whereas in Hire Purchase, the person using the asset may become the owner of the assets.
2. In case of leasing, after payment of the agreed lease installments the ownership does not get transferred to the lessor whereas in case of Hire Purchase, after payment of the agreed lease installments the ownership is transferred to the person using the asset.
3. In leasing, the lessor claims the depreciation and other allowances whereas in Hire Purchase, the depreciation and other allowances on the asset are claimed by the lessee (user of the asset).

In case of leasing, asset is shown in the balance sheet of the lessor. As the asset is not shown in the balance sheet of the lessee, hence it is known as 'off the balance sheet asset' for the lessee whereas In case of Hire Purchase, asset is shown in the balance sheet of the lessee.

### **Activity G:**

1. How leasing is different from Hire Purchase? If you have to choose any one source of finance from the above two for your organization then which is preferred by you and why? Discuss.

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## **16.12 Venture Capital**

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The venture capital refers to financing of new high risky venture promoted by qualified entrepreneurs who lack experience and funds to give shape to their ideas. In broad sense, under venture capital financing venture capitalist make investment to purchase equity or debt securities from inexperienced entrepreneurs who undertake highly risky ventures with a potential of success. The features of the venture capital can be enumerated as it is basically a equity finance in new companies, viewed as long term investment in growth oriented small/medium firm and apart from providing funds, the investor also provides support in form of sales strategy, business networking and management expertise, enabling the growth of the entrepreneur.

In India venture capital started in 1986 when ICICI set up the first venture fund cell in Bombay. This later on merged into the Technology Development and Information Company of India Ltd. (TDICI), a Bangalore based company of ICICI with an equity of 1 crore (contributed equally by ICICI and UTI). Unlike developed countries, in India venture capital does not finance the risky idea/technology. Indian technological set ups have usually been of a foreign collaboration type. In India venture capital is usually of nature of financing small scale enterprises. However, the concept is catching up. Many support institutions are encouraging venture capital idea. In the year 1988, the Government of India took a policy initiative and announced

guidelines for Venture Capital Fund (VCFs). In the same year, a Technology Development Fund (TDF) financed by the levy on all payments for technology imports was established. This fund was meant to facilitate the financing of innovative and high risk technology programmes through the IDBI.

A major development in venture capital financing in India was in the year 1996 when the Securities and Exchange Board of India (SEBI) issued guidelines for venture capital funds to follow. These guidelines described a venture capital fund as a fund established in the form of a company or trust, which raises money through loans, donations, issue of securities or units and makes or proposes to make investments in accordance with the regulations. This move was instrumental in the entry of various foreign venture capital funds to enter India. The guidelines were further amended in April 2000 with the objective of fuelling the growth of venture capital activities in India.

### Methods of Venture Capital Financing

Some common methods of venture capital financing can be enumerated as follows:

- **Equity Financing:** Sometime undertakings require funds for a longer period but they may not be able to provide returns during the initial period. Therefore, the venture capital finance is generally provided by way of equity share capital. It is worth mentioning that the equity contribution of venture capitalist should not exceed 49 % of the total equity capital of venture capital undertakings so that effective control and ownership remains with the entrepreneurs.
- **Conditional Loan:** This is repayable in the form of a royalty after the venture is able to generate sales. The interest is not paid on such loans. The royalty is generally charged between 2 to 15 percent but the actual rate depends on other factors of the venture such as gestation period, cash flow patterns, risk and other factors of the enterprise.
- **Income Notes:** This is a hybrid security which includes the features of both conventional loan and conditional loan. The entrepreneur has to pay both interest and royalty on sales but at substantially low rates. IDBI's VCF provides funding equal to 80-87.50% of the projects cost for commercial application of indigenous technology.
- **Participating Debenture:** This type of security carries charges in three phases- In the start up phase no interest is charged, next stage a low rate of interest is charged up to a particular level of operation, after that, a high rate of interest is required to be paid.

### Activity I:

1. What contribution venture capitalists have made towards economic growth? Discuss critically giving appropriate example.

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## 16.13 Book Building

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Book Building is a common practice in developed countries and has recently been making inroads into emerging markets as well, including India. Book building is essentially a process used by companies for raising capital through Public offerings- both Initial Public Offers (IPOs) and Follow on Public Offers (FPOs) to aid price and demand discovery. It is a mechanism where during the period for which the book for the offers are open, the bids are collected from investors at various prices which are within the price band specified by the issuer. The process is directed towards both the institutional as well as the retail investors. The issue price is determined after the bid closure, based on the demand generated in the process.

During the fixed period of time for which the subscription is open, the book runner collects bids from investors at various prices between the floor price and the cap price. Bids can be revised by the bidder before the book closes. The process aims at tapping both wholesale and retail investors. The final issue price is not determined until the end of the process when the book is closed. After the closure of the book building period, the book runner evaluates the collected bids on the basis of certain evaluation criteria and sets the final issue price. If demand is high enough, the book can be oversubscribed. In this case, the green shoe option is triggered.

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## 16.14 Debt Securitisation

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Securitization is a process in which illiquid assets are pooled into marketable securities that can be sold to investors. The process leads to the creation of financial instruments that represents ownership interest in, or is secured by a segregated income producing asset or pool of assets. These assets are secured by personal or real property such as automobiles, real estate or equipment loans but in some cases are unsecured.

**Process of Securitization:** It follows the following process.

**Step I** – SPV (Special Purpose Vehicle) is created to hold title to assets underlying securities as a repository of the assets or claims being securitized.

**Step II** – The originator i.e. the primary financier or the legal holder of assets sells the assets (existing or future) to the SPV.

**Step III** – The SPV, with the help of an investment banker, issues securities which are distributed to investors in form of pass through or pay through certificates.

**Step IV** – The SPV pays the originator for the assets with the proceeds from the sale of securities.

The process of securitization is generally without recourse i.e. the investor bears the credit risk or risk of default and the issuer is under an obligation to pay to 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 through credit enhancement facilities like insurance, letter of credit and guarantees.

In India, the Reserve Bank of India had issued draft guidelines on securitization of standard assets in April 2005. These guidelines were applicable to banks, financial institutions and non banking financial companies. The guidelines were modified and brought into effect from February 2006.

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## 16.15 New Instruments

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The new instruments that have been introduced since early 90's as a source of finance is staggering in their nature and diversity. These new instruments are as follows:

- **Deep Discount Bonds:** It is a form of Zero-interest bonds. These bonds are sold at a discounted value and on maturity face value is paid to the investors. In such bonds, there is no interest payout during lock in period. IDBI was the first to issue a deep discount bond in India in January, 1992. The bond of a face value of Rs. 1 lakh was sold for Rs. 2,700 with a maturity period of 25 years. The investor could hold the bond for 25 years or seek redemption at the end of every five years with a specified maturity value. The investor can sell the bonds in stock market and realize the difference between face value (Rs. 2,700) and market price as capital gain.

- **Secured Premium Notes:** Secured Premium Notes is issued along with a detachable warrant and is redeemable after a notified period of say 4 to 7 years. The conversion of detachable warrant into equity shares will have to be done within time period notified by the company.
- **Zero Interest Fully Convertible Debentures:** There are fully convertible debentures which do not carry any interest. The debentures are compulsorily and automatically converted after a specified period of time and holders thereof are entitled to new equity shares of the company at predetermined price. From the point of view of company this kind of instrument is beneficial in the sense that no interest is to be paid on it, if the share price of the company in the market is very high than the investors tends to get equity shares of the company at the lower rate.
- **Zero Coupon Bonds:** A Zero Coupon Bond does not carry any interest but it is sold by the issuing company at a discount. The difference between the discounted value and maturing or face value represents the interest to be earned by the investor on such bonds.
- **Double Option Bonds:** These have also been recently issued by the IDBI. The face value of each bond is Rs. 5,000. The bond carries interest at 15% per annum compounded half yearly from the date of allotment. The bond has maturity period of 10 years. Each bond has two parts in the form of two separate certificates, one for principal of Rs. 5,000 and other for interest (including redemption premium) of Rs. 16,500. Both these certificates are listed on all major stock exchanges. The investor has the facility of selling either one or both parts anytime he likes.
- **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. These were recently issued by IDBI, ICICI etc.
- **Inflation Bonds:** Inflation Bonds are the bonds in which interest rate is adjusted for inflation. Thus, the investor gets interest which is free from the effects of inflation. For example, if the interest rate is 11 percent and the inflation is 5 percent, the investor will earn 16 percent meaning thereby that the investor is protected against inflation.
- **Floating Rate Bond:** This as the name suggests is bond where the interest rate is not fixed and is allowed to float depending upon the market conditions. This is an ideal instrument which can be resorted to by the issuer to hedge themselves against the volatility in the interest rates. This has become more popular as a money market instrument and has been successfully issued by financial institutions like IDBI, ICICI etc.

#### Activity J:

1. You are required to list out the benefits of the various new financial instruments from the perspective of your organization.

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### 16.16 Summary

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Long term funds are used for purchasing fixed assets expansion/improvisation programmes, diversification and acquisition, takeovers & mergers and alliances etc. There are various sources of long term funds like share capital, debentures, bonds, Retained earnings, foreign loan, Term loans, Venture Capital, leasing etc.

Equity capital is the owners' capital and remains forever with the company. Preference capital is also permanent capital but unlike equity shareholders the preference shareholders do not enjoy enough power and voting rights. Preference shares get a priority to get their share of investment and profits before equity shareholders. Debentures are long term promissory notes which may be secured or unsecured. The interest



rate is fixed on debentures. Bond holders/Debenture holders have a priority of claim to income over equity and preference shareholders.

Securitisation is important source of finance and it is a process in which illiquid assets are pooled into marketable securities that can be sold to investors. Leasing is a very popular source to finance equipments. It is a contract between the owner and user of the asset over a specified period of time in which the asset is purchased initially by the lessor (leasing company) and thereafter leased to the user (Lessee Company) who pays a specified rent at periodical intervals.

Venture capital provides risk capital and skilled to firms which are to invest in ventures of advance technology, and research and development for commercial production of any item/services.

Every day new creative financial products keep on entering the market. Some of the examples are Deep Discount Bonds, Option Bonds, and Inflation Bonds etc. To day the businesses are allowed to source funds from International Market also. Some of important products are ECB, Euro Bonds, American Depository Receipt etc.

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### **16.17 Self Assessment Questions**

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1. What do you understand by long-term finance? Critically examine the importance of instruments of long-term finance.
2. 'From the view-point of the investors, debentures are least risky, lesser risky are preference shares and highest risky are equity shares'. Discuss and bring out the difference between any two different instruments of long-term finance.
3. What are term loans? What are their features?
4. Explain the different forms of depository receipts.
5. What are ECBs? What are the advantages and disadvantages of ECBs? Why are ECBs becoming popular these days?
6. What do you mean by venture capital financing and what are the methods of this type of financing?
7. What do you understand by equity shares? What are its features, advantages and disadvantages?
8. What is Debt Securitisation? What are the process of Debt Securitisation?

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### **16.18 Reference Books**

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- Bhalla V. K. (1997); 'Financial Management and Policy', First Edition, Anmol Publications Pvt. Ltd., New Delhi.
- Kapil Sheeba, Kapil Kanwal Nayan (2003); 'Financial Management: Strategy, Implementation & Control', First Edition, Pragati Prakashan, Meerut.
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## Unit - 17 : Sources of Short-term Finance

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### Structure of Unit:

- 17.0 Objectives
- 17.1 Introduction
- 17.2 Characteristic of Short-term Financing
- 17.3 Trade Credit
- 17.4 Accrued Expenses, Provisions & Deferred Income
- 17.5 Bills of Exchange
- 17.6 Treasury Bills
- 17.7 Public Deposit
- 17.8 Commercial Papers
- 17.9 Inter-Corporate Deposits (ICDs)
- 17.10 Short-term Unsecured Debentures
- 17.11 Bank Finance
- 17.12 Difference between Trade Credit and Bank Credit
- 17.13 Factoring
- 17.14 Eurocurrency Loan
- 17.15 Summary
- 17.16 Self Assessment Questions
- 17.17 Reference Books

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### 17.0 Objectives

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After completing this unit, you would be able to:

- Know the short-term finance its characteristic and purpose for raising the fund from the sources of short-term.
- Portray meaning, benefits and cost of trade credit as a spontaneous source of finance.
- Comprehend the different sources of spontaneous sources such as accrued expenses, provisions and deferred Incomes.
- Point out commercial paper, bills of exchange, treasury bills, inter-corporate deposit, and short-term Un-secured debenture as short-term sources of finance.
- Learn about the different negotiated sources from bank to raise short-term funds.
- Put forth the innovative source of short-term fund instrument as factoring and its position in India.
- Differentiate trade credit and bank credit to understand the concept in more lucid manner.

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### 17.1 Introduction

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Short term Finance means availability of funds for a period of one year or less than that period. These include the financial needs up to one year. Short term finance is the source of working capital. Short term finances are used to purchase the raw materials, to pay salaries, to pay taxes, rent etc. Generally the short term sources are trade credit, bank credit, indigenous bankers, public deposits, advances from customers, personal loans, retained earnings, accrued expenses, and provision for taxation and depreciation fund.

Broadly speaking, the short-term finance may be classified between two categories i.e. spontaneous sources and negotiated sources. Spontaneous sources of finance are those which naturally arise in the course of business operations. Trade credit, credit from employees, credit from suppliers of services etc. are some of

the examples which may be quoted in this respect. Negotiated sources, as it is clear from name itself, are those which have to be specifically negotiated with lenders say commercial banks, financial institutions, general public etc. The finance manager has to be very careful while selecting a particular source, or a combination thereof for financing of working capital. Generally the following parameters are suggestive to consider before arriving on any decisions. These are cost, impact of credit rating, feasibility, reliability, restrictions and hedging or matching approach i.e. raising the same maturity short-term fund as needed in the business.

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## **17.2 Characteristic of Short-term Financing**

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The characteristics of the short-term can be enumerated in the below mentioned lines.

Short-term finance tends to be less expensive than long term finance. The principal supplier of the short-term finance is the banking system and its overdrafts and loans have the additional advantages of being available quickly and inexpensively. On the contrary, in long term finance, the public issue of shares tends to be expensive because of the services of issuing houses, merchant banks, lawyers, accountants, and possibly other experts whose services are almost essential. Bank overdraft negotiations do not require these experts, although the bank may charge a commission for the overdraft facility offered in addition to the interests on the overdraft when used.

Short term financing embraces the borrowing or lending of funds for a short period of time, say one year or less. There is greater tendency for the greater use of short-term financing among small concerns and lesser use among large concerns is prevalent in practically all type of business. This is probably accounted for by the fact that a small-sized business finds it quite difficult to raise long-term funds resulting on account of lower average credit standing and the relative impermanence of many small units.

Short term finance deals with the commercial bank, trade credit and other sources of funds that have to be repaid within a year or less. Trade credit is the privilege extended by suppliers to their customers for delaying the payment of goods purchased, sometimes for a month or more. Short-term financing is associated largely with paying for those business assets that change constantly in form and that are used up or consumed in the course of operations. Such assets are also called 'current assets' or 'working assets'. Customers may sometimes provide short-term funds by making advances on contracts. They in essence, make a pre-payment on goods before receiving delivery. Customers might advance funds, if the order is big enough to require the manufacturer to tie up in raw materials or goods to process more funds than what the latter can afford.

### **Activity A:**

1. You are advised to discuss the peculiarities implicit in the problems of short-term financing and its relevance in modern business business.

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## **17.3 Trade Credit**

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Trade credit as source of working capital refers to credit facility given by suppliers of goods during the normal course of trade. In other word, the credit extended in connection with the goods purchased for resale by a retailer, or for raw materials used by manufacturer in producing its products is called the trade credit. Thus, trade credit may be defined as the credit available in connection with goods and services purchased for resale. It is the 'resale' which distinguishes trade credit from other sources. It can be clarified with an example that the fixed assets may be purchased on credit, but since these are to be used in the production process rather than for resale, such credit purchase of fixed assets is not called trade credit.

When a firm buys goods from another, it may not be required to pay for these goods immediately. During this period, before the payment becomes due, the purchaser has a debt outstanding to the supplier. This debt is recorded in the buyer's balance sheet as creditors; and the corresponding account for the supplier is that of debtors. Normal business transaction, therefore, provide the firm with a source of short term financing (trade credit) because of the time gap between the receipts of goods and services and payment thereof. The amount of such financing depends on the volume of purchases and the payment timing. Small and new firms are usually more dependent on the trade credit, as they find it difficult to obtain funds from other sources. There can be an argument that trade credit is a cost free source of finance but it is not, it involves implicit cost. The supplier extending trade credit incurs cost in the form of opportunity cost of funds invested in trade receivables. Generally, the supplier passes on these costs to the buyer by increasing the price of the goods or alternatively by not extending cash discount facility. Trade credit is mostly an informal arrangement and granted on open account basis, In USA trade creditors are called account payables.

### **Benefits of Trade Credit:**

Trade credit is a spontaneous source of financing. When volume of business grows, amount of credit also automatically increases. Suppose buyer is in habit of receiving credit for 30 days and his daily purchases are Rs. 10,000 per day. If his business increases and makes purchases for Rs. 3,00,000 (30 x 10,000) to Rs. 4,50,000 (30 x 15,000). In an informal way, buyer receives extra credit as he has making prompt payment at the end of 30 days. The major advantages of trade credit are as under:

**Easy Availability:** Unlike other sources of finance, trade credit is easier to obtain. Market practice in a particular trade normally determines credit period. On this trade credit, many small firms survive. In many trades, it is an accepted way of conducting business. Even a new shop gets trade credit after a couple of transactions. It is not possible to secure borrowing from banks in initial periods. Even for a new company, trade credit is easier to secure and highly difficult to raise finance in capital market.

**Flexibility:** Flexibility is a unique feature of trade credit, if business expands, more purchases are made and with higher purchases, more trade credit is received. In contrast, when business declines automatically firm makes lower purchases with it, lesser trade credit is received.

**Informality:** Trade credit is informal. No legal documents are involved. Generally no formal agreement is entered into while extending trade credit.

### **Cost of Trade Credit:**

The money utilized by the firm as trade credit is simply a postponement of due payments by the firm making certain trade purchases and delaying certain payments. This does not imply that such capital does not carry any cost with it. Trade credit has a cost which is equal to the cost of not availing the discount specified in the credit terms of the suppliers. All suppliers, in order to speed up their collections and to encourage cash payments, give some cash discount to their buyers. For example the credit term of a supplier is '2/15, net 30' where 2 stands for a cash discount of 2% if the payment is made within 15 days of receiving the invoice. If the buyer does not wish to avail the discount then the maximum period by when he can make payments is 30 days. If the buyer uses the trade credit as short-term financing it will utilize the money and make the payments on the last day of credit period extended to him. He will forego this discount. Cost of foregoing this discount is the cost of trade credit.

$$\frac{\text{Discount \%}}{(1 - \text{Discount \%})} \times \frac{360}{(\text{Total credit period} - \text{cash discount period})}$$

Illustration: Cost of not being able to take discount when credit terms of suppliers are 2/10 net 30 and actual payment by the firm takes place on 80<sup>th</sup> day of purchase.

Solution:

$$\text{Cost} = \frac{.02}{1 - .02} \times \frac{360}{80 - 10} = \frac{.02}{.98} \times \frac{360}{70} = \frac{720}{6860} = 10.5 \%$$

### Decision Analysis of Trade Credit:

If the cost of trade credit compared to the opportunity cost of capital is very high then it is advisable to avail cash discount offered by the supplier. If the cost of trade credit is low compared to the opportunity cost of capital and it is less, then one should forego cash discount and utilize the cash during the credit period extended by the supplier. However, in some cases the payment can be delayed beyond the last day of available credit period. This depends on the buyer supplier relationship. However, the buyer should always keep in mind the fact that payments can be slowed down only till a point where the credibility and goodwill of the buyer is not hampered.

### Activity B:

1. Cost of not being able to take discount when credit terms of suppliers are 3/12 net 60 and actual payment by the firm takes place on 90<sup>th</sup> day of purchase. Calculate the cost of Trade Credit.

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## 17.4 Accrued Expenses, Provisions & Deferred Income

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### 17.4.1 Accrued Expenses

Another source of short-term financing is the accrued expenses or the outstanding expenses liabilities. The accrued expenses refer to the services availed by the firm, but the payment for which has not yet been made. The classical example is salaries payable to staff. In case of salaries and wages, employees render their services and so benefit of services is received by the firm immediately while payments are made at the end of month. So even employees too provide a source of spontaneous short-term finance to the organization they work. Electricity and telephone are other examples where services are received first and payments are made at the end of specified duration normally end of month. In case of corporate taxes, they are paid quarterly while profits are made as and when sales are made. In this way, even government has provided credit to business firms in respect of their cash sales. When bill for payment is not received and accounts are to be finalized, provision for accrued expenses is made in accounts to reflect true and fair profit and financial position in financial statements. It is built-in and an automatic source of finance as most of the services, are paid only at the end of a period. Accrued expenses represents spontaneous and interest free source of financing. There is no explicit or implicit cost associated with the accrued expenses and the firm can save liquidity by accruing these expenses. The longer the period of payment, higher the benefit firm derives. However, due to legal constraints and practical difficulties, firm cannot postpone their payment indefinitely. Till their payment, firm enjoys benefit as short term financing.

### 17.4.2 Provisions and Funds Generated from Operations

From Profit after Tax, the various expenses to be made in future are deducted as estimated expenses of the future like provision for dividends, provision for bonus etc. As these provisions are not immediate cash outflow, they provide funds for the firm for its current use. However, the firm has to make these payments in future from its future earning profits.

Funds generated from operations, during an accounting period, increase working capital by an equivalent amount. The two main components of funds generated from operations are profit and depreciation. Working capital will increase by the extent of funds generated from operations.

### **17.4.3 Deferred Income**

Deferred Income represents funds received in advance for services to be rendered in future. The receipts improve liquidity of firm. However firms that have great demand for their products and services, enjoying good reputation in market, can only get the benefit of deferred income. Manufacturers and contractors engaged in producing or constructing costly goods, involving considerable length of time for manufacture or construction, demand advance money before accepting orders. In turn key projects or where goods are to be made for a specific requirement, advance payments are insisted. This avoids possibility for cancellation of sale after commencement of execution of order. Normally, clause remains in those contracts that advance payment made would be forfeited on cancellation of the contract. These advances are adjusted when goods and services are supplied. Till supply of services, amount stands as a liability in the books of recipient. This is a cost free source of finance and really useful in business.

#### **Activity C:**

1. Analyse the impact of spontaneous source of short term fund on business decision making taking in to account accrued expenses, provisions and deferred Income. What plan business should device to increase this type of source of finance?

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## **17.5 Bills of Exchange**

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Bills of exchange provide an easy route to extend trade credit. When suppliers of goods is less sure of receiving payment on due date supplier draws the bill of exchange on the buyer to document transaction fool proof method and buyer accepts the bill of exchange for payment on due date. In other words, trade credit is documented in the form of bill of exchange. For wholesaler, the bills of exchange become 'bills receivable' and the same document becomes 'bills payable' to retailer. In the accounts of wholesaler, bills receivable appears in place of sundry debtors. Bills payable take the place of sundry creditors in the accounts of retailers.

Supplier is also in a position to discount bills receivable with his banker and can raise finance to meet his working capital needs. Even when there is no doubt of creditworthiness of buyer, seller may adopt this mode of payment through bill of exchange when he wants to have the option of raising finance through discounting bills of exchange. In case, bill of exchange is not executed between supplier and buyer, supplier can raise finance from bank in the form of hypothecation of book debts. In other words, discounting bills of exchange and hypothecation of book debts are the different routes available for meeting working capital needs.

The greatest advantage with bill of exchange is its self maturing character as due date is certain and buyer cannot dodge payment unlike book debt. Suppliers are also in a position to discount bills receivable with his banker and can raise finance to meet his working capital needs.

#### ***Credit Terms:***

Credit terms refer to those terms under which supplier sell on credit to buyer. There are two important terms and they are 'due date' and 'cash discount'. Due date is the date on which buyer has to make payment for goods received. On the due date, supplier can expect payment. Credit terms refer to length of credit period. Cash discount is granted to customers for early payment, before due date. The typical way of expressing

credit period and cash discount in an invoice is '2/15, net 30 days' This means 2% discount would be given, if buyers makes payment within 15 days from date of invoice. If buyer does not want to avail cash discount, he can avail credit period of 30 days. Buyers can make payment at the end of 30 days from date of invoice.

#### **Activity D:**

1. How would you analyse the credit term mentioned as '3/18, net 40 days'? Think and discuss the credit term if it becomes '2/10, net 30 days' is beneficial or not to the business.

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### **17.6 Treasury Bills**

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This represents central government borrowings against a bill or a promissory note. It is a highly liquid, risk free instrument. At present there are three types of treasury bills but only first and third is generally used. These are

- a) 91 days Treasury Bills issued every week.
- b) 182 days Treasury Bills issued every week.
- c) 364 days Treasury Bills issued every month.

There are two forms of treasury bills;

- a) Ordinary Treasury Bills: These are issued to public and RBI by the Government.
- b) Ad-hoc Treasury Bills: These are created only in favour of RBI.

It is the RBI which discounts the treasury bills held by the banks & financial institutions. Rate of interest on treasury bills is lowest among short-term sources of funds and is fixed by RBI from time to time.

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### **17.7 Public Deposit**

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A deposit from the public is one of the important source of finance particularly for well established big companies with huge capital base for short and medium term. The firm may raise short-term funds from the general public by offering handsome rate of interest. The deposits thus mobilized from public by non-financial manufacturing companies are known as 'public deposits' or 'fixed deposits'. These are regulated by regulations of public deposit under the companies' amendment rules or now company law. However, the company raising public deposit cannot raise more than 10% of its paid up share capital and free reserves. The rate of interest on public deposit cannot be more than 15% which is computed on quarterly basis. The firm seeking funds through public deposit has to issue an advertisement disclosing details about its name, date of its incorporation, its profits and other relevant information required by the investor in order to invest with the firm and the same has to be submitted to the registrar of companies before advertising it.

#### **Activity E:**

1. You are required to collect the information in detail from your surroundings the case of using short-term financing as public deposits and reaction of the public in general.

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### **17.8 Commercial Papers**

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Commercial Paper (CP) is an unsecured promissory note issued by a firm to raise funds for a short period, generally, varying from a few days to a few months. In India, the maturity period of Commercial Paper varies between 15 days to 1 year while in some other countries; the maturity period may go up to 270 days. It is a money market instrument and generally purchased by commercial banks, money market mutual funds

and other financial institutions desirous to invest their funds for a short period. As the Commercial Paper is unsecured, the firms having good credit rating can only issue the commercial paper.

The firm or the dealers in Commercial Paper sell these to the short-term lenders who use it as interest earning investment of temporary surplus of operating funds. The nature of these surpluses and motives for buying the CP suggest that all the holders of the commercial paper expect to be paid in full at maturity. The maturity term of commercial paper is not extended. This expectation on the part of short term tenders requires that the borrowing firm must be (i) an established and profitable firm and (ii) consistently maintaining credit goodwill in the market and having good credit rating. The interest cost of the commercial paper depends upon the amount involved, maturity period and the prime lending rates of commercial banks. The main advantage of commercial paper is that cost involved is lower than the prime lending rates. In addition to this cost, the borrowing firm has to bear another cost in the form of placement fees payable to the dealer of Commercial Paper who arranges the sale.

The Commercial Paper market has ballooned from Rs. 44,000 crore in March, 2009 to Rs. 67,000 crore by June end and Rs. 80,000 crore by mid august 2009 as interest rates in the debt market have fallen below band rates at 4 to 5 percent.

### **Issue of Commercial Papers in India:**

Commercial Paper was introduced as a money market instruments in India in January, 1990 with a view to enable the companies to borrow for short term. Since the commercial paper represents an unsecured borrowing in the money market, the regulation of CP comes under the purview of the Reserve Bank of India which has issued Guidelines in 2000 superseding all earlier Guidelines. These Guidelines are aimed at:

- i) Enabling the highly rated corporate borrowers to diversify their sources of short term borrowings, and
- ii) To provide an additional instrument to the short term investors.

These Guidelines have stipulated certain conditions meant primarily to ensure that only financially strong companies come forward to issue the CP. Commercial Paper should be in the form of usance promissory note negotiable by endorsement and delivery. It can be issued at such discount to the face value as may be decided by the issuing company. Commercial Paper is subject to payment of stamp duty. In terms of the guidelines, the issuer company is not permitted to take recourse to the underwriters for underwriting the issue of Commercial Paper.

### ***Updated Conditions of CP:***

The updated conditions till 1<sup>st</sup> July 2010 are as under,

- a) Eligibility: A corporate would be eligible to issue Commercial Paper provided: i) the tangible net worth of the company, as per the latest audited balance sheet, is not less than Rs. 4 crores; ii) company has been sanctioned working capital limit by bank/s or all India financial institution/s; and iii) the borrowal account of the company is classified as a Standard Assets by the financing banks/institution.
- b) Rating requirements: All eligible participants have to obtain the credit rating from CRISIL, ICRA or CARE or any other recognized credit rating agency. The minimum credit rating required for issue of commercial paper is P-2 of CRISIL or any other equivalent rating from other rating agencies.



- c) **Minimum Investment and Denomination:** Amount that can be invested by a single investor cannot be less than Rs. 5 lakhs (face value). Commercial Paper can be issued in denomination of Rs. 5 lakhs or multiple thereof.
- d) **Maximum Limit:** Commercial Paper can be issued within the overall umbrella limit fixed by the RBI, i.e., issue of Commercial Paper together with other instruments, viz., term money borrowings, term deposits, certificate of deposit and inter-corporate deposits, all put together should not exceed 100 percent of its net owned funds, as per the latest audited balance sheet.
- e) **Aggregate Limit:** The aggregate amount of CP from an issuer shall be within the limit as approved by its Board of Directors or the quantum indicated by the Credit Rating Agency for the specified rating, whichever is lower. Banks and financial institutions have the flexibility to fix working capital limits duly taking into account the resource pattern of companies' financing including CPs. Earlier, Commercial Bank that sanctioned working capital limit was required to reduce the cash credit limit of the borrower to the extent of the issuance of commercial paper. Now, there is no need for the concerned commercial bank to reduce the sanctioned cash credit limit of the concerned company, automatically, after issuance of commercial paper. Commercial bank has the freedom to fix the working capital limits of the borrower.
- f) **Issuing and Paying Agent (IPA):** Only a scheduled bank can act as an IPA for issuance of Commercial paper.
- g) **Period of Raising Subscription:** Commercial Paper has to be raised within two weeks from the date of opening the issue for subscription.
- a) **Maturity:** Maturity runs between a minimum of 7 days and maximum of one year from the date of issue. No grace period is allowed for repayment and if the maturity date falls on a holiday then it should be paid on the previous working day. Each issue of Commercial Paper is treated as a fresh issue.
- h) **Interest:** Commercial Paper is issued at a discount to its maturity value. The difference amount between the issue price and maturity amount is the return to the investor.
- i) **Credit Enhancement:** Commercial Paper is a 'stand alone' product. However, banks have the flexibility to provide credit enhancement by way of stand-by assistance, based on their commercial judgement. In other words, in case of default in payment by the issuer, responsibility would be cast on the bank that has provided credit enhancement. This credit enhancement provides the necessary cushion to the investor's confidence to invest. It may be made clear that the credit enhancement is not compulsory for the issue of commercial paper. The issuer normally seeks the credit enhancement when the credit rating for the commercial paper is not adequate, though enough to issue commercial paper to attract the investors' response to raise finance at a cheaper interest rate. This credit enhancement strengthens the rating of the commercial paper.

These conditions change from time to time and the conditions existing at the time of issue govern the issue of commercial paper.

Any company proposing to issue commercial paper has to submit an application to the bank which provides working capital limit to it, along with the credit rating of the firm. The issue has to be privately placed within two weeks by the company or through a merchant banker. The initial investor pays the discounted value of the commercial paper to the firm. Thus, Commercial Paper is issued only through the bank that has sanctioned the working capital limit and it does not increase the working capital resources of the firm.

### Recent Importance:

With the recent reduction in interest rates, importance of commercial paper has diminished, of late. However, corporate sector still finds issue of commercial paper cheap and has again regained its erstwhile importance to raise finances at a lower interest rate compared to the rates of interest charged on loans by banking sector. The Indian economy has started witnessing the unprecedented increasing trends on inflation from the middle of the year 2006. In consequences, bank interest rates have been hardening more significantly from the year 2007. Increase in interest rates, offered by banks, is also in consequences of different stringent initiatives taken by RBI. The different measures are increase of credit reserve ratio and statutory liquidity ratio to contain or control the galloping inflation trends, prevailing more than 6% during the year 2010. So, commercial paper has regained its importance to work as a potent weapon to raise short-term finances by highly rated companies to improve their bottom line. In other words, commercial paper has become attractive way to finance short-term requirements, instead of borrowing from banks.

### Annual financing cost of Commercial Paper:

The annual financing cost of Commercial Paper depends upon the discount on issue and the maturity period. The annualized pre tax cost of commercial paper can be computed as below:

$$\text{Annual Financing Cost} = \frac{\text{FV} - \text{SP}}{\text{SP}} \times \frac{360}{\text{MP}}$$

Where FV = Face Value of Commercial Paper

SP = Issue Price of Commercial Paper

MP = Maturity period of Commercial Paper

For example, a commercial paper of the face value of Rs. 10,00,000 is issued at Rs. 9,60,000 for a maturity period of 120 days. The annual financing cost of the commercial paper is:

$$\text{Annual Financing Cost} = \frac{10,00,000 - 9,60,000}{9,60,000} \times \frac{360}{120} = 12.5\%$$

### Benefits and limitations of Commercial Paper as a Source of Financing

From the point of the issuing company, Commercial Paper provides the following benefits:

- Commercial Paper is sold on an unsecured basis and does not contain any restrictive conditions.
- Maturing commercial paper can be repaid by selling new commercial paper and thus can provide a continuous source of funds.
- Maturity of Commercial Paper can be tailored to suit the requirement of the issuing firm.
- Commercial Paper can be issued as a source of fund even when money market is tight.
- Generally, the cost of Commercial Paper to the issuing firm is lower than the cost of commercial bank loans.

However, Commercial Paper as a source of financing has its own limitations.

- a) Only highly credit rated firms can use it. New and moderately rated firms generally are not in a position to issue Commercial Paper.
- b) Commercial Paper can neither be redeemed before maturity nor can be extended beyond maturity.

So, Commercial Paper is advantageous both to the issuer as well as to the investor. The issuer can raise short-term funds at lower costs and the investor as a short term outlet of funds. Commercial Paper provides liquidity as they can be transferred. However, the issuer must adhere to the RBI guidelines.

#### **Activity F:**

1. A commercial paper of the face value of Rs. 20,00,000 is issued at Rs. 19,40,000 for a maturity period of 140 days. Calculate the annual financing cost of the commercial paper.

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### **17.9 Inter-Corporate Deposits (ICDs)**

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Sometimes, the companies borrow funds for a short-term period, say up to six months, from other companies which have surplus liquidity for the time being. The ICDs are generally unsecured and are arranged by a financier. The ICDs are very common and popular in practice as these are not marred by the legal hassles. The convenience is the basic virtue of this method of financing. There is no regulation at present in India to regulate these ICDs. Moreover, these are not covered by the Section 58A of the Companies Act, 1956, as ICDs are not for long term. The transactions in the ICDs are generally not disclosed as the borrowing under the ICD simply a liquidity shortage of the borrower. The rate of interest on ICDs varies depending upon the amount involved and the time period. The entire working of ICDs market is based upon the personal connections of the lenders, borrowers and the financiers.

#### **Activity G:**

1. What is Inter-corporate Deposit? Do you think that it is regulated by any regulation of Company Act or other? Explain if it is.

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### **17.10 Short-term Unsecured Debentures**

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Companies have raised short-term funds by the issue of unsecured debentures for periods up to 17 months and 29 days. The rate of interest on these debentures may be higher than the rate on secured long-term debentures. It should be noted that no credit rating is required for the issue of these debentures because as per the SEBI guidelines, the credit ratings required for debentures having maturity period of 18 months or more. The use of unsecured debentures as a source of short-term financing, however, depends upon the state of capital market in the economy. During sluggish period, the companies may not be in a position to issue these debentures. Moreover, only established firms can issue these debentures as new company will not find favour from the investors. Another drawback of this source is that the company procures funds from retail investors instead of getting a lump-sum from one source only. Further, that the issue of securities in capital market is a time consuming process and the issue must be planned in a proper way.

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### **17.11 Bank Finance**

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Bank offers short term funds for business enterprise in different forms. It may provide funds either directly or indirectly. In case of indirect finance, the bank covers only the risk and does not provide finance i.e. letter of credit and in case of direct finance, the bank provide finance plus it covers the risk i.e. cash credit, overdraft, note lending and discounting of bills. The firm gives an assessment of its working capital requirement to the bank. On this request the bank provides a credit limit to the firm which the firm can operate accordingly.

The interest is charged on the amount actually utilized by the firm. However, the bank requires the borrowing firm to maintain a minimum balance in its operating accounts at all times which is known as compensatory balance.

### ***17.11.1 Nature of Credit***

Of all the banking concepts, that of credit is probably the most elusive. It is commonly said that a man 'has credit' – a bank 'extend credit' or Credit is based upon the three Cs – of capital, character and capacity'. However, this does not tell us anything about what credit is or what the function of credit is. First, credit provides the mechanism whereby a person may acquire real goods without giving an equivalent value of goods in exchange; secondly, as an indirect consequence, there is a redirection of the flow of real goods, different from what would otherwise take place. The great importance of the institution which we loosely call credit finds emphasis in such common expressions as 'modern industrial society is a credit society, credit is the heart and core of the industrial system and credit is the life blood of commerce and industry'. In simple business parlance, credit involves merely getting something now and paying for it later. It is synonymous with borrowing. The essential element in credit operations always is postponement of payment for something that has been received.

### ***17.11.2 Cash Credit***

Cash credit is the most popular form of credit with borrowers for meeting working capital requirements. Bank considers firm's sales and production plans to sanction a particular working capital limit, which is called sanctioned limit in a cash credit account. In case of seasonal industries, bank sanctions peak credit limit to meet working capital requirements during season which is always higher in comparison to the limit sanctioned for non peak period. So, bank sanctions separate limits for peak and non-peak periods as working capital requirement is maximum during peak season. These cash credit limits are against security of current assets such as stocks and book debts.

Bank does not finance 100% of current assets. Bank stipulate margin. The drawing power is calculated after deducting the required margin from value of stocks. Borrower has to submit stock statement monthly as per terms of sanction, declaring physical stocks and their value on a specified date. If margin requirement is 30%, bank can lend only up to 70% of value of stock and this is called drawing power of borrower and borrower is allowed to draw to the extent of the drawing power. Based on value of stock, drawing power is calculated. Borrower can deposit sale proceeds daily to reduce the outstanding balance in cash credit account and can draw as and when needed to the maximum extent of drawing power or cash credit limit, whichever ever is lower. Borrower is required to pay interest for amount utilized only and not on the total sanctioned limit. It is sanctioned for one year.

Cash credit facility can be sanctioned either in the form of pledge or hypothecation of goods. In case of pledge, goods are kept in the godowns under lock and key of bank, so possession of goods and control thereon is with bank, not borrower. As and when payment is made, goods are released, even proportionately to borrowers. In case of hypothecation, possession of goods is with borrower and can deal with goods in the manner he likes, even selling goods without bank's prior approval. It is extended to such borrowers whose creditworthiness is well known to bank.

### ***17.11.3 Bank Overdraft***

It is short-term borrowing facility made available to the companies in case of urgent need of funds. The bank will impose limits on the amount they can lend. When the borrowed funds are no longer required they can quickly and easily be repaid. The bank issue overdrafts with a right to call them in at short notice. Banks

sanction regular overdraft limits normally against security of fixed deposit receipts, shares, life insurance policy, postal certificates etc. Interest is charged on amount utilized. Cheque facility is made available in overdraft account. In addition to permanent overdraft limit, bank sanctions temporary overdraft in current account of customers as and when cheques received are in excess of balance in current account. This is a temporary arrangement and normally availed by professional for their working capital requirements.

#### **17.11.4 Note Lending**

Note lending is very different from Cash Credit and Bank Overdraft account. It is not a running account. It is sanctioned for a period of about 2-3 months. It is form of loan given to the borrower against promissory notes/debt instrument. Interest is charged on the complete loan amount sanctioned unlike cash credit/bank overdraft account where interest is charged only on the utilised (withdrawn) account. However note lending is not as popular as cash credit/bank overdraft arrangement.

#### **17.11.5 Purchase or Discounting of Bills**

Bill discounting is recognized as an important short term financial instrument and it is widely used method of short-term financing. Supplier can avail the limit for bills drawn on his buyers, covering supply of goods made. If the bill of exchange is payable on demand, it is purchased by bank. If the bill of exchange is drawn on acceptance basis bank discounts the bills accepted by buyer of goods. Buyer has to make payment on the due date. In both the cases, working capital is provided by bank, by purchasing or discounting bills, as the case may be. This has a self liquidating character with greater control for banks to monitor utilization of finances for working capital requirements.

#### **17.11.6 Bill Rediscounting**

The bill rediscounting Scheme was introduced by Reserve Bank of India with effect from 1<sup>st</sup> November, 1970 in order to extend the use of the bill of exchange as an instrument for providing credit and the creation of a bill market in India with a facility for the rediscounting of eligible bills by banks. Under the bills rediscounting Scheme, all licensed scheduled banks are eligible to offer bills of exchange to the Reserve Bank for rediscount.

#### **17.11.7 Line of Credit**

A line of credit is an agreement between a bank and a firm that permits the firm to borrow up to a specified limit during a particular time period. Once the line of credit is approved at the start of the period, loans taken out against the line are usually approved by the loan officer with a minimum of delay or additional investigation. The agreement specifies the terms and conditions of the loans to be made under the line of credit. Although technically in force for a set time period, usually a year, most credit lines represent an ongoing relationship with the bank and may be renewed. At renewal the rate, credit limit, or other conditions of the line of credit may be altered, depending upon the financial performance, condition and needs of the borrower. The line of credit provides a very flexible source of short-term financing. The borrower has access to a specified amount of credit, but pays interest only on the actual borrowing. Line of Credit is a commitment by a bank to lend a certain amount of funds on demand specifying the maximum amount.

The primary purpose of a credit line is to supply funds to meet the short-term, frequently seasonal, cash flow needs of the borrower. To ensure that the line is used for short-term purposes, credit line sometimes includes a requirement of a cleanup period, perhaps 30 or 60 days, during which there is no borrowing against the line. A second purpose of a line of credit is to provide a backup source of cash to pay off maturing commercial paper. Credit lines used in this way are called backup lines. Most organizations issuing commercial paper maintained an unused credit line in an amount sufficient to back up their commercial paper. Of course, the intention is never to have to borrow under this credit line.

### **17.11.8 Working Capital Loan**

It is normally sanctioned by banks for ad-hoc or temporary requirements of customers, not earlier foreseen. This is additional sanction in excess of cash credit limit sanctioned. Once repayment is made loan account would be closed. In other words, customer cannot utilize this mode of finance on a continuous basis like cash credit account. Banks charge higher interest rate for extending this type of facility, compared to normal cash credit limit extended to same borrower.

Generally, the banks while granting working capital facility to a customer stipulate that a margin of 25% would be required to be provided by the customer and hence the bank borrowing remains only limited to 75% of the security offered. In other words, against a security of Rs. 100, the bank gives a loan of up to Rs. 75. The short-fall is generally treated as Working Capital Term Loan (WCTL). This WCTL is to be repaid in a phased manner varying between a period of two to five years.

### **17.11.9 Funded Interest Term Loan**

Sometimes, a company because of its operations may not be able to pay the interest charge on its working capital cash credit facility obtained from a commercial bank. Such accumulation of unserviced interest makes the cash credit account irregular and in excess of the sanctioned limit. It also prevents the firm to make further operations in the account. Such un-serviced accumulated interest may be transferred by the bank from cash credit account to Funded Interest Term Loan (FITL). This will enable the firm to operate its cash credit account. The FITL is considered separately for repayment.

### **17.11.10 Non-Fund based Facilities**

#### **17.11.10.i Letter of Credit**

A letter of credit is a guarantee from a bank stating that a loan will be made to the client if specified conditions are met. It is commonly used to finance international trade. Because an exporter does not know an importer or because information, language and cultural differences make it difficult to perform an adequate credit analysis, the exporter is not willing to sell to the importer on open credit. The importer presents a letter of credit from its bank, stating that the amount necessary for payment of the shipment will be paid on a specified date if conditions are met. This allows the importer to substitute the bank's credit rating for its own credit rating, thereby reducing the risk to the exporter.

The purpose of letter of credit is that payment is assured to supplier of goods or services by bank. Here the responsibility for payment is assumed by bank and so supplier is not concerned with the creditworthiness of the buyer. In case payment is not made by customer, bank makes payment to the party in whose favour the letter of credit is opened. So bank assumes risk for default in payment by the opener of letter of credit. Simply, creditworthiness of buyer is not relevant to the supplier once letter of credit is opened.

A letter of credit can be either revocable, in which case the bank has the right to cancel the letter, or irrevocable, in which case the bank is bound to honour the terms if the specified conditions are met. The maturity of the loan connected to the letter is dictated by the event that evoked the need for the letter. In most instances, it is of relatively short duration, for example, 30 to 90 days. The loan usually has a fixed rate based on the prevailing rate at the time the loan is issued. A commitment fee is usually charged for issuing a letter of credit whether the loan is issued or not.

A banker's acceptance is generated by a time draft for which a bank is committed to make the payment to the holder at maturity. Banker's acceptances most frequently arise from international transactions when the conditions for a letter of credit have been met. Financing is provided when the bank makes an advance on

the time draft issued. Some banks use the term banker's acceptance to refer to a loan issued to finance the purchase of specific goods, whether for an international or a domestic transaction. The loan made under a banker's acceptance is usually a discount loan. The discount from face value advanced to the borrower includes an amount for the interest at prevailing money market rates plus a fee or a commission of approximately 1.5%. Because of the commission, the cost to the borrower is usually above the commercial paper rate, but because it is based on money market rates, it may be below the prime rate.

#### **17.11.10.ii Bank Guarantees**

Bank guarantee is one of the facilities that the commercial banks extend on behalf of their clients in favour of third parties who will be the beneficiaries of the guarantees. In case of guarantee, it may be categorized as Performance Bank Guarantee, Bank guarantee against advances received by a supplier and bank guarantee in lieu of security deposit or earnest money as per requirement of tenders of different Governmental or Corporate bodies be it in private sectors or in public sectors.

In case of performance guarantee, it gives an assurance by bank to the third party about the performance of project or equipments/machineries upto a certain period which has been executed/ manufactured by the customers of the bank. In case of bank guarantee for advances received by the customer of the bank from third party, such guarantee assures the third party that if the project for which advance has been given is not executed, the bank is liable to refund such advance. Such non-fund facilities by bank are not given independently but are generally considered by them along with the question of sanction of cash credit facilities.

#### **Activity H:**

1. 'There is no guarantee that a borrower utilizes the cash credit limit for short-term Purposes, alone.' Is it right? Name the alternative form of finance by which bank can better monitor utilization of funds for short-term by borrower.

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### **17.12 Difference between Trade Credit and Bank Credit**

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The below enumerated comparison describes the difference between trade credit and bank credit.

**Security:** Advances by trade creditors are almost invariably unsecured. They may be secured where creditors constitute a major source of finance for the debtor. Bank advances are commonly secured by a charge over the real or personal property of the customer, although some bank advances may be made on personal security only. Initial inquiry into the nature of the security is generally more rigorous in the case of bank credit.

**Purpose:** Trade credit arises from a particular purchase of goods. Bank credit is generally undifferentiated and can, therefore, be used for a wider range of purpose.

**Extent:** Usually trade creditors' accounts do not assume large dimensions. For individual clients, on the other hand, bank advances may be much larger than the amounts those clients owe at any time to the individual trade creditors

**Liquidation:** Trade creditors' accounts are liquidated much more frequently than bank advances.

**Cost:** Failure to take advantage of cash discounts offered by trade creditors is many times more costly than borrowing from banks to meet these accounts. Advances on the overdraft cost must be less than the yield from the prompt settlement of creditor's accounts.

**Competition:** There is greater competition among the suppliers of goods than among the suppliers of bank credit. Long credit terms are frequently extended to retain a customer to whom competitors have offered

longer terms or better discounts or simply to sustain sales in spite of the customer's reluctance to buy. Bankers are more cautious, less inclined to encourage borrowing than sales representatives are to promote sales. Bank credit is thus less conducive to the unwise expansion of stock levels and credit sales than trade credit.

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### 17.13 Factoring

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Factoring is a new concept in financing of account receivables. This refers to outright sale of accounts receivables to a factor or a financial agency. A factor is a firm that acquires the receivables of other firms. The factoring lays down the conditions of the sale in a factoring agreement. In factoring, three parties are involved. The supplier of goods (seller), the receiver of goods (buyer), the undertaker of debt (factor). When some goods are sold on credit and payable after a specified period, the efforts of seller are always to collect receivable as quickly as possible. To put it in other way, he is to remain busy significantly for such receivable management. It involves cost, time and efforts on the part of the seller. Instead of making such internal management of such receivable, he may delegate such job of receivable management i.e. collection of debtors to a specialized agency. Such an agency is called factor. To put it in a layman's language, a factor is an agent who collects the dues of his client for a certain fee. By factoring the seller assigns his right of collection of debt from the purchaser to the factor. The buyer is advised with this assignment to pay dues directly to the factor instead of to the seller. Hereafter, it becomes responsibility of factor to collect receivables. For such service to the seller and also for bearing the risk of non-collection, the factor obviously charges some fees. In such cases they charge interest for such financing in addition to fee.

Normally, factoring is the arrangement on a non-recourse basis where in the event of default the loss is borne by this factor. However, in a factoring arrangement with recourse, in such situation, the accounts receivables will be turned back to the firm by the factor for resolution. To make operative of such service in India, RBI constituted a Committee in January, 1988. The Committee submitted its report in January, 1989 and RBI accepted its recommendation in principle. SBI commercial and Factoring Services Ltd. is the first factoring company which is on verge of starting its operation as factoring.

**Factoring Services:** The factor manages all the accounts, of all the customers of the said firm to make collections on time. Factor also interferes in the credit policy of the firm and thus advocates the best credit policy suitable for the firm. It provides all management and administration support from the stage of deciding credit extension to the customer to the final stage of debt collection. Factor provides financial assistance to the business firm by giving it advance cash against book debts. Factoring services provided by factors are purchasing receivables, sales ledger administration, credit management, credit collection, protection against default and bad debts, financial accommodation against the assigned book debts, assuming the losses which may arise from bad debts and providing relevant advisory service to the seller.

**Factoring Process:** The client firm having book debts enters into an agreement with a factoring agency/institution. The client firm delivers all orders and invoices and the invoice copy to the factor. The factor pays 80% of the invoice value (depends on the type of factoring agreement), in advance. The balance amount is paid when factor recovers complete amount of money due on customers (debtors of the client) and against all these services, the factor charges some amount as service charges.

**Cost of Factoring:** Cost of factoring is very high about 17-18% of the value of receivables. The high cost of factoring includes the element of risk present due to the chance of book debts becoming bad debts. But the cost is overcome by the advantages of factoring like immediate liquidity and 100% risk cover. The cost of factoring service also depends on various factors like credit worthiness of the client, turnover of the client and the factor, average size of invoices, various costs borne by the factors etc.



**Factoring in India:** In India factoring services started very late, around 1991. It is still in the initial stages and supports only the domestic trade and commerce in India. The nationalized banks have been given the responsibility of nurturing factoring in India. SBI has floated its subsidiary factoring unit i.e. SBI factors and Commercial Services Ltd. In the Southern region Canara bank has also floated its subsidiary named as Canbank Factors Ltd. Factoring is very popular in developed countries like USA, UK etc. In USA the market for factoring services is around \$ 33 billion. In India the total factoring service value was around Rs. 1000 crores in 1996-97. The idea of introducing factoring service in India was first floated by working group committee headed on money market by Mr. N Vaghul in 1987. RBI then formed a study group, Kalyansundaram, former managing director of SBI, in January 1988 for examining the introduction of factoring services in India. But still, till today the factoring service in India has not acquired the status of a separate industry, instead it has been clubbed with NBFCs.

### **Advantages of Factoring**

- a) It enhances the liquidity position of the company.
- b) The hazardous job of collection from Debtors gets eliminated.
- c) The loss of interest because of late collection of Debtor can be arrested. Obviously, the return of investment improves.
- d) The whole attention and energy of the concerned company can be diverted only on the sales/marketing aspects.

### **Disadvantages of Factoring**

In spite of many services offered by factoring, following are disadvantages of factoring.

- a) High cost of factoring compared to other short-term finance.
- b) Firms availing factoring services are viewed as weak.
- c) Once a buyer defaults in payment, factor takes a tough stance and may not agree to provide credit against sales made to the same buyer. This action may force the firm to discontinue sales, resulting in reduced sales.

### **Difference Between Factoring and Bill Discounting**

The difference between factoring and bill discounting can be enumerated as below.

- a) Factoring is called as 'invoice factoring' whereas bills discounting is known as 'invoice discounting'.
- b) In factoring the parties are known as client, factor and debtor whereas in bills discounting they are known as Drawer, Drawee and Payee
- c) Factoring is a sort of management of book debts whereas bills discounting is a sort of borrowing from commercial banks.
- d) For factoring there is no specific Act, whereas in the case of bills discounting, the Negotiable Instrument Act is applicable.

### **Activity I:**

1. 'Factoring services is related to management of debts arising from credit sales. Factor provides credit against receivables and in this process firm gets funds immediately for credit sales made.' What is your opinion on this statement? Discuss.

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### **17.14 Eurocurrency Loan**

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In international trade short term funding is through Eurocurrency loans. Due to individual government regulations of different nations, on the interest rate, on domestic banks lending changes as one crosses the national boundary etc. interest on euro dollar loan would be same as interest on domestic dollar loan if the world is made free of regulations and taxes imposed by the government.

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### **17.15 Summary**

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Short-term funds can be collected through many sources such as accrued expenses, provisions, trade credit, bank finance, public deposit, commercial papers, treasury bills, factory and Eurocurrency etc. Trade credit is one of the important sources of short-term funds. It arises when firm purchases on credit. However, the firm should also calculate the cost of foregoing cash discount offered by the supplier, if it takes trade credit. Accrued expenses or deferred payments arise due to delayed payments and liabilities. This gives rise to additional funds which the firm can utilize by delaying payments.

Banks are principal sources of short term finance. The different forms of bank borrowings are cash credit, bank overdraft, discounting of bills, short term loans, letter of credit. However, bank finance is given on the basis of working capital requirement assessed for a particular firm. There are various regulations of RBI under which bank finance is offered. Commercial paper is an important instrument of money market. The highly rated, blue chip company issues commercial paper for short-term finance. In India common commercial papers are of 91 & 180 days maturity.

Factoring is basically selling receivables to factoring providing firms called factors. These firms monitor and collect receivables on behalf of the firm. They offer around 70-90% of the receivable amount to the firm even before the money is recovered. There are various types of factoring. In India factoring is still in its nascent stage.

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### **17.16 Self Assessment Questions**

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1. Explain the importance of trade credit as a source of short-term finance. Whether the provision of this source involves any cost to the provider and who bears it, finally?
2. What are accrued Expenses? What are the limitations of using accrued expenses?
3. Describe the different types of short-term finance provided by Commercial banks for meeting short-term needs of the business. Is there a way to utilize non-fund based limit for short-term purposes?
4. What are Commercial Papers? What are the preconditions required to be fulfilled before floating commercial papers?
5. What are the advantages and disadvantages of using public deposit as a source of funds?
6. What is factoring? How it is beneficial to a firm? Differentiate between bill discounting and factoring.
7. What is Eurocurrency Loan? Why do firm go for such a loan?

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