



Institute of Open and Distance Education

Faculty of Management

Financial Management

Financial Management



2MBA4



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Financial Management

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C H A P T E R

1

INTRODUCTION TO FINANCIAL MANAGEMENT

LEARNING OBJECTIVES

1. Understand the meaning and importance of Business Finance
2. Explain the importance of Financial Management
3. Describe scope of Financial Management
4. Explain the different methods of Financial Management

Meaning and Definition of Financial Management

According to the Encyclopedia of Social Sciences, Corporate finance deals with the financial problems of corporate enterprises. Problems include financial aspects of the promotion of new enterprises and their administration during early development, the accounting problems connected with the distinction between capital and income, the administrative questions created by, growth and expansion, and finally the financial adjustments required for bolstering rehabilitation of a corporation which has come into financial difficulties. Management of all these is financial management. Financial management mainly involves, rising of funds and their effective utilisation with the objective of maximising shareholders' wealth. To quote, Joseph and Massie, "Financial Management is the operational activity of a business that is responsible for obtaining and effectively utilising the funds necessary for efficient operations".

According to Van Horne and Wachowicz, "Financial Management is concerned with the acquisition, financing and management of assets with some overall goal in mind." Financial manager has to forecast expected events in business and note their financial implications. First, anticipating financial needs means estimation of funds required for investment in fixed and current assets or long-term and short-term assets. Second, acquiring financial resources—once the required amount of capital is anticipated, the next task is acquiring financial resources i.e., where and how to obtain the funds to finance the anticipated financial needs and the last one is, allocating funds in business – means allocation of available funds among the best plans of assets, which are able to maximize shareholders' wealth. Thus, the decisions of financial management can be divided into three viz., investment, financing and dividend decision.

Financial Management is broadly concerned with the acquisition and use of funds by a business firm. Its scope may be defined in terms of the following questions.

- How large should the firm be and how fast should it grow?
- What should be the composition of the firm's assets?
- What should be the mix of the firm's financing ?
- How should the firm analyze, plan and control its financial affairs?

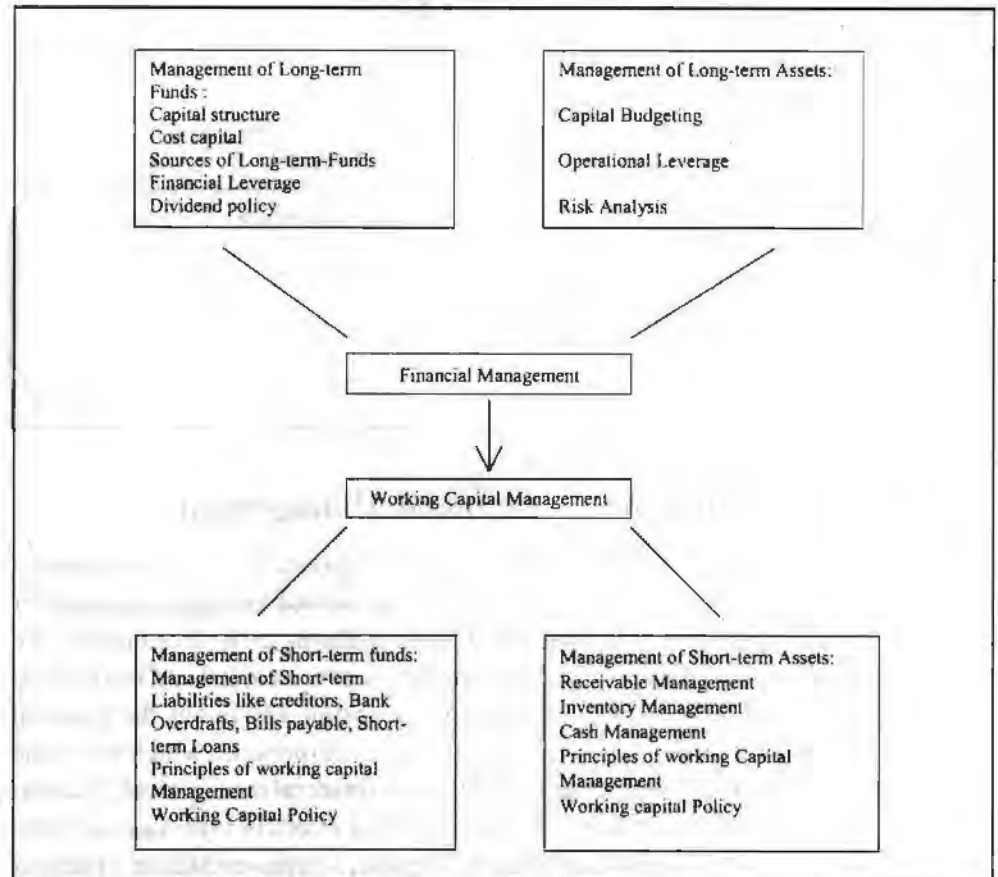


Figure 1: Framework of Financial Management

The entire gamut of management efforts concerned with raising of funds at optimum cost and their effective utilization with a view to maximise the wealth of the shareholders.

Financial Management is concerned with the efficient use of an important economic resource namely, capital funds.

Thus, Financial Management includes – Anticipating Financial Needs, Acquiring Financial Resources and Allocating Funds in Business (i.e., The A's of financial management)

Importance of Financial Management

Financial Management is indeed, the key to successful business operations. Without proper administration and effective utilisation of finance, no business enterprise can utilize its potentials for growth and expansion.

Financial management is concerned with the acquisition, financing and management of assets with some overall goals in mind. As mentioned in the contents of modern approach, the discussions on financial management can be divided into three major

decisions viz., (i) Investment decision; (ii) Financing decision; and (iii) Dividend decision (see figure 2). A firm takes these decisions simultaneously and continuously in the normal course of its business. Firm may not take these decisions in a sequence, but decisions have to be taken with the objective of maximizing shareholders' wealth.

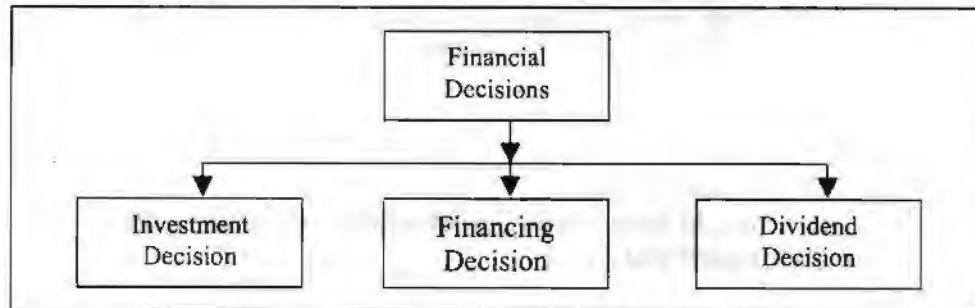


Figure 2: Financial Decisions

- (a) **Investment Decision:** It is most important than the other two decisions. It begins with a determination of the total amount of assets needed to be held by the firm. In other words, investment decision relates to the selection of assets, that a firm will invest funds. The required assets fall into two groups:
- (i) **Long-term Assets** (Fixed assets: plant & machinery, land and buildings, etc.). Which involve huge investments and yield a return over a period of time in future. Investment in long-term assets is popularly known as “capital budgeting”. It may be defined as the firm’s decision to invest its current funds most efficiently in fixed assets with an expected flow of benefits over a series of years. It is discussed in detail under the chapter capital budgeting.
 - (ii) **Short-term Assets** (Current assets: raw materials, working in process, finished goods, debtors, cash, etc.). That can be converted into cash within a financial year without diminution in value. Investment in current assets is popularly termed as “working capital management”. It relates to the management of current assets. It is an important decision of a firm, as short-survival is the prerequisite for long-term success. Firms should not maintain more or less assets. More assets reduce return and there will be no risk, but having less assets is more of a risk as well as more profitable. Hence, the main aspects of working capital management are, the trade-off between risk and return. Management of working capital involves two aspects. First, determination of the amount required for the running of the business and secondly financing these assets. It is discussed in detail in the chapter on Working Capital Management.
- (b) **Financing Decision:** After estimation of the amount required and the assets that require purchasing, comes the next financing decision into the picture. Here, the financial manager is concerned with make up of the right hand side of the balance sheet. It is related to the financing mix or capital structure or leverage and he has to determine the proportion of debt and equity. It should be optimum finance mix, which maximizes shareholders' wealth. A proper balance will have to be struck between risk and return. Debt involves fixed cost (interest), which may help in increasing the return on equity alongwith an increase in risk. Raising of funds by issue of equity shares is one permanent source, but the shareholders expect higher rates of earnings. The two aspects of capital structure are: capital structure theories and determination of optimum capital structure.

- (c) **Dividend Decision:** This is the third financial decision, which relates to dividend policy. Dividend is a part of profits, that are available for distribution, to equity shareholders. Payment of dividends should be analyzed in relation to the financial decision of a firm. There are two options available in dealing with the net profits of a firm, viz., distribution of profits as dividends to the ordinary shareholders' where, there is no need of retention of earnings or they can be retained in the firm itself if they require, for financing of any business activity. But distribution of dividends or retaining should be determined in terms of its impact on the shareholders' wealth. The Financial manager should determine optimum dividend policy, which maximizes market value of the share thereby market value of the firm. Considering the factors to be considered while determining dividends is another aspect of dividend policy.

Scope and Functions of Financial Management

From the below discussion it is evident, that financial management as an academic discipline has undergone notable changes over the years, with regard to its scope and areas of coverage. At the same time, the financial manager's role also has undergone fundamental changes over the years. Study of the changes that have taken place over the years is known as "scope of financial management." In order to have an easy understanding and better exposition to the changes, it is necessary to divide the scope into two approaches.

1. **Traditional Approach:** The traditional approach, which was popular in the early stage, limited the role of financial management to raising and administering of funds needed by the corporate enterprises to meet their financial needs. It deals with the following aspects.
 - i. Arrangement of funds from financial institutions.
 - ii. Arrangement of funds through financial instruments like share, bonds etc.
 - iii. Looking after the legal and accounting relationship between a corporation and its sources of funds.

Thus, the finance manager had a limited role to perform, He was expected to keep accurate financial records, prepare reports on the corporation's status and performance and manage cash in a way that the corporation was in a position to pay its bills on time.

The term "Corporation Finance" was used in place of the present term "Financial Management".

The traditional approach to the scope of the finance function evolved during the 1920s and 1930s, dominated the academic thinking during the 40s and through the early 50s. It has now been discarded as it suffers from serious limitations. Following are the main limitations.

- a. **External approach:** The approach treated the subject of finance only from the view point of suppliers of funds, i.e., outsiders, viz, bankers, investors etc. It followed an outsider – looking- in approach and not the insider-looking-out approach, since it completely ignored the view point of those who had to take internal financing decisions.
- b. **Ignored routine problems:** The subject of financial management was mainly confined to the financial problems arising during the course of incorporation, mergers etc., and the subject did not give any importance to day-to-day financial problems of the business.

- c. **Ignored non-corporate enterprise:** The approach focused mainly on the financial problems of corporate enterprises.
- d. **Ignored working capital financing:** The problems related to financing, short term or working capital were ignored in the approach. The approach focuses mainly on the problems of long term financing.
- e. **No emphasis on allocation of funds:** The approach confined financial management only to procurement of funds. It did not emphasize on allocation of funds.

The conceptual framework of the traditional treatment ignored, what Solomon aptly describes as the central issues of financial management. These are :

- (i) Should an enterprise commit capital funds to certain purposes ?
- (ii) Do the expected returns meet financial standard of performance?
- (iii) How should these standards be set and what is the cost of capital funds to the enterprise?
- (iv) How does the cost vary with the mixture of financing methods used ?

In the absence of the coverage of these crucial aspects, the traditional approach implied a very narrow scope for financial management. The modern approach provides a solution to these shortcomings.

- 2. **Modern Approach:** According to the modern approach, the term financial management provides a conceptual and analytical framework for financial decision-making. That means, the finance function covers both, acquisition of funds as well as their allocation. The new approach views the term financial management in a broader sense. It is viewed as an integral part of the over-all management.

The new approach is an analytical way of viewing the financial problems of a firm. The main contents of the modern approach are as follows:

- (i) What is the total volume of funds, an enterprise should commit?
- (ii) What specific assets should an enterprise acquire?
- (iii) How should the funds required, be financed?

Thus, financial management, in the modern sense of the term, can be divided into four major decisions as functions of finance. They are:

- (i) The investment decision
- (ii) The financing decision
- (iii) The dividend policy decision
- (iv) The funds requirement decision

The functions of financial management may be classified on the basis of Liquidity, Profitability and Management.

- 1. **Liquidity:** It is ascertained on the basis of three important considerations.
 - (a) Forecasting cash flows → i.e., matching the inflows against the cash outflows.
 - (b) Raising funds → i.e., financial manager will have to ascertain the sources from which funds may be raised and the time when these funds are needed.

- (c) Managing the flow of internal funds.
- 2. **Profitability:** → While ascertaining profitability, the following factors are taken into account:
 - (a) Cost control
 - (b) Pricing
 - (c) Forecasting future profits
 - (d) Measuring cost of capital
- 3. **Management:** Asset management has assumed an important role in financial management. It includes: (a) the management of long-term funds. (b) The management of short-term funds.

Apart from the main functions, mentioned above following subsidiary functions are also performed by the finance management.

Financial Decisions

The important financial decisions to be taken by the manager are as follows:

1. **Investment Decision:** This is concerned with the allocation of capital. It has to show the funds that can be invested in assets, which would yield benefit in future. This is a decision based on risk and uncertainty. Finance manager has to evaluate the investment in relation to its expected return and risk, to determine whether the investment is feasible or not. Besides, the financial manager is also entrusted with the management of existing assets. The whole exercise is called "Capital Budgeting", this was the first technique developed in financial management. This technique helps to know 'Net Present Value' of the assets. To have a more profitable investment, the companies can think of amalgamations and mergers internally and externally. That is why, we have seen the emergence of multinational companies.
2. **Finance Decision:** This decision is concerned with the mobilization of finance for investment. The finance manager has to take decisions regarding the acquisition of finance. Whether entire capital required, should be raised in the form of equity capital, or the amount should be borrowed capital, has to be decided. Even the timing of acquisition of capital should be well defined. While determining the ratio between debt and equity, the finance manager should ascertain the risk involved in obtaining each type of capital. Thus, determining the best "Finance Mix" is another important task of the finance manager. The best capital structure will always ensure wealth maximization.
3. **Dividend Decision:** This decision is concerned with the divisible profits of the company.
 - (i) How much profit is to be flown back of capitalization?
 - (ii) How much cash dividend should be paid to the shareholders?
 - (iii) Maintenance of stable dividend rate over the period, are some of the issues connected with this decision.

The dividend decision involves the determination of the percentage of profit earned by the enterprise which is to be paid to its shareholders. The dividend payout ratio must be evaluated in the light of the objective of maximizing shareholder's wealth. Thus, the dividend decision has become a vital aspect of financing decision.

4. **Current Assets Management:** The finance manager should also manage the current assets, to have liquidity in the business. Investment of funds in current assets reduce the profitability of the firm. However, at the same time, the finance manager should also look after the current financial needs of the firm to maintain optimum production. While investing funds in current assets, he must see that proper balance (trade off) is maintained between profitability and liquidity.

Every financial decision involves this trade off. At this level the market value of the company's shares would be the maximum.

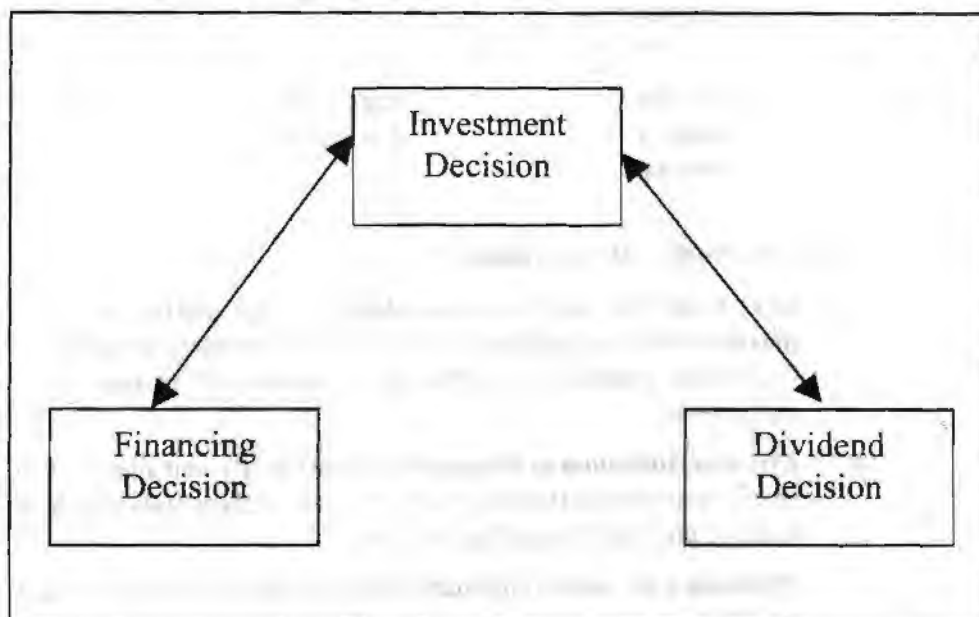


Figure 3: Decision, Return, Risk and Trade off

The inter-relationship between market value, financial decisions, risk-return and trade off is depicted in Figure 3.

In conclusion we can say that to maximize the wealth of owners, the finance manager has to be very careful while taking the decisions relating to (i) Investment (ii) Dividend (iii) Financing and (iv) Current Assets.

Objective of Financial Management

(Profit – Maximization vs Wealth Maximization)

The objectives of financial management can be broadly classified into two categories:

1. **Basic Objectives:** Traditionally, the basic objectives of financial management have been (A) Maintenance of liquid assets and (B) Maximization of profitability of the firm. However, these days, there is a greater emphasis on (C) Shareholders' wealth maximization rather than on profit maximization.
 - (A) **Maintenance of Liquid Assets:** Financial management aims at maintenance of adequate liquid assets with the firm to meet its obligations at all times. However, investment in liquid assets has to be adequate – neither too low nor too excessive. The finance manager has to maintain a balance between liquidity and profitability.
 - (B) **Maximization of Profit:** "Profit maximization" is a term which denotes the maximum profit to be earned by an organization in a given time period.

The profit-maximization goal implies that the investment, financing and dividend policy decision of the enterprise should be oriented to profit maximization.

The term "Profit" can be used in two senses – first, as the owner-oriented concept and the second, as the operational concept.

Profit as the owner-oriented concept, refers to the amount of net profit, which goes in the form of dividend to the shareholders. Profit as the operational concept means profitability, which is an indicator of economic efficiency of the enterprise.

Profitability-maximization implies, that the enterprise should select assets, projects and decisions, that are profitable and reject the non-profitable ones. It is in this sense, that the term profit-maximization is used in financial management.

Merits of Profit – Maximization:

- i. ***Best Criterion on Decision-Making:*** The goal of profit – maximization is regarded as the best criterion of decision-making as it provides a yardstick to judge the economic performance of the enterprises.
- ii. ***Efficient Allocation of Resources:*** It leads to efficient allocation of scarce resources as they tend to be diverted to those uses which, in terms of profitability, are the most desirable.
- iii. ***Optimum Utilization:*** Optimum utilization of available resource is possible.
- iv. ***Maximum Social Welfare:*** It ensures maximum social welfare in the form of maximum dividend to shareholders, timely payment to creditors, higher wages, better quality and lower prices, more employment opportunities to the society and maximization of capital to the owners.

However, the profit-maximization objective suffers from several drawbacks which are as follows:

- i. ***Time Factor Ignored:*** The term 'Profit' does not speak anything about the period of profit-whether it is short-term profit or long-term profit.
- ii. ***It is Vague:*** The term 'Profit' is very vague. It is not clear in what exact sense the term profit is used. Whether it is Accounting profit or Economic profit or profit after tax or profit before tax.
- iii. ***The Term 'Maximum' is also Ambiguous:*** The term 'maximum' is also not clear. The concept of profit is also not clear. It is therefore, not possible to maximize what cannot be known.
- iv. ***It Ignores Time Value:*** The profit maximization objective fails to provide any idea regarding the timing of expected cash earnings. The choice of a more worthy project lies in the study of time value of future inflows of cash earnings. It ignores the fact that the rupee earned to day is more value able than a rupee earned later.
- v. ***It Ignores the Risk Factor:*** According to economists, profit is a reward for risk and uncertainty bearing. It is also a dynamic surplus

or profit is a reward for innovation. But when can the organization maximize profits? Profit – maximization objective does not make this clear.

- (C) **Wealth Maximization:** It is now widely and universally accepted that the objective of the enterprise should be suitable and operationally feasible. Precise and clear cut and should give weight to the time value and risk factors. Owing to the various drawbacks of the profit maximization objective, Professor Ezra Solomon rejected it as inappropriate and unsuitable and suggested the adoption of wealth- maximization objective which removes all the drawbacks of the profit maximization objective.

Wealth- maximization is also called value- maximization. The wealth or 'net present worth' of a course of action is the difference between gross present worth and the amount of capital investment required to achieve the benefits. Gross Present-worth represents the present value of expected cash benefits.

In simple words, wealth-maximization means maximizing the present value of a course of action (i.e. $NPV = GPC \text{ of benefits} - \text{Investment}$). Any financial action which results in positive NPV, creates and adds to the existing wealth of the organization and the course of action which has a negative NPV, reduces the existing wealth and hence be given up. All positive actions can be adopted, as they add to the existing wealth and help in wealth maximization.

Significance of Wealth- Maximization: The company, although it-cares more for the economic welfare of the shareholders, cannot forget the others who directly or indirectly work for the over-all development of the company. Thus, Wealth- Maximization takes care of.

1. Lenders or creditors
 2. Workers or Employees
 3. Public or Society
 4. Management or Employer
2. **Other objectives:** Besides the above basic objectives, the following are the other objectives of financial management.
- Ensuring a fair return to shareholders.
 - Building up reserves for growth and expansion.
 - Ensuring maximum operational efficiency by efficient and effective utilization of finance.
 - Ensuring financial discipline in the management.

Methods of Financial Management

The term "Financial Method" or "Financial Tool" refers to any logical method or technique to be employed for the purpose of accomplishing the following two goals :

- a. Measuring the effectiveness of firm's action and decisions.
- b. Measuring the validity of the decisions regarding accepting or rejecting future projects.

Following are the important financial tools or methods used by the financial manager in performance of his job :

1. **Cost of Capital:** Cost of capital helps the finance manager in deciding, the sources, from which the funds are to be raised. In case of different sources of finance viz, shares, debentures, loans from financial institutions, banks, public deposits etc., the financial management takes into account the cost of capital and opts for the source, which is the cheapest, the cost of capital is also taken into account for determining the optimum capital structure.
2. **Trading on Equity:** Trading on equity is another tool, which helps the finance manager in increasing the return to equity shareholders.
3. **Capital Budgeting appraisal:** Methods such as payback period, average rate of return, internal rate of return, net present value, profitability index etc., help the finance manager in selecting the best among the alternative capital investment proposals.
4. **Ratio Analysis:** This is another method for evaluating different aspects of the firm different ratios serve different purposes.
5. **ABC Analysis:** Cash management models, debtor's turnover ratio etc., help the finance manager in effective management of current assets.
6. **Funds Flow Analysis and Cash Flow Analysis:** These techniques help the finance manager in determining whether the funds have been procured from the best available source and they have been utilised in the best possible way. Projected funds flow analysis and projected cash flow analysis help the finance manager in estimating or arranging, for the future working capital or cash needs.

Summary

Financial Management is broadly concerned with the acquisition and use of funds by a business firm.

Financial Management is concerned with the efficient use of an important economic resource namely, capital funds.

The two aspects of capital structure are: capital structure theories and determination of optimum capital structure.

The traditional approach, which was popular in the early stage, limited the role of financial management to raising and administering of funds needed by the corporate enterprises to meet their financial needs.

According to the modern approach, the term financial management provides a conceptual and analytical framework for financial decision-making. That means, the finance function covers both, acquisition of funds as well as their allocation. The new approach views the term financial management in a broader sense. It is viewed as an integral part of the over-all management.

The objectives of financial management can be broadly classified into two categories:

Basic Objectives: Traditionally, the basic objectives of financial management have been (A) Maintenance of liquid assets and (B) Maximization of profitability of the firm. However, these days, there is a greater emphasis on (C) Shareholders' wealth maximization rather than on profit maximization.

The other objectives of financial management:

- Ensuring a fair return to shareholders.

- Building up reserves for growth and expansion.
- Ensuring maximum operational efficiency by efficient and effective utilization of finance.
- Ensuring financial discipline in the management.

Test Yourself

1. Discuss in detail the scope of financial management.
2. State the objectives of financial management.
3. What do you mean by wealth maximisation and profit maximisation ? Which one do you suggest ? Why ?
4. Briefly explain the functions of financial management.
5. "Investment, financing and dividend decisions are all inter-related". Comment.
6. What do you mean by financial management ? Discuss the approaches to finance function.
7. In what respect is the objective of wealth maximisation superior to profit maximization?
8. "The profit maximization is not an operationally feasible criterion." Do you agree? Illustrate your views.
9. "Finance functions of a business is closely related to its other functions" Discuss.
10. ".....Finance has changedfrom a field that was concerned primarily with the procurement of funds to one, that includes the management assets, the allocation of capital and valuation of the firm" Elucidate.

FINANCIAL PLANNING**LEARNING OBJECTIVES**

1. Explain the meaning of Financial Planning.
2. Explain the steps involved in Financial Planning.
3. Understand Over Capitalisation and Under Capitalisation.

Meaning and Definition**Meaning**

Financial Planning is deciding in advance, the course or line of action for the future with respect to the financial management of a concern, It includes :

- (i) Estimating the amount of funds to be raised.
- (ii) Determining the forms and the proportionate amount of the securities to be issued for raising the capital and;
- (iii) Laying down the policies as to the administration of the financial plan.

Definition

Financial plan may be defined as the plan, which properly estimates the amount of funds required, proportion of debt-equity, and the policies for administration of financial plan.

Financial plan is a statement estimating the amount of capital required, determination of finance mix and formulation of policies for effective administration of the financial plan. Financial plan states:

- (a) The amount of capital required to be raised.
- (b) The proportion of debt in total capital and its form.
- (c) Policies bearing on the administration of capital.

Opinion of Coben and Robbins, that financial plan should:

- (a) Determine the financial resources required to meet the company's operating programme;
- (b) Forecast the extend to which, these requirements will be met by Internal generation of funds and to what extent, they will be met from external sources;
- (c) Develop the best plans to obtain the required external plans;
- (d) Establish and maintain a system of financial controls, governing the allocation and use of funds.

- (e) Formulate programmes to provide the most effective profit-volume-cost relationship;
- (f) Analyse the financial results of operations;
- (g) Report the facts to the top management and make recommendations on the future operations of the firm.

From the above, we can conclude that financial plan is an advance programming of all the plans of financial management and integration and co-ordination of all these plans with other functions of a company.

The meaning of financial planning may be well understood with the help of the following definitions:

“The financial plan of a corporation has two-fold aspects: it refers not only to the capital structure of the corporation, but also to the financial policies, which the corporation has adopted or intends to adopt”

– J.H. Bourneville.

“Financial planning pertains only to the function of finance and includes the determination of the firm’s financial objectives, formulating and promulgating financial policies and developing financial procedures”

– Walker and Boughn.

The above definitions highlights the main aspects of financial planning, they are:

- (a) Determining the financial objectives;
- (b) Formulation of financial policies;
- (c) Development of financial procedures.

Need for Financial Planning

Many technically sound and economically viable industrial projects have failed simply because of poor financial planning. Thus, it is an essential tool for any business undertaking.

Financial Planning is needed, not only in the case of enterprises proposed to be setup, but is equally needed for on-going enterprises as well.

The need for financial planning arises from the following reasons:

Good financial planning:

- (a) Would ensure liquidity throughout the year.
- (b) Would bring to light, the surplus of funds available for expansion.
- (c) Would contribute to the rational utilisation of the available resources, to get the maximum benefit.
- (d) Would make things easy for the management team to function smoothly.

Steps in Financial Planning

1. **Estimating the Capital Requirements:** It is the first step in financial planning. Requirement of the concern will be estimated on the basis of the following factors:
 - (a) The cost of fixed assets like land, buildings, plant and machinery, furnitures and fittings, needed to be acquired.

- (b) The cost of intangible assets like patents, goodwill etc., to be acquired.
 - (c) The amount required to be invested in current assets like stock of raw materials, stores, stock of finished goods, sundry debtors, cash etc.
 - (d) The cost of promotion and the cost of financing i.e., the amount of expenses to be incurred on the promotion of the concern like registration fee, stamp duty, legal charges etc., and the amount of expenses to be incurred on the printing of prospectus, share application forms, etc.
2. **Determination of the Form and the Proportionate Amount of Securities to be issued:** The second step in Financial Planning is the determination of the forms and the proportion of the various securities to be issued by the concern, for raising capital.
3. **Other Steps:**
- Projection of Financial Statements
 - Determination of Funds Needed
 - Forecast the Availability of Funds
 - Establish and Maintain Systems of Control
 - Develop Procedures
 - Establishment of Performance-Based Management Compensation System

The financial planning process can be broken down into six major steps:

- (1) **Projection of Financial Statements:** Financial statements are profit & loss account, and balance sheet. Projection of financial statement is very much needed, since it helps to analyse the effects of the operating plan on projected profits and various financial plans. The same projects can also ensure the proper monitor of the implemented financial plan. Success of a firm depends on the ability to identify the deviations from the financial plan.
- (2) **Determination of Funds Needed:** Anticipation of funds needed to invest on fixed assets (Plant & Machinery and equipment) as well as current asset (inventories and receivables) for R & D programmes and for major promotional campaigns.
- (3) **Forecast the Availability of Funds:** The required funds may be generated from two sources, internal and external sources. This step involves estimation of funds to be generated internally, which automatically identifies the amount of funds to be raised from outside.
- (4) **Establish and Maintain System of Control:** Planning and control are the twins of management. Control system is necessary to see the proper and effective utilisation of funds within the firm. It helps the basic financial plan to be carried out properly.
- (5) **Develop Procedures:** Developing procedures ensure consistency of actions. Procedures should be developed for adjusting the basic plan, if the economic forecasts upon which, the plan was based, do not materialise. For example, if the economy turns out to be stronger than was forecasted, then the procedures will help. This step is really a “feedback loop” which triggers modifications in the financial plan.

- (6) **Establishment Performance-Based Management Compensation System:** It is very much needed, to reward the managers for doing what the stockholders want them to do i.e., maximization of share prices.

Objectives of the Financial Plan

A Financial plan has the following prime objectives:

- (i) **Ensure the availability of sufficient funds** to invest in feasible projects, thereby achieving company goals.
- (ii) **Balances of risk and costs** while raising the required funds there is a need to balance risk and costs to protect the investor.
- (iii) **Simplicity:** Simplicity in this context means that, the firm should issue few securities, since the issue of a variety of securities is complicated.
- (iv) **Flexibility:** Flexibility means that, the plan should be flexible enough, to adjust according to the changing conditions.
- (v) **Liquidity:** Liquidity means, the ability of an enterprise to honour the currently maturing obligations. Hence, financial plan should be able to provide funds not only when it is running under profits, but also in the periods of depression or abnormal business situation/phase.
- (vi) **Optimum Use:** The Financial plan should ensure sufficient funds only for genuine needs. Plan should not allow the firm to suffer shortage of cash or should have excess of funds than needed, which will be a waste. Put in simple terms, the funds should be raised according to the needs and should be utilized properly.
- (vii) **Economy:** The main objective of the financial manager is to raise funds at least cost, the same is the case with financial planning. The plan should help the firm to raise funds at minimum cost. It should not impose disproportionate burden on the firm, which means the plan should ensure optimum debt-equity mix.

Capitalisation

At the very outset, it must be noted, that the concept of capitalization is used only in the case of joint stock companies and not in the case of other forms of business undertaking like sole trading concerns and partnership firms. Again, in financial management, the term 'Capitalisation' is concerned only with the quantitative aspects and not with the qualitative aspects of business finance.

In financial management the term 'capitalisation' is used in two different senses, viz. (1) in a broad sense and (2) in a narrow sense. In a broad sense, the term 'capitalisation' is considered synonymous with financial planning. So, the term is taken to refer to the determination of the amount of capital to be raised, the securities through which the capital is to be raised and the relative proportions of the various types of securities to be issued, and also the administration of the capital.

In a narrow sense, the term 'capitalisation' is taken to mean the determination of only the quantity of finance required by a company.

Components of Capitalisation

The components of capitalisation are:

- (a) Par value of share capital i.e., paid-up value of both equity and preference share capital.

- (b) Reserves and surplus i.e., all types of reserves, capital reserves as well as revenue reserves and surplus.
- (c) Long-term borrowed funds i.e., debentures issued and other long-term borrowings.

Capitalisation vs Capital: The term 'capitalisation' confines itself to only long term sources of finance. But the term 'capital' includes all the sources of finance i.e., long-term.

The concept of capitalization is used only in the case of companies. But the concept of capital is used in the case of all forms of business undertakings.

Capitalisation vs Share Capital: The terms 'capitalisation' includes not only share capital but also reserves and surplus and long-term borrowings. But, the term 'share capital' includes only the share capital (i.e., equity as well as preference share capital).

Estimation of Capitalisation: There are two approaches, basis or theories for the determination of the amount of capitalization of a company. They are:

1. Cost approach or cost theory of capitalisation
2. Earnings approach or earning theory of capitalisation.

Cost Approach or Cost Theory of Capitalisation: Under the Cost Approach or Cost Theory of Capitalisation, the capitalization of a company is based on the cost of acquisition of fixed assets, the establishment of the company and the amount of regular working capital requirement. So, under this method, the amount of capitalisation or the value of a company is arrived at, by adding up the following items.

- (a) Costs of acquisition of fixed assets, such as land, buildings, plant and machinery, furniture and fixtures etc.
- (b) Cost of establishing the company, comprising the preliminary expenses, underwriting commission, expenses on the issue of shares etc.
- (c) The amount of regular working capital requirements.

For instance, if the acquisition of fixed assets would cost Rs. 5,00,000 the cost of establishing the company would amount to Rs. 50,000 and the regular working capital requirements of the company would amount to Rs. 1,00,000, then the amount of capitalization of the company would be taken as Rs. $(5,00,000+50,000+1,00,000) = 6,50,000$.

The Cost approach, no doubt provides a basis for the determination of the capitalisation of the new company. But it is not a good basis for the determination of capitalization for the following reasons.

- (a) The capitalization or the value of a company is based more on its earning capacity (i.e., on its productive or earning capital) rather on the total value of the assets held by it.
- (b) The earnings of a company may decline, when some of its assets remain idle and some assets become obsolete. But this will not be revealed, if capitalization is made on the basis of the cost of the assets.
- (c) The cost approach is not the right basis for the capitalization of a company having irregular earnings.

Earnings Approach or Earnings Theory of Capitalisation: Under the earnings approach or earnings theory of capitalization, the capitalization or the value of a company is determined on the basis of its earnings. According to this approach, the capitalization

or value of a company is equal to the value of its earnings. For instance, if the average annual earnings or profit of a company is Rs. 50,000 and the capitalization rate (i.e., the fair rate of return of the average rate of return in the industry) is 10% on the capital employed, then, the capitalization of the company will be:

$$\text{Average amount of profit of the company} \times \frac{100}{\text{Fair rate of return}}$$

$$\text{i.e. } 50,000 \times \frac{100}{10} = \text{Rs. } 5,00,000$$

The earnings approach provides a good basis for determining the capitalization of an existing company. However, this approach may not be quite suitable for determining the capitalization of a new company. This is because, estimation of the future average annual profits of a new company is not only difficult, but also highly risky, as the future is dependent on a number of considerations.

To sum up, the cost approach of capitalization is quite suited to a new company while the earnings approach of capitalization is quite satisfactory for an existing company.

Over-capitalisation

Meaning of Over: Capitalisation: A company is said to be over-capitalized, when its actual earnings or profits are not sufficient to pay dividend at proper rate to the shareholders. In short, when the actual capitalization of a company (i.e., the capitalization of a company arrived at, by adding up the par value or paid-up value of share capital, reserves and surplus, debentures and other long-term borrowings) is more than the proper capitalization (i.e. the capitalization determined on the basis of either the cost approach or the earnings approach).

The company is said to be over-capitalized. For instance, if the fair rate of return or the average rate of return in the industry is 10% on the investment or capital employed, the company earns a profit of Rs 75,000 and it has raised funds through the issue of shares and debentures and other long-term borrowings to the extent of Rs. 9,00,000, then the company is said to be over-capitalised. The company is over-capitalised, because the earning of the company is just.

$$\frac{75,000}{9,00,000} \times 100 = 8\frac{1}{3}\%, \text{ Which is less than the fair rate return in the industry.}$$

Viz., 10%

Symptoms of Over-Capitalisation

There are certain symptoms of over-Capitalisation. They are:

1. The actual capitalization of the company exceeds the Capitalisation warranted by its activity level and requirements.
2. The earnings or profits of the company are lower than the general expected return in the industry (i.e., the fair rate of return in the industry). In short, there is a fall in the earning capacity of the company.
3. There is a fall in the rate of dividend declared by the company over a long period. (It may be noted that fall in the dividend rate of a company in some of the years does not make the company over-capitalised. It is only when, there is fall in the rate of dividend of the company over a long period, that the company can be said to be over-capitalised).

4. There is a fall in the market value or market price of the shares of the company.

Over-Capitalisation vs. Excess Capital: Over-Capitalisation arises, when the existing capital of a company is not effectively or properly utilized, as indicated by the fall in the earning of the company. On the other hand, excess capital arises, when the company has raised capital in excess of its requirements.

It may be interesting to note that, sometimes, a company may be over-capitalised, but it may suffer from shortage of capital.

Causes of Over-Capitalisation: Over-Capitalisation is caused by a number of factors or causes. The important causes of over-capitalization are:

1. If a company is promoted by acquiring assets at inflated prices (i.e., at prices higher than their real values or worth), there arises over-capitalization as the booked values of the assets are higher than their real worth.
2. Acquisition of unproductive intangible assets like goodwill, patents etc., on a large scale, higher costs render a large portion of the capital of the company unproductive and will lead to over-capitalization.
3. Heavy preliminary and promotional expenses incurred by a company, will render a greater portion of the capital of the company unproductive and will contribute to over-capitalisation.
4. If a company is promoted during the boom period, it will have to pay higher prices for the acquisition of assets. The value of the assets may fall, when the recession sets in. The result is over-capitalisation.
5. When a company raises more capital through the issue of shares and debentures than what it can profitably use, a part of the capital of the company remains unutilised or under-utilised. This results in over-capitalisation.
6. If a company borrows large sums of money at a rate of interest higher than its rate of earning, there results a fall in the earnings of the company as well as over-capitalisation.
7. When a company does not make adequate provision for depreciation or postpones essential repairs to plant and machinery and equipments, the efficiency of plant and machinery and equipments is reduced. Consequently, the earnings of the company decline and this results in over-capitalisation.
8. If a company follows liberal dividends policy, the earnings of the company are dissipated in the form of dividends and adequate reserves are not created. In such a case, after a few years, the book values of the assets of the company tend to be higher than, their real values. Which means, there is over-capitalisation.
9. When there is excessive taxation by the Government, very little fund is left with the company. The meager funds left with the company may not be sufficient even to carry out essential repairs and renewals. As a result, the efficiency of the assets will decline. The decline in the efficiency of the assets will result in a fall in the earnings capacity of the company and over-capitalisation.

Consequences or Effects of Over-Capitalisation: Over-Capitalisation is disadvantageous to the company, the shareholders, the consumers and the society. The disadvantage or the adverse effects of over-capitalisation on the company are:

1. Over-capitalisation results in a fall in the earnings or profits of the company.
2. The fall in the earnings of the company will lead to reduction in the rate of dividend that could be declared by the company. The reduction in the rate of dividend of the company will lead to fall in the market values or market prices of

the shares of the company. The fall in the market prices of the company's shares will lead to loss of confidence of the investors in the company.

3. The loss of confidence of the investors in the company will lower the creditworthiness of the company and will make it very difficult for the company to raise new capital for expansion and modernization.
4. When there is over-capitalisation, the company may resort to window-dressing of accounts (i.e., manipulation of accounts) to show, higher profits and to declare, dividends. Declaration of dividends out of the fictitious profits, shown by the window-dressing of accounts, will result in payment of dividend, out of capital. Declaration of dividends out of capital will be detrimental to the company.
5. An over-capitalised company may be forced to adopt the scheme of re-organisation or if reconstruction has not helped the over-capitalised company to improve its situation, the over-capitalised company has to go into liquidation.
6. When the earnings of the company fall owing to over-capitalisation, the company may try to increase its earnings by raising the prices of its products. When the prices of the products are raised, the company may not be able to face the competition from the rival firms.

Adverse Effects of Over-Capitalisation on the Shareholders: The adverse effects of Over-Capitalisation on the shareholders are:

1. Over-capitalisation results in a fall in the rate of dividends to the shareholders.
2. Over-capitalisation will result in a fall in the market values or market prices of the shares held by the shareholders.
3. On account of the fall in the market values of the shares, resulting from over-capitalisation, the holdings of the shareholders (i.e. the shares held by the shareholders) will have lesser value as securities for raising loans.
4. The shareholders of an over-capitalised company may find it difficult to dispose of their shares. Even if they are able to dispose of their shares, they have to sell those shares at a loss.
5. The fall in the market values of the shares of a company, caused by over-capitalisation, will encourage speculation in such shares. Speculation in the shares of an over-capitalised company is not in the interests of the shareholders.
6. If a company facing Over-Capitalisation resorts to re-organisation of capital as a remedy, the shareholders will be the worst affected, as they have to agree to forego a major part of their share capital for writing –off the past losses of the company.

Adverse Effects of Over-Capitalisation on the Consumers: The adverse effects of over-capitalisation on the consumers are:

1. An over-capitalised company is forced to raise the prices of its products so as to increase its earnings. The rise in the prices of the products will be detrimental to the consumers.
2. An over-capitalised company may not be able to keep up the quality of its products. The fall in the quality of the products will be harmful to the consumers.
3. An over-capitalised company is unable to face competition and survive in the market. The result is, its liquidation. The consumers will be affected adversely by the stoppage of the production by the liquidated company.

Adverse Effects of Over-Capitalisation on the Society: The adverse effects of over-capitalisation on the society are :

1. An over-capitalised company may find it difficult to pay the wages of the workers on time. This will affect the morale of the workers and will lead to strained industrial relations.
2. If an over-capitalised company resorts to wage cuts to reduce its costs and to improve its earnings, there will be resentment amongst the workers. As a result, the industrial relations will be strained.
3. An over-capitalised company with a large amount of debenture issue may, on account of its lower earning-capacity, find it difficult to pay the fixed interest on its debentures. This will affect the interests of the debenture holders adversely.
4. An over-capitalised company may, on accounts of its lower earning capacity, find it difficult to repay the creditors and the debenture holders.
5. Over-Capitalisation will lead to misapplication and wastage of the resources of the society.
6. Over-capitalisation will lead to a fall in the market values of the shares of a company. The fall in the market values of the shares of an over-capitalised company may encourage speculation in the shares and affect the climate of investment adversely (i.e., will be detrimental to the interest of the society).
7. An over-capitalised company is unable to face competition and survive in the market. The result is its liquidation. The liquidation or closure of the over-capitalised company will affect the interests of the creditors and the labourers adversely.

Remedies or Corrective Steps for Over-Capitalisation

The real remedy for over-capitalisation lies in the scheme of re-organization or reconstruction of the over-capitalised company. The scheme of re-organisation or reconstruction helps the over-capitalised company to write off the past losses, to bring down the assets to their real values by providing the necessary depreciation and to undertake repairs and renewals and additions to its plant and machinery, to improve the earnings capacity of the assets and thereby the earnings or profits of the company.

The scheme of re-organization or reconstruction can take the following forms:

- (a) The shareholders may be asked to forego a part of their share capital. The share capital of the shareholders can be reduced in any of the following two ways:
 - (i) The par value or the paid-up of the shares may be reduced. For instance, if the share capital of the over-capitalised company consists of 10,000 shares of Rs. 100 each, fully paid, it (i.e., the share capital) can be reduced to 10,000 shares of Rs. 50 each, fully paid.
 - (ii) The number of shares may be reduced. For instance, if the share capital of an over-capitalised company consists of 10,000 shares of Rs. 100 each, fully paid it (i.e., the share capital) can be reduced to 5,000 shares of Rs. 100 each, fully paid.
- (b) Even the debenture holders and the creditors may be induced to forego a reasonable amount of their claims against the over-capitalised company.
- (c) High dividend bearing preference shares may be replaced by low dividend bearing preference shares. This will help the over-capitalised company to have more

profits available for dividend to equity shareholders or to have more retained earnings.

- (d) High interest bearing debentures may be replaced by low interest bearing debentures, if necessary, by offering some inducement to the debenture holders i.e., by offering some premium on the redemption of the old debentures.
- (e) Sub-division of the shares of the over-capitalised company may be thought of. This step will increase the marketability of the company's shares and thereby, will increase the market value of the shares of the company.
- (f) If funds are available, redemption of some debentures and repayment of some debts may be thought of.

Besides the various schemes of re-organisation or reconstruction enumerated above, efforts should be made by the over-capitalised company to reduce its cost of operation and to improve its earnings or profits.

Under-Capitalisation

Meaning of Under-Capitalisation: Under-Capitalisation is just the reverse of over-capitalisation. Under-Capitalisation refers to a situation, where the actual capitalization of a company is much less than its proper capitalization (i.e., the capitalization warranted by its earnings). For instance, if the general rate of return or fair rate of return on the investment or capital employed in the industry is 10%, the average annual earnings or profits of a company are Rs. 60,000 and the actual capitalization of the company is Rs. 5,00,000, the company is said to be under-capitalised. The company is under-capitalised, because its actual capitalisation viz., Rs. 5,00,000 is much less than its proper or fair capitalization viz.,

$$\text{Rs. (Average annual profits of the company)} \times \frac{100}{\text{Fair rate of return}} = 5,00,000$$

$$\text{i.e. } 60,000 \times \frac{100}{10} = 6,00,000$$

In other words, a company is said to be under-capitalised, when its actual rate of earnings is much higher than the general rate or fair rate of earnings in the industry. For instance, if a company is earning a return of 20% on investment or capital employed, as compared to 12% earned by similar companies engaged in the same industry (i.e., the general or fair rate of return of the industry), the company is said to be under-capitalised.

Symptoms of Under-Capitalisation: The various symptoms of Under-Capitalisation are:

1. The actual capitalization of the company is much less than its fair or proper capitalization (i.e., capitalization warranted by its earnings).
2. The actual rate of earnings of the company is much higher than the general rate or fair of earnings in the industry.
3. The dividend rate of the company will be much higher than, that of similar companies in the industry over a long time.
4. The market value or market price of the shares of the company will be much higher than the market values of the shares of similar companies in the industry.

Under-Capitalisation vs Inadequate Capital

Under-Capitalisation refers to a situation, where the existing capital of a company is very effectively used and as a result, its actual capitalisation is much less than its proper or fair capitalization warranted by its earnings. On the other hand, inadequate capital refers to a situation, where a company does not have sufficient funds at its disposal to carry out its activities.

Causes of Under-Capitalisation

The following are the causes of Under-Capitalisation.

1. Under-estimation of the initial earnings of a company is one of the causes of Under-Capitalisation.
2. If a company is set up during the period of recession, its assets would be acquired at low prices. In such a case, the company becomes Under-Capitalised after the recession is over.
3. Maintenance of high standards of efficiency in the working of a company will contribute to higher earnings and Under-Capitalisation.
4. Creation of adequate reserves for depreciation and renewals, conservative dividend policy followed and large-scale ploughing back of profits result in the availability of large funds for expansion and modernization. This will contribute to higher earnings and Under-Capitalisation.

Consequences or Effects of Under-Capitalisation

Under-Capitalisation has certain consequences or effects. They are:

1. Under-Capitalisation may encourage competition from new companies in the sense, that the high profits earned by an Under-Capitalised company may encourage new companies to enter the field. As a result, the profits of the company may decline.
2. Under-Capitalisation may encourage the management to manipulate the share prices.
3. Higher profits, arising from Under-Capitalisation may lead to more government control and higher taxation.
4. Higher profits, gained due to Under-Capitalisation, may give an opportunity to the workers to demand higher wages and better welfare facilities.
5. The higher profits earned by an Under-Capitalised company may make the consumers develop the feeling that they are being exploited by the company.

Remedies for Under-Capitalisation

The situation of Under-Capitalisation can be set right through a number of corrective steps or remedies. They are:

1. Issue of bonus shares, by capitalizing accumulated earnings, is the most effective remedy for Under-Capitalisation, (i.e., issue of bonus shares reduces the average rate of earning as well as the rate of dividend of the company).
2. Raising the par value of the company's shares is an important remedy for Under-Capitalisation. The par value of the company's assets and giving the shareholders new shares of higher denomination, out of the profits arising from the upward revision of the company's assets, in place of the existing shares.

3. Splitting of the shares of the company is another remedy for Under-Capitalisation. The splitting of the shares of the company results in an increase in the number of shares and a fall in the rate of earning per share. (It may be noted that the splitting of the shares of the company will not lower the average earning rate of the company. It will only lower the rate of earning per share).

Over-Capitalisation Vs. Under-Capitalisation

Both, Over-Capitalisation and Under-Capitalisation are not based on the working results of a company just for a year or two. They represent chronic conditions of the business.

Both, Over-Capitalisation and Under-Capitalisation are post-mortem diagnosis of the disease. That is, they can be observed only when a company has worked for some years. Both are deviations from the ideal pattern of capitalization.

Both, Over-Capitalisation and Under-Capitalisation are detrimental to the society. Over-Capitalisation involves a strain on the financial resources of the company, an evil, for the shareholders and a big danger for the consumers and moreover, it endangers the economic prosperity of the country. Similarly, Under-Capitalisation may accentuate unhealthy competition from business rivals and sow seeds of dissension, cause discontentment among the employees and thus, may lead to exploitation of consumers.

Though both, Over-Capitalisation and Under-Capitalisation are bad, Over-Capitalisation is considered more dangerous than Under-Capitalisation for the following reasons:

1. Over-Capitalisation is a more common phenomenon, whereas Under-Capitalisation is a rare phenomenon.
2. Under-Capitalisation is not an economic problem, but a problem of adjusting the capital structure.
3. Under-Capitalisation is indicative of effective utilization of resources, sound financial position and good management.
4. Over-Capitalisation has more serious effect on the company, the shareholders, the consumers and the society than Under-Capitalisation.
5. Under-Capitalisation can be remedied more easily than Over-Capitalisation.
6. The remedial process of Over-Capitalisation is more painful and has to be carried out at a higher cost to the shareholders than Under-Capitalisation.

It is true that, of the two situations, Over-Capitalisation is more dangerous than Under-Capitalisation or Under-Capitalisation is a lesser evil than Over-Capitalisation. But both the situations should be avoided.

Few years ago, a corporation could run its business without planning for different aspects in technological advancement, that were not directly related to its products, or services. But those times are gone forever. Now, this period of liberalisation, privatisation and globalisation (LPG), business environment, with even expanding opportunities and changing market conditions, strategic planning (long-range) has greater importance for the growth as well as for its survival. To quote Oscar Hauptmann (Harvard Professor) today's business firms are "Aiming at a moving target", by long-range planning. The cost of keeping up with change is quite high no matter what procedure is followed and careful environmental scanning and long-range planning is becoming more critical every day.

The (long-range) strategic plan of a corporation consists, its corporate purpose, corporate scope; corporate objectives; and corporate strategies. The corporate purpose defines the mission of the company. Put it simple, Coca-Cola company has expressed its purpose as “we exist to create value for our shareholders/owners”. The corporate scope describes a company’s line of business and geographic area of operations. For example, Coca-Cola’s mission statement indicates that the company limits its productions to soft drinks, but on a global geographic scale. Nucor Corporation, a firm listed in the New York Stock Exchange, has described its scope as “we are a manufacturing company producing primarily steel products”. The corporate purpose and scope states the general philosophy of the business but it does not provide its manager with operational objectives. The corporate objectives spell out the specific goals set by the company, which guide the management. The objectives may be in the qualitative or quantitative form. Examples of qualitative objective is the maintenance of distribution system as the worlds’ most effective and pervasive method to satisfy customers. On the other hand quantitative objectives can be fixed in terms of quantity. For example, accomplish 60 per cent market share, 30 per cent return on equity (ROE), Rs. 50 crore economic value added (EVA). The corporate strategies are the instruments for achieving corporate objective. Put it simple, corporate strategies are broad policies rather than detailed plans. For example, one airline may have a strategy of offering no-frills service between a limited numbers of cities, while another’s strategy may be to offer “safe rooms in the sky”. Strategies should be both, achievable and compatible with the company’s purpose, scope and objectives.

- (i) All the functional managers should formulate a strategic plan. Financial manager has to formulate financial plan. Planning is one of the principles of management, so financial management planning means, deciding in advance, what is to be done. The finance function is primarily concerned with the economic procurement and efficient use of funds, which is possible only with the help of a well-prepared financial plan. Financial plan is a systematic approach to attain economic procurement and utilisation of funds. Preparations for this financial plan is the responsibility of the promoter or the consultant (if promoter doesn’t have knowledge to prepare the plan) and after promotion, it is the financial manager’s responsibility.

Summary

Financial Planning is deciding in advance, the course or line of action for the future with respect to the financial management of a concern. Financial plan is a statement estimating the amount of capital required, determination of finance mix and formulation of policies for effective administration of the financial plan.

A company is said to be over- capitalized, when its actual earnings or profits are not sufficient to pay dividend at proper rate to the shareholders. In short, when the actual capitalization of a company (i.e., the capitalization of a company arrived at, by adding up the par value or paid-up value of share capital, reserves and surplus, debentures and other long-term borrowings) is more than the proper capitalisation (i.e., the capitalisation determined on the basis of either the cost approach or the earnings approach).

Under-Capitalisation is just the reverse of over-capitalisation. Under-Capitalisation refers to a situation, where the actual capitalisation of a company is much less than its proper capitalisation (i.e., the capitalisation warranted by its earnings).

Test Yourself

Conceptual Type

- (1) What is financial planning?
- (2) List out the elements of a corporate financial plan.
- (3) List out the objectives of a financial plan.
- (4) What do you mean by flexibility of financial plan?
- (5) What do you mean by strategic financial plan?
- (6) What is operating financial plan?

Analytical Type

1. What is financial planning?
2. Explain the theories of Capitalisation.
3. State the steps involved in financial planning.
4. What are the causes of Over-Capitalisation?
5. What are the effects of Under-Capitalisation?
6. What are the benefits of financial planning?
7. Briefly explain the objectives of financial planning.

C H A P T E R

3

CAPITAL STRUCTURE

LEARNING OBJECTIVES

1. Say what is capital structure.
2. Know the optimum capital structure.
3. Discuss number of factors that determine a firm's capital structure.
4. Know the meaning and types of leverages in business.
5. Calculate financial leverage and its impact on EPS.

Meaning of Capital Structure

Capital structure is that part of financial structure, which represents long-term sources. The term capital structure is generally defined to include only long-term debt and total stockholder investment. The term capital structure refers to the mix of long-term sources of funds, such as equity shares capital, reserves and surpluses, debenture, long-term debt from outside sources and preference share capital. To quote Bogen, "Capital structure may consists of a single class of stock, or it may be complicated by several issues of bonds and preferred stock, the characteristics of which may vary considerably". In other words, capital structure refers to the composition of capitalisation, i.e., to the proportion between debt and equity that make up capitalisation. Capital structure indicated by the following equation.

Capital Structure = Long-term Debt + Preferred Stock + Net worth

or

Capital Structure = Total Assets - Current Liabilities

Thus, the capital structure of a firm consists of the shareholder's funds and debt. The inherent financial stability of an enterprise and risk of insolvency to which it is exposed, are primarily dependent on the source of its funds as well as the type of assets it holds and relative magnitude of such asset categories.

Features of an Appropriate Capital Structure

Construction of optimum capital structure is very important for a firm, since the firm's value is depending on the capital structure. Hence, financial manager or the concerned person should develop an appropriate capital structure, which is helpful to maximise shareholders wealth. This can be done only when all those factors, which are relevant to the company's capital structure decision, are properly analysed and balanced. Capital structure should be planned generally keeping in view the interest of ordinary shareholders because they are the ultimate owners of a business enterprise and have the right to select the directors. However, the interest of the other groups, such as, employees, customers, creditors, society and government should also receive reasonable consideration. There is no tailor-made capital structure for all business

enterprises. There are certain common characteristics that categorise industries. The study of capital structure involves a study of the debt-equity mix with the object of lowering the overall cost of capital and with a view to maximizing the market value of the firm's securities.

An appropriate capital structure should have the following features(11):

- (a) **Profitability / Return:** As we have seen in the above discussion that the appropriate capital structure is one, which is most advantageous. With the constraints, maximum use of leverage at a minimum cost should be made. In other words, it should generate maximum returns to the owners without adding additional cost.
- (b) **Solvency / Risk:** The use of more or excessive debt threatens the solvency of the firm. Debt should be used till the point where debt does not add significant risk, otherwise use of debt should be avoided.
- (c) **Flexibility:** Flexible capital structure means it should allow the existing capital structure to change according the changing conditions without increasing cost. It should also be possible for the firm to provide funds whenever needed to finance its possible activities. Firm should also repay the funds in not required.
- (d) **Conservation / Capacity:** capital should be conservative in the sense that the debt capacity of a firm should not be exceeded. In other words, the capital structure should be determined within the debt capacity of the firm and not beyond firm's capacity. The debt capacity of a firm depends on its ability to generate future cash inflows. It should have enough cash to pay its fixed charges and principal sum.
- (e) **Control:** Use of more equity may lead to loose the control on company. The owners of competitors from (closely held firms) are very particular concerned about the dilution of control. Hence, construction of capital structure should not involve the risk of loss of control on the firm.

The above stated are the general features of an appropriate capital structure. There may be particular features for a firm, which may be additional. Further, the weight given to each of these features will differ from firm to firm.

Optimum Capital Structure

In taking a financing decision, the financial manager's job is to come out with an optimum capital structure. Optimum capital structure is that capital structure at that level of debt - equity proportion, where the market value per share is maximum and the cost of capital is minimum. The same to quote, Ezra, "optimum leverage is that mix of debt and equity which will maximise the market value of the company and minimise the company's overall cost of capital." The study of capital structure involves a discussion of the nature of the industry and specific circumstances of the business enterprise in question, besides the general theory of finance. It is difficult to define an ideal capital structure. A company's capital structure is a function of the nature of its business and how risky the particular business is, and therefore, a matter of business judgment. As observed by Van Horne, "In the optimum capital structure, the marginal real cost of each available method of financing is the same". As Guthmann and Dougall rightly remark, from a strictly financial point of view, the optimum capital structure is achieved by balancing the financing, so as to achieve the lowest average cost of long-term funds. This in turn produces that maximum market value for the total securities issued against a given amount of corporate income. The optimum capital structure

keeps balance between share capital and debt capital. The primary reason for the employment of debt by an enterprise can be stated as upto a certain point, debt is from the point of view of the ownership, a less expensive source of funds than equity capital. Hence, optimum capital structure keeps a balance between debt capital and equity capital.

Determinants of Capital Structure

Capital structure may be determined at the time of promotion of the firm or during the latter stages. But determining optimal capital structure at the time of promotion is very important and it should be designed very carefully. Management of any firm should set a target capital structure and the subsequent financing decisions should be made with a view to achieve the target capital structure. Construction of capital structure, is difficult, since it involves a complex trade off among several factors or considerations. Keeping the objective of wealth maximisation in mind, capital structure has to be determined. The following factors affect optimal capital structure.

- 1) **Tax benefit of Debt:** Debt is the cheapest source of long-term finance, when compared with other source equity, because the interest on debt finance is a tax-deductible expense. Hence, debt can be accepted as a tax-sheltered source of finance, which helps in shareholder ' wealth maximisation.
- 2) **Flexibility:** Flexibility is one of the most important and serious factors, which is considered in determining capital structure. Flexibility is the firm's ability to adopt its capital structure to the needs of changing conditions. Changing conditions may be, need of more funds for investments or having substantial funds that are already raised. Whenever there is a need to have more funds to finance profitable investments, the firm should be able to rise without delay and less cost. On the other hand, whenever there are surplus funds, the firm should be able to repay them. The above two conditions are fulfilled only when there is a flexible capital structure. In other words, the financial plan of a firm should be able to change according to their operating strategy and needs. The flexibility of capital structure depends on the flexibility in fixed charges, the covenants and debt capacity of the firm.
- 3) **Control:** The equity shareholder have voting right to elect the directors of the company. Raising funds by way of issue of new equity shares to the public may lead to loss of control. If the management wants to have total control on the firm then, it may require to raise funds through non-voting right instrument that is debt source of finance. But the firm needs to pay interest compulsory on debt finance. Debt finance is preferred only when the firm's debt service capacity is good. Otherwise the creditors may seize the assets of the firm to satisfy their claims (interest). In this situation management would lose all control. It might be better to sacrifice a measure of control by some additional equity finance rather than run the risk of loosing all control to creditors by employing too much debt. (12) Widely held companies can raise funds by way of issue of equity shares, since the shares are widely scattered and majority of shareholder are interested in the return. At the same time if they are not satisfied with the firm, they will switch over to some other firm, where they expect higher return.
- 4) **Industry Leverage Ratios:** The Industry standards provide benchmark. Firm can use industry leverage ratio as standard for construction of capital structure. Because industry standard may be appropriate to the firm. It does not mean that all firms in the industry are having optimum capital structure. Put it simple, they may be using more leverage or less leverage, but it suggests that whether

the firm is out of line or not, if it is it should know the reasons why and be satisfied with the reasons.

- 5) **Seasonal Variations:** Use of more or less financial leverage depends on the seasonal variations of the business. Low degree of financial leverage (less debt) is preferable when a firm's business is seasonal in nature. Example, Businesses such as production and sale of umbrellas, fans, air coolers., industries requires less debt capital in their capital structure. Use of more debt may make the firm unable to pay interest obligations in lean years, which would lead to financial distress. On the other hand, industries involved in business, where there is no seasonality, like consumer non-durable products (food items, soaps, etc.) or with items in habitual use (cigarette) or all those products, which have an inelastic demand are not likely to be subject to wide fluctuations in sales can use more debt in their capital structure, since they are able to earn regular profit.
- 6) **Degree of Competition:** Competition in the industry also determines the capital structure. When, there is no or less competition then, the firms can use less equity or more debt in their capital structure, since they can sell more products at higher prices. Example, public utility corporations like gas, electricity, etc. On the other hand, competitive firms have to use more equity in their capital structure, because of competition; they may not be able to sell more units and cannot earn more profits. Example, garment industry, home appliances industry.
- 7) **Industry Life Cycle:** The Industry life cycle consists of introduction stage; growth stage; maturity stage and declining stage. The industry in infancy should use less debt capital or more equity capital in capital structure, since the profit earning capacity is less due to less sales where as when a firm is in its growing stage (fast) and having more profits, it can go for more debt or less equity that helps to maximise shareholder wealth.
- 8) **Agency Costs:** Agency costs arises when there is a conflict of interest among owners, debenture holders and the management. Conflict may arise due to the transferring of wealth to debt holders in their favour. The agency problem is handled through monitoring and restrictive covenants, which involve costs that are called agency costs. The financing strategy of a firm should seek to minimise the agency costs, by way of employing an external agent who specialises in low-cost monitoring. Management should use debt finance to the extent that it maximises the wealth of shareholders, not beyond that.
- 9) **Company Characteristics:** Characteristics like size and credit standing among other companies (within or outside industry). Small firm's ability to raise funds from outside is limited when compared to large firms. Small firms have to depend on owners' funds for financing activities. In other words, investors perceive that investment in small firms is more risky than the large firms. On the other hand, large firms are forced to make use of different sources of funds, because no single source is sufficient to their needs.

When it comes to the credit rating characteristics a firm enjoying high credit rating may get funds easily from the capital market, as compared to other firms, which are having low credit rating. Because investors and creditors prefer to invest and grant loans to high credit rating firms, since the risk is less.

- 10) **Timing of Public Issue:** Timing of public offer is also one of the most important factors considered while planning the capital structure. Public offering should be made at a time when, that state of the economy as well as capital market is ideal to provide the funds. For example during 2003 to 2004 period, many firms like Vijaya Bank, IOB, Union Bank, TCS, IOC, NTPC come up with IPO due to

ideal capital market and the economy. Prices as well as yields on securities depend on the money policy pursued by the government. Scarcity of debt money and equity funds leads to high interest rates and low price earnings (P/E) ratios. Therefore, company has to decide whether to finance infancy stage with equity funds and latter stages (except declining) with debt funds or vice versa.

- 11) **Requirements of Investors:** Before going to issue a particular instrument to the public or investors to raise funds, there is a need to know the investors requirements. Investors may be institutional investors. (LIC, GIC, UTI) as well as individual investors. Some investors are ready to take risk (bold investors.), who prefer capital gains and control and hence, equity shares are suitable to them. On the other hand, investors. (cautious), who are interested in the safety of their investment and stable returns, prefer to invest in debentures, since satisfying their needs and preference share are more suitable to the investors. (less cautious), who prefers stable returns and share in profits.
- 12) **Period of Finance:** Period of finance also plays a crucial role in determining the capital structure. A firm can issue redeemable debentures or preference shares, when the finance is required for a limited period. For example, for 5 years, firm can issue 5 years redeemable debentures or preference shares. But equity share capital is the best source when the firm needs finance for unlimited period (unknown).
- 13) **Purpose of Finance:** Debt source of finance is suitable when a firm is planning to invest in productive (avenues) purpose. For example, investment on machinery, where as, if the firm is planning to raise funds for non-productive purpose, it can raise funds from equity source for example social responsibility or general development on a permanent basis.
- 14) **Legal Requirements:** There are some guidelines on shares and debentures issued by the government that are very important for the construction of the capital structure. For example, the controller of capital issues, now SEBI grants to consent for capital issue when, (a) debt equity ratio does not exceed 2 : 1 (higher ratio may be allowed for capital intensive projects), (b) the ratio of preference capital to equity capital does not exceed 1 : 3 and (c) promoters hold at least 2.5 per cent of the equity capital.

Leverages

As we have seen in the above discussion, that a firm can raise its required finance either equity or debt or both the sources. While constructing capital structure, a firm can use fixed cost bearing securities for maximisation of shareholder' wealth. Leverage has been defined as, the action of a lever and mathematical advantage gained by it. In other words, leverage allows accomplishing certain things that are otherwise not possible. The concept is valid in business also. From the financial management point of view, the term leverage is commonly used to describe the firm's ability to use fixed cost assets or sources of funds to magnify the returns to its owners. According to James Home, leverage is, "the employment of an asset or sources of funds for which the firm has to pay a fixed cost or fixed return." Here fixed cost (operating cost) or fixed returns (financial cost) remains constant irrespective of the level of output.

Types of Leverages

There are two types of leverages, such as

- i) Operating leverage
- ii) Financial leverage

Now let us discuss about types of leverages.

Operating Leverage: Operating leverage is present any time, a firm has operating costs regardless of the level of production. These fixed costs do not vary with sales. They must be paid regardless of the amount of revenue available. Hence, operating leverage may be defined as the firm's ability to use operating costs to magnify the effects of changes in sales on its earnings before interest and taxes. Operating leverage is associated with investment (assets acquisition) activities. Hence, operating leverage results from the present fixed operating expenses with in firm's income stream. The operating costs are categorised into three: One - fixed costs, which do not vary with the level of production, they must be paid regardless of the amount of revenue available. Example, depreciation plant and machinery, buildings, insurance, etc. Second - variable costs that varies directly with the level of production. Example, raw materials, direct labour costs, etc. Third - Semi-variable costs, which partly vary and is partly fixed.

The degree of operating leverage may be defined as the change in the percentage of operating income (EBIT), for the change in percentage of sales revenue. The degree of operating leverage at any level of output is arrived at by dividing the percentage change in EBIT with percentage change in sales.

That is

$$\text{Degree of Operating Leverage} = \frac{\text{Percentage change in EBIT}}{\text{Percentage change in sales}}$$

or

$$\text{DOL} = \frac{\text{Contribution}}{\text{Operating Profit(EBIT)}}$$

Operating leverage may be favourable or unfavourable. High degree of operating leverage indicates high degree of risk. It is good, when revenues are rising and bad when they are falling. Operating risk (business risk) is the risk of the firm not being able to cover its fixed operating costs. The larger the magnitude, the larger is the volume of sales required to cover all fixed costs.

Before solving the problems, there is a need to know the calculation of earnings available to equity shareholder from the sales revenue. The following table clearly gives a picture about the calculation of earnings available to ordinary shareholder.

Particulars	Amount (Rs.)
Sales Revenue (units sold x selling price pu)	X X X X
Less: Variable cost	X X X
[Units produced x cost per unit]	
Contribution	X X X X
Less: Fixed cost	X X X
Earnings Before Interest & Taxes (EBIT)	X X X X
Less: Interest	X X X
Earnings Before Tax (EBT)	X X X X
Less: Tax	X X X
Earnings After Taxes (EAT)	X X X X
Less: Preference Dividend	X X X
Earnings available to Equity shareholder (EAES)	X X X X

Illustration 1: XYZ Ltd., produced and sold 1,00,000 units of a product at the rate of Rs. 100. For production of 1,00,000 units, it has spend a variable cost of Rs. 6,00,000 at the rate of Rs. 6 per unit and a fixed cost of Rs. 2,50,000. The firm has paid interest Rs. 50,000 at the rate of 5 per cent and Rs. 1,00,000 debt. Calculate operating leverage.

Solution:

$$DOL = \frac{\text{Contribution}}{\text{EBIT or Operating profit (EBIT)}}$$

Particulars	Amount (Rs.)
Sales Revenue (1,00,000 x Rs. 100)	10,00,000
Less: Variable cost (1,00,000 x Rs. 6)	6,00,000
Contribution	4,00,000
Less: Fixed cost	2,50,000
EBIT	1,50,000

$$\text{Operating leverage} = \frac{4,00,000}{1,50,000} = 2.66$$

Illustration 2: From the following particulars of ABC Ltd., calculate operating leverage.

Particulars	Amount (Rs.)
Sales Revenue (1,00,000 x Rs. 100)	10,00,000
Less: Variable cost (1,00,000 x Rs. 6)	6,00,000
Contribution	4,00,000
Less: Fixed cost	2,50,000
EBIT	1,50,000

Solution:

Calculation of EBIT on a percentage change

Particulars.	2002	2004	% change
Sales Revenue	10,00,000	12,50,000	25
Less : Variable cost	6,00,000	7,50,000	25
CONTRIBUTION	4,00,000	5,00,000	25
Less : Fixed cost	2,50,000	2,50,000	
EBIT	1,50,000	2,50,000	66.67

$$\text{Percentage change} = \frac{\text{Increase in revenue / profit / amount}}{\text{Base or previous year revenue / profit}}$$

$$\text{Degree of operating leverage (DOL)} = \frac{\text{Percentage change in EBIT}}{\text{Percentage change in sales}}$$

$$DOL = \frac{66.67}{25} = 2.667$$

Operating leverage 2.667 indicates that when, there is 25 per cent change in sales, the change in EBIT is 2.667 times.

Application of Operating Leverage

- It is helpful to know how operating profit (EBIT) would change with a given change in units produced.
- It will be helpful in measuring business risk.

Financial Leverage: A firm may need long-term funds for long-term activities like expansion, diversification, modernization etc. , the financial managers job is to compose funds. The required funds may be raised by two sources: equity and debt. Use of various sources to compose capital is known as financial structure. The use of fixed charges, sources of funds such as debt and preference share capital along with the equity share capital in capital structure is described as financial leverage. According to Lawrence, financial leverage is the ability of the firm to use fixed financial charges to magnify the effects of changes in EBIT on the firm's earnings per share. In other words, financial leverage may be defined as the payment of fixed rate of interest for the use of fixed interest bearing securities, to magnify the rate of return as equity shares. It is also known as "trading as equity". Hence, financial leverage results from the presence of fixed financial charges in the income statement. Financial leverage associates with financing activities. (17) The fixed charges do not vary with firm's EBIT. They must be paid regardless of the amount of EBIT available to the firm. It indicates the effect on EBIT created by the use of fixed charge securities in the capital structure of a firm. Financial leverage is computed by the following formula:

$$\text{Financial (Leverage)} = \frac{\text{EBIT or operating profit}}{\text{EBT or taxable income}}$$

or

$$\text{Degree of financial leverage (DFL)} = \frac{\text{Percentage change in EPS}}{\text{Percentage change in EBIT}}$$

A Financial leverage may be positive or negative. Favourable leverage occurs when the firm earns more on the assets purchased with the funds, than the fixed cost of their use and vice versa. High degree of financial leverage leads to high financial risk. The financial risk refers to the risk of the firm not being able to cover its fixed financial costs. Hence, the financial manager should take into consideration, the level of EBIT and fixed charges while preparing the firm's financial plan.

Illustration 3: A firm has sales of 1,00,000 units at Rs. 100 pu. Variable cost of the produced products is 60 per cent of the total sales revenue. Fixed cost is Rs. 2,00,000. The firm has used a debt of Rs. 5,00,000 at 20 per cent interest. Calculate the operating leverage and financial leverage.

Solution:

Calculation of EBT

Particulars.	Amount Rs.
Sales Revenue (1,00,000 units x Rs. 100 PV)	10,00,000
Less: Variable cost (10,00,000 x 0.60)	6,00,000
Contribution	4,00,000
Less: Fixed cost	2,00,000
EBIT	2,00,000
Less: Interest (5,00,000 x 20 /100)	1,00,000
Earning before tax (EBT)	1,00,000

Operating leverage = contribution of EBIT = $4,00,000 / 2,00,000 = 2$

Financial leverage = $2,00,000 / 1,00,000 = 2$

Illustration 4: From the following particulars of PQR Company, calculate operating and financial leverages. The company's current sales revenue is Rs. 15,00,000 lakh and sales are expected to increase by 25 per cent. Rs. 9,00,000 incurred on variable expenses for generating Rs. 15 lakh sales revenue. The fixed cost is Rs. 2,50,000. The company has Rs. 20 lakh equity shares capital and Rs. 20 lakh, 10 per cent debt capital. Calculate operating leverage and financial leverage. Rs. 10 equity and 50 per cent tax rate.

Solution:

Calculation of EPS

Particulars.	Financial Plan				
	Alternative 'A'		Alternative 'B'		
	Rs.		Rs.		
EBIT	1,50,000		1,50,000		
Less : Interest	---		50,000		
EBT / or PBT	1,50,000		1,00,000		
Less : Tax at 50%	75,000		50,000		
EAT	75,000		50,000		
Less : Preference dividend	---		---		
Earnings available to share holders.	75,000		50,000		
No. of shares (existing + new)	(1,00,000 + 50,000)		(1,00,000 + 0)		
EPS =	Earnings available to share holders.	75,000	= 0.5	50,000	= 0.5
	No. of equity shares	1,50,000		1,00,000	

Working Notes

1) Variable cost in percentage of Sales:

$$VC\% = \frac{\text{Total variable cost}}{\text{Sales}} \times 100 = \frac{9,00,000}{15,00,000} \times 100 = 60 \text{ per cent}$$

$$\text{Increase in variable cost} = 18,75,000 \times 60 / 100 = 2,25,000$$

$$\text{Total variable cost} = 9,00,000 + 2,25,000 = \text{Rs. } 11,25,000$$

2) Percentage change in EBIT:

$$\frac{\text{Increase or decrease in EBIT}}{\text{Base EBIT}} \times 100 = \frac{1,50,000}{3,50,000} \times 100 = 42.86 \text{ percent}$$

3) Interest on Debt:

$$20,00,000 \times \frac{20}{100} = \text{Rs. } 4,00,000$$

4) EPS

$$EPS = \frac{\text{Earnings available to shareholders}}{\text{No. of ordinary shares}}$$

$$\text{Current position} = 7500 \div 2,00,000 = 0.375$$

$$\text{Expected change} = 1,50,000 \div 2,00,000 = 0.75$$

$$\ast \text{ Operating leverage} = \frac{\text{Contribution}}{\text{EBIT}} \text{ or } \frac{\% \text{ change in EBIT}}{\% \text{ change in Sales}}$$

$$= \frac{6,00,000}{3,50,000} \text{ or } \frac{42.86}{25} = 1.714$$

$$\ast \text{ Financial leverage} = \frac{\text{EBIT}}{\text{EBT}} \text{ or } \frac{\% \text{ change in EPS}}{\% \text{ change in Sales}}$$

$$= \frac{3,50,000}{1,50,000} \text{ or } \frac{100}{42.86} = 2.333$$

Application of Financial Leverage

- It is helpful to know, how EPS would change with a change in operating profit (EBIT).
- It will be helpful for measuring the financial risk.

Summary

Organisation requires funds to run and maintain the business. The required funds may be raised from short-term sources or long-term sources or a combination of both the sources of funds, so as to equip itself with an appropriate combination of fixed assets and current assets. Generally, capital is raised from two prime sources (a) equity and (b) debt. What should be the proportion of equity and debt in the capital structure of a company?

Capital structure refers to the mix of long-term sources of funds, such as equity shares capital, reserves and surpluses, debenture, long-term debt from outside sources, and preference share capital.

Capital structure is indicated by the equation: Capital structure = long-term debt + preferred stock + net worth or Capital structure = total assets - current liabilities.

In a financing decisions the financial manager's job is to come out with an optimum capital structure, which maximizes market value per share by minimizing cost of capita. An appropriate capital structure should take into consideration profitability, solvency, flexibility of capital structure, firm's debt capacity, and control.

Financial leverage (FL) is the ability of the firm to use fixed financial charges to magnify the effects of changes in EBIT on the firm's earnings per share. It is also known as "trading as equity". Symbolically (DFL): Percentage change in EPS ÷ Percentage change in EBIT (or) EBIT ÷ EBT pertaining profit (EBIT). FL may be positive or negative favourable leverage occurs when the firm earns more on the assets purchased with the funds, than the fixed cost of their use and vice versa. High DFL leads to high financial risk. Financial leverage is helpful to know how EPS would change with a change in operating profit (EBIT), and for measuring financial risk.

Test Yourself

1. Define capital structure.
2. What is optimum capital structure?

3. Define leverage.
4. What do you mean by financial leverage?
5. Distinguish between capital structure and financial structure.
6. What do you mean by Agency cost?
7. What do you mean by flexibility in capital structure?
8. What is operating leverage? How does it help to maximize, revenue of a firm?
9. Distinguish between operating and financial leverage.
10. What basic principles will you advocate in the matter of deciding on a proper constitution of capital structure for a firm?

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CAPITAL BUDGETING**LEARNING OBJECTIVES**

1. Define capital budgeting.
2. Explain capital budgeting process.
3. Discuss the techniques of capital budgeting with their merits and limitations.
4. Compare and contrast NPV with IRR.
5. Understand about Discounted & non discounted Cash Flow
6. Learn more about NPV, IRR and PI Methods

Meaning and Definition

Capital budgeting refers to planning the deployment of available capital for the purpose of maximizing the long-term profitability of the firm. It is the firm's decision to invest its current funds most efficiently in long-term activities in anticipation of flow of future benefits over a series of years.

In other words, Capital budget may be defined as the firm's decision to invest its current funds most efficiently in the long-term assets in anticipation of an expected flow of benefits over a series of years. Therefore, it involves a current outlay or series of outlay of cash resources in return for an anticipated flow of future benefits. Capital budgeting is the process to identify, analysis and select investment projects, whose returns (cash flows) are expected to extend beyond one year. Firm's investment decisions would generally include expansion, acquisition, modernization, replacement of fixed assets or long-term assets. From the above definition, we may identify the basic features of capital budgeting viz., potentially large anticipated benefits, relatively a high degree risk, and a relatively long-time period between the initial outlay and anticipated return.

Capital budgeting involves

- The search for new and more profitable investment proposals
- The making of an economic analysis to determine the profit potential of each investment proposal.

In simple, capital budgeting refers to the total process of generating, evaluating, selecting and following upon capital expenditure alternatives.

Capital budgeting may be defined as the firm's formal process for the acquisition and investment of capital. It involves the firm's decision to invest its current funds for addition, disposition, modification and replacement of fixed assets.

Capital Budgeting Process

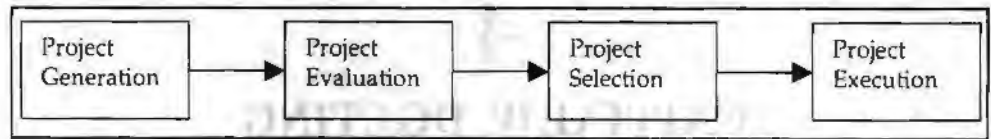


Figure 1: Exhibits Capital Budgeting process

While steps are essential to any capital budgeting process, but individual situations of capital budgeting may demand other steps relevant to the situation to make the process an effective one:

1. **Project Generation:** Investment proposals of various types may originate at different levels within a firm. The investment proposals may fall into one of the following categories.
 - i) Proposals to add new product to the product line.
 - ii) Proposal to expand capacity in existing product lines.
 - iii) Proposals to reduce the costs of the output of the existing at any level; from top management level to the level of the workers. The proposals may originate systematically or haphazardly.
2. **Project Evaluation:** Project Evaluation involves two steps :
 - i) Estimation of benefits and costs. The benefits and costs must be measures in terms of cash flows.
 - ii) Selection of an appropriate criterion to judge the desirability of the project.
3. **Project Selection:** Since capital budgeting decisions are of considerable significance, the final approval of the project may generally rest on the top management. However, projects are screened at multiple levels.
4. **Project Execution:** The funds are appropriated for capital expenditure after the final selection of investment proposals. The formal planning for the appropriation of funds is called the capital budget. The project execution committee or the management must ensure that the funds are spent in accordance with appropriations made in the capital budget.

According to Finance managers, the Capital Budgeting Process is classified as under:

1. Planning/Idea Generation
2. Evaluation/Analysis
3. Selection
4. Financing
5. Execution/Implementation
6. Review

Process/Steps of Capital Budgeting

The process of Capital budgeting may be divided into six broad phases/steps, viz., planning or idea generation, evaluation / analysis, selection, financing, execution/implementation and review. Figure 1 depicts the relationship among phases of capital budgeting.

1. **Planning/Idea Generation:** The search for promising project ideas is the first step in capital budgeting process. In other words the planning phase of a firm's capital budgeting process is concerned with articulation of its broad investment strategy and the generation and preliminary search of project proposals. Identifying a new worthwhile project is a complex problem. It involves a careful study from many different angles. Ideas can be generated from the sources like, performance analysis of existing industries, examination of input and output of various industries, review of import and export data, study plans outlays and government guidelines, looking at the suggestions of financial institutions and developmental agencies, study of local materials and resources, analysis of economic and social trends, study of new technological developments, draw clues from the consumption abroad, explore the possibility of reviving sick units, identity unfulfilled psychological needs, attending trade fairs, stimulate creativity for generating new product ideas among the employees.
2. **Evaluation/Analysis:** In the preliminary screening, when a project proposal suggests that the project is prima facie worthwhile, then it is required to go for evaluation / analysis. Analysis has to consider aspects like, marketing, technical, financial, economic and ecological analysis. This phase focuses on gathering data, preparing, summarizing relevant information about various alternative projects available, which are being considered for inclusion in the capital budgeting process. Costs and benefits are determined based on the information gathered about other alternative projects.
3. **Selection:** Selection or rejection follows the analysis phase. If the project is worthwhile, after using a wide range of evaluation techniques, which are divided into traditional / non-discounted and modern / discounted. Selection and rejection of a project depends on the technique used to evaluate and its rule of acceptance. The acceptance rules are different for each and every method. Apart from the use of techniques of evaluation, there are few techniques available for measurement (range, standard deviation, coefficient of variation) and incorporation of risk (risk adjusted discount rate, certainty equivalent, probability distribution approach and decision tree approach) in capital budgeting.
4. **Financing of the Project:** After the selection of the project, the next step is financing. Generally the amount required is known after the selection of the project. Under this phase financing arrangements have to be made. There are two broad sources available such as equity (shareholders' funds – paid up share capital, share premium, and retained earnings) and debt (loan funds – term loans, debentures, and working capital advances). While deciding the capital structure, the decision maker has to keep in mind some factors, which influence capital structure. The factors are Flexibility, Risk, Income, Control, and Tax benefits (referred to by the acronym FRICT). Capital should consist of debt and equity.
5. **Execution/Implementation:** Planning of paper work and implementation is physically different in implementing the selected project. Implementation of an industrial project involves the stages, project and engineering designs, negotiations and contracting, construction, training, and plant commissioning. Translating an investment proposal from paper work to concrete work is complex, time consuming and a risky task. Adequate formulation of project, use of the principle of responsibility accounting and use of network techniques (PERT and CPM), are very much helpful for the implementation of a project at reasonable cost.
6. **Review of the Project:** Once the project is converted from paper work to concrete work, then, there is need to review the project. Performance review should be

done periodically, under this performance review, actual performance is compared with the predetermined or projected performance.

Project Evaluation Techniques (Capital Budgeting Appraisal Methods)

In view of the significance of capital budgeting decisions, it is absolutely necessary that the method adopted for appraisal of capital investment proposal is a sound one. Any appraisal method should provide for the following:

- i. A basis of distinguishing between acceptable and non-acceptable projects.
- ii. Ranking of projects in order of their desirability.
- iii. Choosing among several alternatives.
- iv. A criterion which is applicable to any conceivable project.
- v. Recognizing the fact, that bigger benefits are preferable to smaller ones and early benefits are preferable to later ones.

There are many methods for evaluating and ranking the capital investment proposals. In all these methods, the basic method is to compare the investments in the projects regarding the benefits derived.

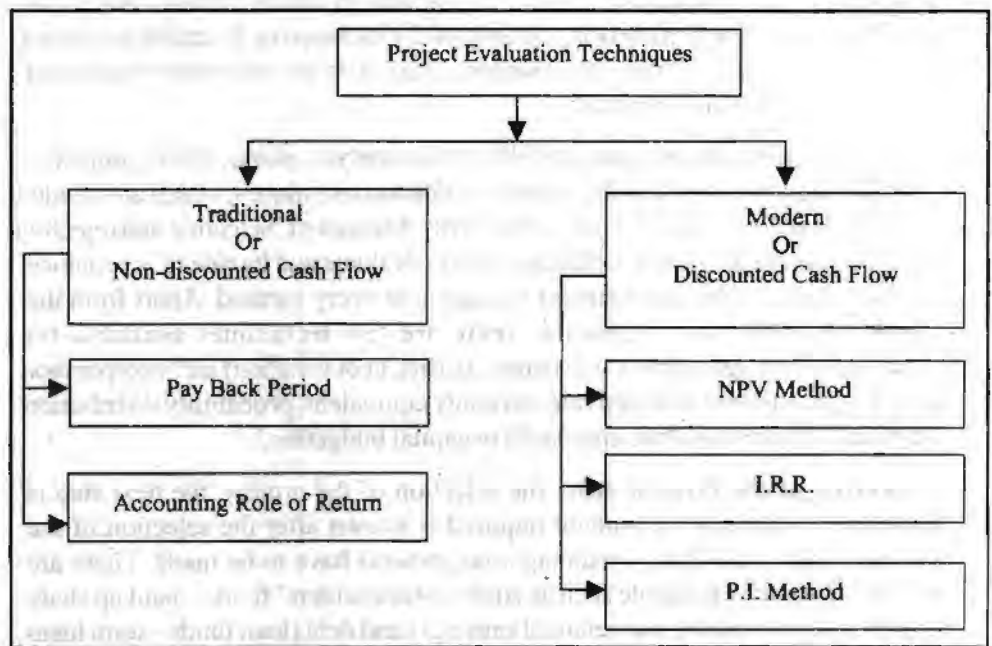


Figure 2: Techniques of Project Evaluation

1. Traditional Methods (Non Discounted Cash flow method)
 - a. Payback period method
 - b. Accounting rate of return method
2. Modern methods (Discounted cash flow methods)
 - a. The net present value of method
 - b. Internal rate of return
 - c. Profitability index or benefit-cost-ratio

It should be kept in mind that different firms may use different methods. Which method is appropriate to a specific project of the firm, depends upon the relevant circumstances of the proposed project under evaluation.

Investment Evaluation Criteria

Traditional Techniques or Non-discounted Cash Flow Techniques

The traditional techniques are further subdivided into two, such as

- (a) Pay back period, and
- (b) Accounting Rate of Return or Average Rate of Return (ARR).

(a) Pay Back Period

Pay back period is one of the most popular and widely recognized technique of evaluating investment proposals. Pay back period may be defined as that period required, to recover the original cash outflow invested in a project. In other words it is the minimum required number of years to recover the original cash outlay invested in a project. The cash flow after taxes is used to compute pay back period.

Pay back period can be calculated in two ways, (i) Using formula (ii) Using Cumulative cash flow method. The first method can be applied when the cash flows stream of each year is equal / annuity in all the years' or projects life, i.e., uniform cash flows for all the years. In this situation the following formula is used to calculate pay back period.

Pay Back Period = $\frac{\text{Original Investment}}{\text{Constant Annual Cash Flows After Taxes}}$
or

Initial investment (cash outlay)

$$\text{Payback period} = \frac{\text{Initial investment (cash outlay)}}{\text{Annual cash inflow}}$$

The Second method is applied when, the cash flows after taxes are unequal or not uniform over the projects' life period. In this situation, pay back period is calculated through the process of cumulative cash flows, cumulative process goes up to the period where cumulative cash flows equals to the actual cash outflows. Put it simple:

PBP = Year before full recovery + $\left(\frac{\text{Unrecovered Amount of Investment}}{\text{Cash flows during the year}} \right)$

Accept-Reject Rule: Acceptance or rejection of the project is based on the comparison of calculated PBP with the maximum or standard pay back period. Put it simple

Accept: Cal PBP < Standard PBP

Reject: Cal PBP > Standard PBP

Considered: Cal PBP = Standard PBP

Advantages Pay Back Period: The Merits of pay back period are,

- It is very simple and easy to understand.
- Cost involvement in calculating pay back period is very less as compared to sophisticated methods.

Limitations of Pay Back Period: Pay back period method suffers from certain Limitations such as:

- It ignores cash flows after pay back period.
- It is not an appropriate method of measuring the profitability of an investment, as it does not consider all cash inflows yielded by the investment.

- It does not take into consideration time value of money.
- There is no rationale basis for setting a minimum pay back period.
- It is not consistent with the objective of maximizing shareholders' wealth. Share value does not depend on pay back periods of investment projects.

For calculating payback period we need cash flows after taxes (CFAT)

Calculation of Cash flows after taxes (CFAT)

Particulars	Rs.
Sales revenue	xxx
Less: Variable cost	xxx
Contribution	xxx
Less: Fixed cost	xxx
Earning Before Depreciation and Taxes (EBDT)	xxx
Less: Depreciation	xxx
Earning Before Taxes (EBT)	xxx
Less: Taxes	xxx
Earnings After Tax (EAT)	xxx
Add: Depreciation	xxx
Cash Flows After Tax (CFAT) or Earnings After Taxes but Before Depreciation (EATBD)	xxx

Illustration 1: A project requires an initial investment of Rs. 1,20,000 and yields annual cash inflow of Rs. 12,000 for 12 years. Find the payback period

Solution:

$$1,20,000/12,000 = 10 \text{ years.}$$

In case of unequal annual cash inflows, cumulative cash inflows will be calculated and by interpolation, the exact payback period can be found out.

Illustration 2: The project requires an initial investment of Rs. 20,000 and the annual cash inflows for 5 years is Rs. 6,000, Rs. 5,000, Rs. 4,000 and Rs. 4,000 respectively. Find the payback period.

Solution:

Year	Cash inflow	Cumulative Cash Inflow
1	Rs. 6,000	Rs. 6000
2	Rs. 8,000	Rs. 14,000
3	Rs. 5,000	Rs. 19,000
4	Rs. 4,000	Rs. 23,000
5	Rs. 4,000	Rs. 27,000

The above table shows that in 3 years, Rs. 19,000 has been recovered, Rs. 1000 is left out of initial investment. In the fourth year, the cash inflow is Rs. 4000. It means the payback period is between three and four years, ascertained as follows:

$$\text{Pay - back period} = 3\text{years} + \frac{1000}{4000} = 3.25 \text{ years}$$

Accept or Reject Criterion: The decision to accept or reject a proposal depends upon how the computed pay-back figures compares with a standard. For example, if

the pay-back standard were 7 years, the project with the 5 years pay-back period would be accepted. Therefore, the decision rule is accepted if the computed pay-back period is less than the standard ; other wise it is rejected.

Illustration 3: A company is considering expanding its production. It can go either for an automatic machine costing Rs. 2,24,000 with an estimated life of 5 years or an ordinary machine costing Rs. 60,000 having an estimated life of 8 years. The annual sales and costs are estimated as follows:

	Automatic Machine (Rs.)	Ordinary Machine (Rs.)
Sales	1, 50,000	1, 50,000
Costs:		
Materials	50,000	50,000
Labour	12,000	60,000
Variable overheads	24,000	20,000

Calculate the payback period and advice the management.

Solution:

Calculation of PBP needs cash flows after tax. Hence, now calculate CFAT

Calculation of Cash inflows after taxes CFAT

Particulars	Automatic Machine (Rs.)	Ordinary Machine (Rs.)
Sales	1, 50,000	1, 50,000
Less costs:		
Material +Labour +V. overheads	<u>86,000</u>	<u>1, 30,000</u>
EBDT	64,000	20,000
Less: Depreciation (WNI)	<u>44,800</u>	<u>7,500</u>
EBT	19,200	12,500
Less: Taxes at 50 per cent	<u>9,600</u>	<u>6,250</u>
EAT	9,600	6,250
Add: depreciation	<u>44,800</u>	<u>7,500</u>
Cash inflow (CFAT)	54,400	13,750

Payback period = Initial Investment , Constant Annual Cash Inflows

PBP of Automatic Machine = 2, 24,000 , 54,400= **4.11 Years**

PBP of Ordinary Machine = 60,000 , 13,750= **4.36 Years**

Advice: The payback period in case of automatic machine is shorter. Hence automatic machine is preferable.

Working Note: Depreciation = (Original Investment – Scrap Value), Life Period

Automatic Machine: (2, 24,000 – 0) / 5 = Rs. 44,800

Old Machine: (60,000 – 0) / 8= Rs. 7,500

Assumption: Tax rate assumed as 50 per cent

Illustration 4: A project costs Rs. 20 lakh and yields annually a profit of Rs. 3 00,000 after depreciation at 12½ per cent but before tax at 50 per cent. Calculate payback period and suggest whether it should be accepted or rejected based on 6 year standard pay back period.

Solution:**Calculation of Cash Flows After Tax**

Particulars	Amount (Rs.)
Profit After Depreciation Before Taxes	3, 00,000
Less: Taxes at 50 %	1, 50,000
EAT	1, 50,000
Add: Depreciation (Note)	Cash inflow (CFAT)
	2, 50,000
	4, 00,000

Payback period = Initial Investment / Constant Annual Cash Inflows

Payback period = Rs. 20,00,000 / Rs. 4,00,000 = 5 years

Decision: Project should be accepted since calculated PBP is less than the standard PBP

Working Note: Depreciation = Cost of Project × Depreciation Rate
 = 20, 00,000 × 0.125 = Rs. 2, 50,000

Illustration 5: (when cash inflows are uneven)

XYZ Ltd., is considering two projects. Each requires an investment of Rs. 10, 000. The firm's cost of capital is 10 per cent. The net cash inflows from investments in two projects X and Y are as follows:

Year	0	1	2	3	4	5
Cash outflow (Rs.)	1,50,000	30,000	----	----	----	----
Cash inflow (Rs.)	----	20,000	30,000	60,000	80,000	30,000

The company has fixed three years payback period as the cut-off point. State which project should be accepted.

Solution:**Calculation of pay back period**

Year	Project X		Project Y	
	CFAT (Rs.)	Cumulative CFAT (Rs.)	CFAT (Rs.)	Cumulative CFAT (Rs.)
1	5,000	5,000	1,000	1,000
2	4,000	9,000	2,000	3,000
3	3,000	1,000/3,000* =0.33	3,000	6,000
4	1,000		4,000	10,000
5		5,000	15,000
6		6,000	21,000

Recoverable Amount / Concerned year cash flows

PBP of Project X is **2.33 years** PBP of Project Y is **4 years**

Since the cut-off point is 3 years, project X should be accepted i.e. 2.33 years is less than 3 years.

Merits:

1. It is an important guide to investment policy.
2. It lays great emphasis on liquidity.
3. The rate which capital is recouped has a positive significance.

4. The method enables a firm to choose an investment which yields a quick return on cash funds.
5. It is easy to understand, calculate and communicate to others.
6. Other than its simplicity, the main advantage claimed for the payback method is, that it is a built-in safeguard against risk.
7. It enables a firm to determine the period required to recover the original investment with some percentage return and thus, arriving at the degree of risk associated with the investment.

Demerits:

1. It does not measure the profitability of a project.
2. The time value of money is ignored.
3. It does not value projects of different economic lives.
4. It is only a rule-of-thumb method. It is often difficult to judge objectively whether one proposed project is superior to another and, if so, by how much.
5. No allowance is made for taxation nor is any capital allowance made.

(b) Accounting Rate of Return/Average Rate of Return (ARR)

Accounting rate of return method uses accounting information as revealed by financial statements, to measure the profitability of the investment proposals. It is also known as the return on investment (ROI). Some times it is known as Average Rate of Return (ARR). Average annual earnings after depreciation and taxes are used to calculate ARR. It is measured in terms of percentage. **ARR can be calculated in two ways.**

- (i) **Whenever it is clearly mentioned as accounting rate of return:** If accounting rate of return is given in the problem, return on original investment method should be used to calculate accounting rate of return.

$$\text{Accounting Rate of Return (ARR)} = \frac{\text{Average annual EAT or PAT}}{\text{Original investment (O) *}} \times 100$$

*OI = Original investment + Additional NWC + Installation Charges + Transportation Charge

- (ii) **Whenever it is clearly mentioned as average rate of return:** If Average rate of return is given in the Illustration, return on average investment method should be used to calculate average rate of return.

$$\text{Accounting Rate of Return} = \frac{\text{Average annual EAT}}{\text{Average investment (AI) *}} \times 100$$

* AI = (Original investment – scrap)/2 + Additional NWC + Scrap value

- (iii) If ARR is given in the problem, any one of the above method can be used to calculate ARR (preferably return on average investment method).

Accept-Reject Rule: Acceptance or rejection of the project is based on the comparison of calculated ARR with the predetermined rate or cut of rate.

Accept: Cal ARR > Predetermined ARR or Cut-off rate

Reject: Cal ARR < Predetermined ARR or Cut-off rate

Considered: Cal ARR = Predetermined ARR or Cut-off rate

Advantages of ARR Method: The ARR method has some merits.

- The most significant merit of ARR is that, it is very simple to understand and easy to calculate.
- Information can easily be drawn from accounting records.
- It takes into account all profits of the projects' life period.
- Cost involvement in calculating pay back period is very less in comparison to the sophisticated methods, since it saves analysts' time.

Limitations of ARR Method: ARR method suffers form serious demerits.

- It uses accounting profits instead of actual cash flows after taxes, in evaluating the projects. Accounting profits are inappropriate for evaluating and accepting projects, since they are computed based on arbitrary assumptions and choices and also include non-cash items.
- It ignores the concept of time value of money.
- It does not allow profits to be reinvested.
- It does not differentiate between the size of the investment required for each project.
- It does not take into consideration any benefits, which can accrue to the firm from the sale of equipment, in abundance which is replaced by the new investment.
- It feels that, 10 per cent rate of return for 10 years is more beneficial than eight per cent rate of return for 25 years.
- It is incompatible with the objective of wealth maximization to the equity shareholders.
- It uses arbitrary cut-off as yardstick or standard for acceptance or rejection rule.

Illustration 6: The working result of two machines are given below

	Machine X Rs.	Machine Y Rs.
Cost	45,000	45,000
Sales per year	1,00,000	80,000
Total Cost Per Year (excluding depreciation)	36,000	30,000
Expected Life	2 years	3 years

Which of the two should be preferred?

Solution:

Computation of average income

	Machine X Rs.	Machine Y Rs.
Sales per year	1,00,000	80,000
Less : cost per year	36,000	30,000
	64,000	50,000
Less : Depreciation	22,500	15,000
Net profit	41,500	35,000
Average Income	41,500	35,000
Average Investment	22,500	22,500

$$ARR = \frac{\text{Average Income}}{\text{Average investment}} \times 100$$

$$\text{For 'X'} = \frac{41,500}{22,500} \times 100 = 184\%$$

$$\text{For 'Y'} = \frac{35,000}{22,500} \times 100 = 156\%$$

Machine X has higher ARR. Hence, Machine X should be preferred.

Illustration 7: A limited firm has under consideration the following two projects. Their details are as follows:

	Project X Rs.	Project Y Rs.
Investment in machinery	10,00,000	15,00,000
Working capital	5,00,000	5,00,000
Life of machinery (Years)	4	6
Scrap value of machinery (%)	10	10
Tax rate (%)	50	50

Income before depreciation and tax at the end of

Year	1	2	3	4	5
X (Rs.)	5,000	4,000	3,000	1,000	--
Y (Rs.)	1,000	2,000	3,000	4,000	5,000

You are required to calculate the average rate of return and suggest which project is to be preferred.

Solution:

Calculation of ARR: (Average annual income after taxes ÷ Average investment) × 100

Project X = (2,87,500 / 10,50,000) × 100 = **27.38 per cent**

Project Y = (3,54,167 / 13,25,000) × 100 = **26.73 per cent**

ARR of Project X is higher than that of Project Y. Hence Project X is preferred.

Working Notes:

1. **Calculation of Average Annual Income After Depreciation and Taxes:**

	Project X Rs.	Project Y Rs.
Average EBDT	8,00,000	9,33,333
Less: Depreciation	2,25,000	2,25,000
Average EBT	5,75,000	7,08,333
Less: Taxes at 50 %	2,87,500	3,54,166
Average EAT	2,87,500	3,54,167

2. **Calculation of Average Investment:**

(Original investment - scrap value) / 2 + Additional Working Capital + Scrap value

Project X: $(10,00,000-1,00,000) / 2 + 5,00,000 + 1,00,000 = \text{Rs. } 10,50,000$

Project Y: $(15,00,000-1,50,000) / 2 + 5,00,000 + 1,50,000 = \text{Rs. } 13,25,000$

3. **Depreciation:** (Original Investment – Scrap Value) / Life Period

Project X: $(10,00,000-1,00,000) / 4 = \text{Rs. } 2,25,000$

Project Y: $(15,00,000-1,50,000) / 6 = \text{Rs. } 2,25,000$

4. **Average EBDT** = $32,00,000 / 4 = 8,00,000$ $56,00,000 / 6 = 9,33,333$

Illustration 8: A project costs Rs. 5,00,000 and has a scrap value of Rs. 1,00,000. Its stream of income before depreciation and taxes during first year through five years is Rs. 1,00,000, Rs. 1,20,000, Rs. 1,40,000, Rs. 1,60,000 and Rs. 2,00,000. Assume a 50 per cent tax rate and depreciation on straight-line basis. Calculate the accounting rate for the project. Also state whether you recommend the project for investment when the management expects a rate of return of 10 per cent.

Solution:

ARR: (Average EAT ÷ Original investment) × 100

ARR = $(\text{Rs. } 32,000 / 5,00,000) \times 100 = 6.4$ per cent

As accounting rate of return for Project is less than the 10 per cent set by the management, hence the project can be rejected.

Working notes:

i) Calculation of Average EAT

	Rs.
Average EBDT (Note iii)	1,44,000
Less: Depreciation (Note ii)	<u>80,000</u>
Average EBT	64,000
Less: taxes at 50 per cent	<u>32,000</u>
Average EAT	<u>32,000</u>

ii) Depreciation = $(5,00,000 - 1,00,000) / 5 = \text{Rs. } 80,000$

iii) Average EBDT = Total profits / No. of years = $7,20,000 / 5 = \text{Rs. } 1,44,000$

Illustration 9: Determine the accounting rate of return from the following data of two machines A and B.

	Machine A	Machine B
	Rs.	Rs.
Original cost	56,125	56,125
Additional investment in networking capital	5,000	6,000
Estimated life in years	5	5
Estimated salvage value	3,000	3,000
Average income-tax rate (%)	55	55

Annual estimated income after depreciation and taxes (EAT)

Year	1	2	3	4	5
Machine A (Rs.)	3,375	5,375	7,375	9,375	11,375
Machine B (Rs.)	11,375	9,375	7,375	5,375	3,375

Depreciation has been charged on straight line basis.

Solution:

Accounting Rate of Return: (Average EAT , Original investment) × 100

Machine A: Average annual income after tax = $36,875 / 5 = 7,375$

Original investment = $56,125 + 5000 = 61,125$

Accounting rate of return = $(7,375 / 61,125) \times 100 = 12.06$ per cent

Machine B: Average annual income after tax = $36,875 / 5 = 7,375$

Original investment = $56,125 + 6,000 = 62,125$

Accounting rate of return = $(7,375 / 62,125) \times 100 = 11.87$ per cent

Note:

- i) If accounting rate of return is given in the illustration, return on original investment method should be used to calculate accounting rate of return.

Original investment = original investment + additional net working capital

- ii) If Average rate of return is given in the illustration, return on average investment method should be used to calculate average rate of return.

(Average annual income after taxes , Average investment) × 100

(Original investment - scrap value) / 2 + Additional Working Capital + Scrap value

- iii) If ARR is given in the problem, any one of the above methods can be used to calculate ARR (preferably return on average investment method).

Modern Techniques of Capital Budgeting (Discounted Cash Flow Techniques)

Modern/discounted cash flow techniques take into consideration almost all the deficiencies of the traditional methods and consider all benefits and cost occurring during the projects' entire life period. Modern techniques can be again subdivided into three, viz., (A) Net Present Value (NPV) (B) Internal Rate of Return (IRR) or trail and error (C) Profitability Index (PI) or Discounted Benefit Cost Ratio (DBCR).

(A) Net Present Value Method (NPV)

The net present value method is one of the discounted cash flow methods. It is also known as discounted benefit cost ratio method. NPV can be defined as present value of benefits minus present value of costs. It is the process of calculating present values of cash inflows using cost of capital as an appropriate rate of discount and subtract present value of cash outflows from the present value of cash inflows and find the net present value, which may be positive or negative. Positive net present value occurs when the present value of cash inflow is higher than the present value of cash outflows and vice versa.

Steps involved in computation of NPV are,

- (i) Forecasting of cash inflows of the investment project based on realistic assumptions.
- (ii) Computation of cost of capital, which is used as discounting factor for conversion of future cash inflows into present values.
- (iii) Calculation of cash flows using cost of capital as discounting rate / factor.
- (iv) Finding out NPV by subtracting present value of cash outflows from present value of cash inflows.

Accept-Reject Rule: *Acceptance* or reject rule of the project is decided based on the NPV.

Accept: $NPV > \text{Zero}$ **Reject:** $NPV < \text{Zero}$ **Consider:** $NPV = \text{Zero}$

Advantages of NPV Method: The Merits of NPV are,

- It takes into account the time value of money.
- It uses all cash inflows occurring over the entire life period of the project including scrap value of the old project.
- It is particularly useful for the selection of mutually exclusive projects.
- It takes into consideration the changing discount rate.
- It is consistent with the objective of maximization of shareholders' wealth.

Limitations of NPV Method: NPV is the most acceptable method in comparison with traditional methods. Nevertheless, it has certain Limitations also.

- It is difficult to understand when compared with PBP and ARR.
- Calculation of required rate or discounting factor or cost of capital is difficult, which involves a lengthy and time consuming process and presents illustrations. At the same time calculation cost of capital is based on different methods.
- In case of projects involving different cash outlays, NPV method may not give dependable results.
- It does not give satisfactory results when comparing two projects with different life periods. Generally a project, having a shorter economic life would be preferable, other things being equal.
- It is consistent with objective of maximization of shareholders' wealth.

Illustration 10: A choice is to be made between the two competing proposals which require an equal investment of Rs. 50000 and are expected to generate net cash flows as under:

Years	Project A Rs.	Project B Rs.
1	25000	10000
2	15000	12000
3	10000	18000
4	Nil	25000
5	12000	8000
6	6000	4000

Cost of capital of the company is 10%. The following are the present value factor at 10% p.a.

Year	:	1	2	3	4	5	6
P.V. Factor At 10%	:	0.909	0.826	0.751	0.683	0.621	0.564

Which proposal should be selected using NPV method? Suggest the best project.

Solution:

Comparative Statement of NPV

Year	PV Factor @10%	Project		Project B	
		Cash Inflow	Present Value	Cash Inflow	Present Value
1	0.909	25000	22725	10000	9090
2	0.826	15000	12390	12000	9912
3	0.751	10000	7510	18000	13518
4	0.683	Nil	Nil	25000	17075
5	0.621	12000	7452	8000	4968
6	0.564	6000	3384	4000	2256
Total present Value :		53461	53461	56819	56819
Less : Initial Investment :		50000	50000	5000	5000
NPV :		Rs. 3461	Rs. 3461	Rs. 6819	Rs. 6819

Since project B has the highest NPV, Project B should be selected.

Illustration 11: The Gama Co., Ltd., is considering the purchase of a new machine. Two alternative machines (X and Y) have been suggested, each having an initial cost of Rs. 400000 and requiring Rs. 20000 as additional working capital at the end of the 1st year. Earnings after taxation are expected to be as follows:

Year	Cash inflows	
	Machine X Rs.	Machine Y Rs.
1	40000	120000
2	120000	160000
3	160000	200000
4	240000	120000
5	160000	80000

The company has a target of return on capital of 10% and on this, you are required to compare the profitability of the machines and state which alternative you consider financially preferable.

Note: The present value of Re. 1 due I 'n' number of years:

Year	:	1	2	3	4	5
P.V. At 10%	:	0.91	0.83	0.75	0.68	0.62

Solution:**Statement showing the profitability of the two machines**

Year	PV Factor @10%	Machine X		Machine Y	
		Cash Inflow	Present Value	Cash Inflow	Present Value
1	0.91	40000	36400	120000	109200
2	0.83	120000	99600	160000	132800
3	0.75	160000	120000	200000	150000
4	0.68	240000	163200	120000	81600
5	0.62	160000	9200	80000	49600
Total present value of cash inflows :			518400		523200
Total present value of cash outflows :					
(Rs. 400000 + 20000 x 0.91) :			418200		418200
Net Present value :			100200		105000

Recommendation: Machine Y is preferable to machine X

Accept or Reject criterion: In case, NPV is positive, the project should be accepted. If the NPV is negative, the project should be rejected.

It can be summarized as under:

1. NPV > Zero → Accept
2. NPV < Zero → Reject
1. PV > Zero → Accept
2. PV < Zero → Reject

PV stands for the present value of cash inflows and C for present value of cash outflows.

Illustration 12: Calculate the NPV for a project, which requires an initial investment of Rs. 20,000 and which, involves a net cash inflow of Rs. 6,000 each year for 6 years. Cost of funds is at 8 per cent.

Solution:

Years	Net Cash inflow (Rs.)	Discount Factor 8 %	Present Value (Rs.)
1 to 6	6,000	4.623*	27,738
Present Value of Cash inflows			27,738
Less: Present Value of cash outflows			20,000
Net Present Value			7,738

*Note: See TABLE A-4 The Present Value of Annuity One Rupee for PV of one rupee at 8 per cent discounting factor, because the cash inflow occurs evenly for a period of 6 years.

Illustration 13: Which amount is worth more at 10 per cent: Rs. 1,000 in hand today or Rs. 2,000 due after 8 years.

Solution:

A rupee received today is more valuable than a rupee received tomorrow. Based on the time value of money, Rs. 1,000 in hand today is worth more than the sum due after 8 years.

Computation of Present Value

Cash Flows (Rs.)	Discounting Factor 10 %	Present Value (in Rs.)
1,000	1.00	1,000
2,000	0.467*	934

Rs. 1,000 today is more valuable than Rs. 2,000 due after 8 years because the value of Rs. 2,000 after 8 years is only Rs. 934.

***Note:** See TABLE A-3 The Present Value of One Rupee for PV of one rupee at 10 per cent discounting factor, because the cash inflow occurs only in one point of time.

Illustration 14: A new machine costs Rs. 20,000, requires no increased investment in working capital and is expected to yield Rs. 6,000 profit per year for 10 years, at which time its scrap value will be negligible. Assume straight-line depreciation and a 30 per cent tax rate.

If management requires at least a 10 per cent return on any new investment, would this investment qualify? At a rate of return what is the present value per rupee of investments.

Solution:

Calculation of CFAT

Rs.	
EBDT 6,000	
Less: Depreciation	<u>2,000</u> (2,000÷10)
EBT 4,000	
Less: Taxes 30 %	<u>1,200</u>
EAT 2,800	
Add: Depreciation	2,000
CFAT 4,800	

Computation of NPV

Year	Cash Flows (in Rs.)	D F 10%	PV's (in Rs.)
1 to 10	4,800	6.145*	29,496
Present Value of cash inflows			29,496
Less: Cash outflows			20,000
Net Present Value (NPV)			9,496

***Note:** See TABLE A-4 The Present Value of Annuity One Rupee for PV of one rupee at 10 per cent discounting factor, because the cash inflows occurs evenly for a period of 10 years.

PV per rupee of investment = Total present value cash inflows ÷ Total investment
 = Rs. 29,496 ÷ 20,000 = Rs. 1.47

Illustration 15: No project is acceptable unless the yield is 10 per cent. Cash inflows of a certain project along with cash outflows are given below:

Year	0	1	2	3	4	5
Cash outflow (Rs.)	1,50,000	30,000	-----	-----	-----	-----
Cash inflow (Rs.)	-----	20,000	30,000	60,000	80,000	30,000

The salvage value at the end of 5th year is Rs. 40,000 Calculate the NPV.

Solution:

Calculation of NPV

Year	Cash Flows (in Rs.)	D F 10%	PV's (in Rs.)
1	20,000	0.909*	18,180
2	30,000	0.826	24,780
3	60,000	0.751	45,060
4	80,000	0.683	54,640
5	30,000	0.621	18,630
6	Scrap Value 40,000	0.621	24,840
Present Value of cash inflows			1,86,130
Less: Cash outflows [†]			1,77,270
Net Present Value (NPV)			8,860

[†] **Working Note: Calculation of PV of cash outflows**

Year	Cash Outflow	DF 10%	PV Rs.
0	1,50,000	1	1,50,000
1	30,000	0.909	27,270
Total PV of Cash outflows			1,77,270

**Note:* See TABLE A-3 The Present Value of One Rupee for PV of one rupee at 10 per cent discounting factor, because the cash inflow occurs unevenly for a period of 5 years.

(B) Internal Rate of Return (IRR)

This method advocated by Joel Dean, takes into account the magnitude and timing of cash flows.

IRR is that rate at which the sum of Discounted Cash Inflow (DCF) equals the sum of discounted cash outflow. It is the rate at which the net present value of the investment is zero. It is called Internal Rate of Return 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 also known by following names:

- Marginal efficiency of capital
- Rate of return over cost
- Time adjusted rate of return
- Yield on investment

Internal rate of return may be defined as that discounting factor at which the present value of cash inflows equals to the present value of cash outflows. It takes into

account the magnitude and timing of cash flows.⁽¹²⁾ In case of NPV method, the discount rate is the required rate of return and that is predetermined, usually by cost of capital, which determines based on external point of view, whereas IRR is based on facts, which is internal to the proposal. It is the best available concept. We shall see that although frequently a used concept in finance, yet at times quite a misleading measure of investment worth.

Computation of IRR is based on the cash flows after taxes. IRR is mathematically represented as 'r'. It can be found by trial and error method. In this method the evaluator selects any discount rate to compute present value of cash inflows. Generally the cost of capital is taken as first trial. If calculated present value of the cash inflows is higher than the present value cash outflows then evaluator has to try at higher rate. On the other hand if the present value of cash inflows is lower than the present value of cash outflows then evaluator has to try lower discounting factor. This process will be repeated till the present value of cash inflows equals to the present value of cash outflows. Generally, IRR may lie between two discounting factors; in that case analyst has to use interpolation formula for calculation of IRR. The formulae is as follows:

$$\text{IRR} = \text{LDF}\% + \left[\Delta \frac{\text{LDPV} - \text{OI}}{\text{LDPV} - \text{HDPV}} \right]$$

Where, LDF = Discount factor of low trial
 Δ DF = Difference between low discounting factor and High discounting factor
 LDPV = PV of cash inflows at low discounting factor trial
 HDPV = PV of cash inflows at high discounting factor trial
 OI = Original investment

Or

$$\text{IRR} = A + \frac{C - 0}{C - D} \times (B - A)$$

Where,
 A = Discounted factor of low trial
 B = Discounted factor of high trial
 C = Present value of cash inflow in the low trial
 D = Present value of cash inflow in the high trial
 O = Original or initial outlay

Accept-Reject Rule: Acceptance or reject rule of the project decides based upon the calculated IRR and Cost of capital (K_o).

Accepted: IRR > Cost of capital (K_o)

Reject: IRR < Cost of capital (K_o)

Consider IRR = Cost of capital (K_o)

Merits of IRR:

1. IRR attempts to find the maximum rate of interest at which funds invested in the project could be repaid out of the cash inflows arising from that project.
2. It considers the time value of money.
3. It considers cash flows throughout the life of the project.
4. It is not in conflict with the concept of maximizing the welfare of the equity shareholders.
5. It is calculated by the method of trial and error, usually it gives more psychological satisfaction to the user.
6. It is consistent with the objective of shareholders; wealth maximization.

Demerits of IRR:

1. Calculation of IRR is quite tedious and it is difficult to understand.
2. Both NPV and IRR assume that the cash inflows can be reinvested at the discounting rate in the new project. However, reinvestment of funds at the cut-off rate is more appropriate than at the IRR. Hence, NPV method is more reliable than IRR to ranking two or more projects.
3. It implies that profits can be reinvested at internal rate of return, which is not logical.
4. It produces multiple rate of returns which can be confusing.
5. It does not help in the evaluation of mutually exclusive projects, since a project with highest IRR would be selected. However, in practice, it may not turn out to be the one, that is the most profitable and consistent with the objective of shareholders i.e. wealth maximization.
6. It may not give fruitful results in case of unequal projects life, unequal cash outflows, and difference in the timing of cash flows.
7. It may give results inconsistent with NPV method. This is especially true in case of mutually exclusive projects, i.e., projects where acceptance of one would result in the rejection of the other. Such conflict of results arises due to the following.
 - i. Differences in cash outlays
 - ii. Unequal lives of projects
 - iii. Different pattern of cash flows.

Compare and Contrast 'NPV' with 'IRR':

NPV and IRR are the discounted cash flow methods available for evaluation of capital budgeting projects. These are similar in certain respects. In certain situations, they would give same (accept or reject) decision. But they differ in the sense, that the results regarding the choice of assets are under certain circumstances mutually contradictory. The comparison of these methods is therefore, involves a discussion of (a) Similarities between the methods, and (b) Differences.

NPV with IRR: Similarities:

- The two methods use cash inflows after tax (CFAT).
- Both the methods take into consideration the time value of money.

- They consider CFAT throughout the projects life period.
- Both methods give consistent results in terms of acceptance or rejection of investment proposals in certain situations. That is, if a project is viable it will be indicated by both the methods. If a project is not qualified, both methods will indicate that it should be rejected.
- The situations in which the two methods will give a concurrent accept or reject decision will be in respect of conventional and independent projects.
- According to NPV the decision rule is that a project will be accepted if NPV is greater than zero, the IRR would support projects where IRR is greater than the cost of capita (K_0).

NPV with IRR: Differences:

- In case of mutually exclusive projects, if NPV method accepts the project while IRR rejects.
- If there is a size disparity the NPV and the IRR will give different rankings.
- When there is an incremental approach, the NPV method is superior to the IRR, because the former supports projects, which are compatible with the goal of shareholders wealth while the latter does not.
- When there is time disparity the NPV would give results superior to the IRR method.
- In Projects with unequal lives, NPV and IRR would give conflicting ranking to mutually exclusive projects.

Comparison of NPV and IRR Methods:

NPV Method	IRR Method
1. Interest rate is a known factor	1. Interest rate is an unknown factor
2. It involves computation of the amount that can be invested in a given project so that the anticipated earnings will be sufficient to repay this amount with market rate of interest.	2. It attempts to find out the maximum rate of interest at which funds are invested in the project. Earnings from the project in the form of cash flow will help us to get back the funds already invested.
3. It assumes that the cash inflows can be reinvested at the discounting rate in the new projects.	3. It also assumes that the cash inflows can be reinvested at the discounting rate in the new projects.
4. Reinvestment is assumed to be at the cut-off rate.	4. Reinvestment in funds is assumed to be at the IRR.

The Present value method always provides for correct ranking of mutually exclusive investment projects, whereas, IRR method sometimes, does not. In the latter method, the implied reinvestment rate will differ depending upon the cash flow for each investment proposal under consideration. For proposal with a high internal rate of return, a high reinvestment rate is assumed, for proposals with a low rate of return, a low reinvestment rate is assumed. The IRR calculated, may rarely represents the relevant rate as assumed and the relevant rate for reinvestment of intermediate cash flows.

(C) Profitability Index (PI)/Discounted Benefit Cost Ratio (DBCR)

This is another discounted cash flow method of evaluating investment proposals. It is also known as discounted benefit cost ratio method. It is similar to NPV method. It is

the ratio of the present value of cash inflows, at the required rate of return, to the initial cash outflow of the investment proposal. PI method measures the present value of future cash per rupee, whereas NPV is based on the difference between present value of cash inflows and present value of cash outflows. NPV method is not reliable to evaluate projects requiring unequal initial investments. PI method provides solution to this problem. PI is the ratio, which is derived by dividing present value of cash inflows by present value of cash outflows.

PI is the ratio of present value of future cash benefits at the required rate of return at the initial cash outflow of the investment.

$$PI = \frac{\text{PV of cash inflows}}{\text{Initial cash outlay}}$$

Like IRR and NPV methods, profitability index is a conceptually sound method of appraising investment projects. It provides ready comparisons between investment proposals of different magnitudes.

Accept-Reject Rule

Accept: $PI > 1$ **Reject:** $PI < 1$ **Considered:** $PI = 1$

Characteristics of Sound Investment Criterion: The characteristics should be possessed by a sound investment criterion.

- (i) It should consider all cash flows to determine the true profitability,
- (ii) It should provide for an objective and unambiguous way of separating good projects from bad projects,
- (iii) It should help ranking of projects according to their true profitability,
- (iv) It should recognize the fact that bigger cash flows are preferable to smaller ones and early cash flows are preferable to later ones,
- (v) It should help to choose among mutually exclusive projects that particular project which maximizes the shareholders' wealth,
- (vi) It should be a criteria, which is applicable to any conceivable investment project independent of others.

Merits of PI:

The PI Method satisfies almost all the requirements of a sound investment criterion. The characteristic, as we recollect are:

- It gives due consideration to time value of money.
- It considers all cash flows to determine PI.
- It help to rank projects according to their PI.
- It recognizes the fact that bigger cash flows are better than smaller ones and early cash flows are preferable to later ones.
- It can also be used to choose mutually exclusive projects by calculating the incremental benefit cost ratio.
- It is consistent with the objectives maximization of shareholders' wealth.

Illustration 16: The initial cash outlay of a project is Rs. 50000 and it generates cash inflows of Rs. 10000, Rs. 20000, Rs. 30000 and Rs. 10000. Assume 10% rate of discount. Find PI.

Solution:**Computation of PI**

Year	Cash inflow	Present Value Factor @ 10%	Present Value of Cash inflow
1	10000	0.909	9090
2	20000	0.826	16520
3	30000	0.751	22530
4	10000	0.683	6830
Total			54970

$$PI = \frac{\text{PV of cash inflows}}{\text{Initial cash outlay}}$$

$$= 54970/50000 = 1.0994$$

Accept or reject criterion: Accept the project if its profitability index is greater than one. Such a project will have the positive net present value. Projects can be ranked on the basis of PI. Highest rank will be assigned to the project with highest PI, while the lowest rank will be given to the project having lowest PI.

Illustration 17: A project requires an investment of Rs. 10,000 and the expected cash flows are:

1st year Rs. 12,000; and 2nd year Rs. 4,000

The cost of capital is 10 per cent and the PV factors at 10 per cent are 1st year-0.909, 2nd year-0.826. Compute the profitability index.

Solution:

$$\begin{aligned} \text{Profitability index} &= \text{Total PV of cash inflows} \div \text{Initial investment} \\ &= (\text{Rs. } 12,000 \times 0.909 + \text{Rs. } 4,000 \times 0.826) \div 10,000 \\ &= 14,212 \div 10,000 = 1.42 \end{aligned}$$

It indicates that for every one rupee investment, there is (1.42-1) 0.42 paise profit.

Illustration 18: The initial cash outlay of a project is Rs. 1,00,000 and it generates cash inflows of Rs. 40,000, Rs. 30,000, Rs. 50,000 and Rs. 20,000. Assume a 10 per cent rate of discount. Calculate Profitability index.

Solution:**Calculation of Profitability Index**

Year	CFAT (Rs.)	DF 10%	Present Values (Rs.)
1	40,000	0.893	36,360
2	30,000	0.797	24,780
3	50,000	0.712	37,550
4	20,000	0.636	13,660
PV of Cash inflows			1,12,350

$$\text{Profitability Index} = \text{PV of cash inflows} \div \text{Initial investment} = 1,12,350 \div 1,00,000 = 1.12$$

Practice Yourself (Solved Problems)

1. What is the present value of Rs. 10,000 at the end of second year at a discount rate of 10 per cent?

Solution:

PV of Rs. 10,000 at the end of second year = $10,000 \times 0.826 = \text{Rs. } 8,260$

2. What is the present value of Rs. 40,000 due, three years hence at a discount rate of 10 per cent?

Solution:

PV of Rs. 40,000 at the end of three years = $40,000 \times 0.751 = \text{Rs. } 30,040$

3. What is the present value of Rs. 30,000 due, three years hence at a discount of 10 per cent?

Solution:

Formula for calculation of discount factor = $[1 \div 1 + r]^n$

Discount Factor at 10 per cent = $[1 \div 1 + 0.10]^3 = 0.751$

Present Value of Rs. 30,000 = $\text{Rs. } 30,000 \times 0.751 = \text{Rs. } 22,53$

Summary

Capital budgeting is the firm's decision to invest its current funds most efficiently in the long-term assets in anticipation of an expected flow of benefits over a series of years.

Capital budgeting decisions are important since growth of the firm depends on fixed assets, it is a more risky decision as huge investments are involved, an irreversible decision, it has effect on other projects too, a and difficult decision (became the decision is based on future years cash inflows, and involves uncertainty of future and hence more risk). Capital budgeting decisions are very important, but they pose difficulties, which shoot form three principle sources: measurement problem, uncertainty, and temporal spread.

The process of Capital budgeting may be divided into six broad phases/steps. They are: (1) planning or idea generation, (2) evaluation / analysis, (3) selection, (4) financing, (5) execution/implementation, and (6) performance review.

Pay back period is that period required to recover the original cash outflow invested in a project. It can be calculated in two ways, First, using formula and the second, cumulative cash flow method.

ARR is very simple to calculate, information can easily be drawn from accounting records, it takes into account all profits of the projects life period, cost involvement in calculating pay back period is very less. However, it suffers from some disadvantages: it uses accounting profits, instead of actual cash flows after taxes, it ignores the concept of time value of money, it does not allow the fact that the profits can be reinvested, it does not differentiate between the size of the investment required for each project, it is incompatible with the objective of wealth maximization.

Discounted cash flow techniques take into consideration almost all the deficiencies of the traditional methods. Net Present Value (NPV) is the present value benefits minus present value of costs. Symbolically:

$$NPV = \frac{\sum_{t=1}^n NIF_t}{(1+k_0)^t} - II$$

NPV may be positive or negative. The decision rule of NPV: accept the project when $NPV > 0$, and vice versa. Project is considered when $NPV = 0$.

NPV is the most acceptable method with comparison to traditional methods due to it: it considers time value of money; uses entire life period cash inflows, is useful for the selection of mutually exclusive projects, takes into consideration the changing discount rate, and is consistent with the objective of maximization. But it suffers from some limitations: it is difficult to calculate, calculation of required rate is difficult, in case of projects involving different cash outlays, NPV method may not give dependable results, and it does not give satisfactory results when the comparison involves two projects with different life periods.

Internal rate of return (IRR) is that discounting factor at which the present value of cash inflows equals to the present value of cash outflows. Symbolically:

$$IRR = \frac{\sum_{t=1}^n CIF_t}{(1+k_0)^t} + \frac{CIF_n + SV_n}{(1+k_0)^n} - II$$

PI method measures the present value of future cash per rupee. Present value of cash inflows is divided by present value of cash outflows to get PI. Using the PI method, a project will qualify for acceptance if $PI > 1$, and vice versa. It is considered when $PI = 1$.

Test Yourself

1. Define capital budgeting.
2. Bring out the difference between The NPV and IRR method.
3. Explain the circumstances under which the payback period is useful.
4. List the stages of capital budgeting process.
5. What do you mean by discounting of cash flows?
6. Discuss the process of capital budgeting.
7. Discuss the significance of capital budgeting.
8. Why is pay back period so popular?
9. How do you calculate the Accounting rate of return? What are its limitations?
10. Compare and contrast NPV with IRR.
11. Discuss the traditional techniques of capital budgeting evaluation.
12. What is NPV? Discuss the steps involved in computation of NPV.
13. How do you calculate cash flows after tax (CFAT)?
14. What do you mean by pay back period?
15. What is the accept or reject criterion under PBP technique?
16. List three limitations of pay back period.
17. Name the discounting cash flow methods.
18. What is the accept or reject criterion under IRR technique?
19. Briefly discuss the techniques of capital budgeting with their merits and limitations.

CHAPTER 5 COST OF CAPITAL

LEARNING OBJECTIVES

1. Define cost of capital
2. Understand the importance of cost of capital
3. Calculate cost of equity capital, preference share capital
4. Determine marginal preference share and debt or debenture capital
5. Compute WACC
6. Discuss marginal cost of capital

Concept

The term cost of capital is a concept having many different meanings. The three viewpoints, regarding the cost of capital is given below.

From Investors' View Point: Investor may define it as “the measurement of the sacrifice made by him in capital formation. For example, Mr. A an investor invested in a company's equity shares, amount Rs. 1,00,000, instead of investing in a bank at the rate of 7 per cent interest. Here he had sacrificed 7 per cent interest for not having invested in the bank.

- **Firms Point:** It is the minimum required rate of return needed to justify the use of capital. For example, a firm raised Rs. 50 lakhs through the issues of 10 per cent debentures, for justifying this issue, a minimum rate of return it has to earn is 10 per cent.
- **Capital Expenditure Point:** The cost of capital is the minimum required rate of return, the hurdle or target rate or the cut off rate or any discounting rate used to value cash flows.

For example, Firm 'A' is planning to invest in a project, that requires Rs. 20 lakh as initial investment and provides cash flows for a period of 5 years. So for the conversion of future 5 years cash flows into present value, cost of capital is needed.

Cost of capital represents the rate of return that the firm must pay to the fund suppliers, who have provided the capital. In other words, cost of capital is the weighted average cost of various sources of finance used by the firm. The sources are, equity, preference, long-term debt and short-term debt.

Importance

The concept of cost of capital is very important and the central concept in financial management decisions. The decisions in which it is useful are as follows:

- 1) **Designing Optimal Corporate Capital Structure:** This concept is helpful in formulating a sound and economical capital structure for a firm. The debt policy

of a firm is significantly influenced by the cost consideration. Capital structure involves determination of proportion of debt and equity in capital structure that provides less cost of capital.

While designing a firm's capital structure, the financial executives always keep in mind minimisation of the over all cost of capital and to maximise value of the firm. The measurement of specific costs of each source of funds and calculation of weighted average cost of capital help to form a balanced capital structure. By comparing various (sources of finance) specific costs, he/she can choose the best and most economical source of finance and can succeed in designing a sound and viable capital structure.

- 2) **Investment Evaluation/Capital Budgeting:** Wilson R.M.S., states that the Cost of Capital is a concept, which should be expressed in quantitative terms, if it is to be useful as a cut-off rate for capital expenses. Capital expenditure means investment in long-term projects like investment on new machinery. It is also known as Capital budgeting expenditure. Capital budgeting decisions require a financial standard (cost of capita) for evaluation. The financial standard is Cost of Capital. In the Net Present Value (NPV) method, an investment project is accepted, if the present value of cash inflows are greater than the present value of cash outflow. The present values of cash inflows are calculated by discounting the rate known as Cost of Capital. If a firm adopts Internal Rate of Return (IRR) as the technique for capital budgeting evaluation, investment should be accepted only when cost of capital is less than the calculated IRR. Hence, the concept of cost of capital is very much useful in capital budgeting decisions, particularly if a firm is adopting discounted cash flow methods of project evaluation.
- 3) **Financial Performance Appraisal:** Cost of capital framework can be used to evaluate the financial performance of top management. Financial performance evaluation involves a comparison of actual profitability of the investment project with the project overall cost of capital of funds raised to finance the project. If the actual profitability is more than the projected cost of capital, then the financial performance may be said to be satisfactory and vice versa.

The above discussion clearly shows the role of cost of capital in financial management decisions. Apart from the above areas (decisions), cost of capital is also useful in (distribution of profits), capitalization of profits, making to rights issue and investment in owner assets.

Before going to discuss the computation of specific cost of each source of funds and cost of capital, it is wise to know various relevant costs associated with the problem of measurement of cost of capital. The relevance costs are :

1. **Marginal Cost Of Capital:** A marginal cost is the additional cost incurred to obtain additional funds required by a firm. It refers to the change in the total cost of capital resulting from the use of additional funds. The marginal cost of capital is a very important concept in investment decisions (capital budgeting decisions).
2. **Average Cost/Composite/Overall Cost:** It is the average of various specific costs of the different components of equity, preference shares, debentures, retained earnings of capital structure at a given time and this is used as the acceptance criteria for (capital budgeting) investment proposals.

3. **Historic Cost/Book Cost:** The book cost has its origin in the accounting system in which book values, as maintained by the books of accounts, are readily available. They are related to the past. It is in common use for computation of cost of capital. For example, cost of capital may be computed based on the book value of the components of capital structure. Historical costs act as guide for future cost estimation.
4. **Future Cost:** It is the cost of capital that is expected to raise funds to finance a capital budget or investment proposal.
5. **Specific Cost:** It is the cost associated with particular component/source of capital. It is also known as component cost of capital. For example, cost of equity (K_e) or cost of preference share (K_p), or cost of debt (K_d), etc.
6. **Spot Cost:** The costs that are prevailing in the market at a certain time. For example, few years back cost of bank loans (house loans) was around 12 per cent, now it is 6 per cent. 6 per cent is the spot cost.
7. **Opportunity Cost:** The opportunity cost is the benefit that the shareholder foregoes by not putting his/her funds elsewhere because they have been retained by the management. For example, an investor, had invested in a company's equity shares (100 shares, each share at Rs. 10). The company decided to declare dividend of 10 per cent on book value of share, but due to capital requirements it retains its investment on one project that is having return on investment (ROI) of 4 per cent. Elsewhere, the project rate of interest (banks) is at 6 per cent. Here, the opportunity cost to the investor is $(6 - 4) 2$ per cent.
8. **Explicit Cost:** Cost of capital can be either explicit or implicit. Distinction between explicit and implicit is important from the point of view of computation cost of capital. An explicit cost of any source of capital is the discount rate that equates the present value of the cash inflows, that are incremental to the taking of the financing opportunity with present value of its increments cash outflows. In other words, the discount rate that equates the present value of cash inflows with present value of cash outflows. It is also called as the internal rate of return. For example, a firm raises Rs. 1,00,000 through the sale of 12 per cent perpetual debentures. There will be a cash inflow of Rs. 1,00,000 and a cash outflow of Rs. 12,000 every year for a indefinite period. The rate that equates the PV of cash inflows (Rs. 1,00,000) and PV of cash outflows (Rs. 12,000 per year) would be the explicit cost. Computation of explicit cost is almost similar to the computation of IRR, with one difference.
9. **Implicit Cost:** It is the cost of opportunity, which is given up in order to pursue a particular action. It is also known as implicit cost of capital. The implicit cost of capital of funds raised and invested by the firm may, therefore be defined as "the rate of return associated with the best investment opportunity for the firm and its shareholders that would be foregone, if the projects presently under consideration by the firm were accepted. The cost of retained earnings is an opportunity cost of implicit cost for a shareholder, who is deprived of the opportunity to invest retained earnings elsewhere. Funds raised by any form of financing have implicit capital costs once they are invested. Thus, in a sense, explicit costs may also be viewed as opportunity costs. This implies that a project reflects negative PV, when its cash flows are discounted by the explicit cost of capital.

Computation of Cost of Capital

Computation of Overall Cost of Capital(WACC)

The term, cost of capital (K_o) means the overall composite cost of capital, defined as the weighed average of the cost of each specific type of fund. It is also known as composite cost or Weighted Average Cost of Capital (WACC). In order to compute the WACC or composite cost of capital a finance manager has to keep in mind the following steps:

1. Determination of the type of funds to be raised and their individual share in the total capitalisation of the firm / company.
2. Computation of cost of each type of funds.
3. Assigning weights to specific costs.
4. Multiplying the cost of each of the sources by the (appropriate) assigned weights.
5. Dividing the total weighted cost by the total weights to get over all cost of capital.

The first aspect has been discussed in capital structure chapter and the sources of finance. The second aspect, discussed below, involves the computation of specific cost of capital.

Computation of Specific Cost of Capital

The financial manager has to compute the specific cost of each type of funds needed in the capitalisation of a company. The company may resort to different financial sources (equity share, preference share, debentures, retained earning public deposits; or it may prefer internal source (retained earnings) or external source (equity, preference and public deposits). Generally, the component cost of a specific source of capital is equal to the investors' required rate of returns. Investors required rate of returns are interest, discount on debt, dividend, capital appreciation, earnings per share on equity shareholders, dividend and share of profit on preference shareholders funds. But investors' required rate of returns should be adjusted for taxes in practice for calculating the cost of a specific source of capital, to the firm.

Compensation of specific source of finance, viz., equity, preference shares, debentures, retained earnings, public deposits is discussed below:

Cost of Equity

Firms may obtain equity capital in two ways (a) retention of earnings and (b) issue of additional equity shares to the public. The cost of equity or the returns required by the equity shareholders is the same in both the cases, since in both cases, the shareholders are providing funds to the firm to finance their investment proposals. Retention of earnings involves an opportunity cost. The shareholders could receive the earnings as dividends and invest the same in alternative investments of comparable risk to earn returns. So, irrespective of whether a firm raises equity finance by retaining earnings or issue of additional equity shares, the cost of equity is same. But issue of additional equity shares to the public involves a floatation cost whereas, there is no floatation cost for retained earnings. Hence, issue of additional equity shares to the public for raising equity finance involves a bigger cost when compared to the retained earnings.

In the following cost of equity is computed in both sources point of view (i.e., retained earnings and issue of equity shares to the public).

Cost of Retained Earnings (K_{re})

Retained earnings is one of the internal sources to raise equity finance. Retained earnings are those part of (amount) earnings that are retained by the form of investing in capital budgeting proposals instead of paying them as dividends to shareholders. Corporate executives and some analysts too normally consider retained earnings as cost free, because there is nothing legally binding the firm to pay dividends to equity shareholders and the company has its own entity different from its stockholders. But it is not so. They involve opportunity cost. The opportunity cost of retained earning is the rate of return the shareholder forgoes by not putting his/her funds elsewhere, because the management has retained the funds. The opportunity cost can be well computed with the following formula.

$$K_{re} = K_e \left(\frac{(1 - T_i)}{(1 - T_b)} \right) \times 100$$

Where,

K_e	=	Cost of equity capital [D , P or E/P + g].
T_i	=	Marginal tax rate applicable to the individuals concerned.
T_b	=	Cost of purchase of new securities/broker.
D	=	Expected dividend per share.
NP	=	Net proceeds of equity share/market price.
g	=	Growth rate in (%).

Illustration 1: A company paid a dividend of Rs. 2 per share, market price per share is Rs. 20, income tax rate is 60 per cent and brokerage is expected to be 2 per cent. Compute the cost of retained earnings.

Solution:

$$\begin{aligned} K_{re} &= \left(\frac{D}{NP} \times \frac{(1 - T_i)}{(1 - T_b)} \right) \times 100 \\ &= \left(\frac{2}{20} \times \frac{(1 - 0.60)}{(1 - 0.02)} \right) \times 100 \\ &= 0.10 \times 0.409 \times 100 = 4.1 \text{ per cent} \end{aligned}$$

Illustration 2: ABC company's cost of equity (K_e) capital is 14 per cent, the average tax rate of individual shareholders is 40 per cent and it is expected that 2 per cent is brokerage cost that shareholders will have to pay while investing their dividends in alternative securities. What is the cost of retained earnings?

Solution:

$$\begin{aligned} K_{re} &= \left(K_e \times \frac{(1 - T_i)}{(1 - T_b)} \right) \times 100 \\ &= 0.14 \times \frac{(1 - 0.4)}{(1 - 0.02)} \times 100 \\ &= (0.14 \times 0.613) \times 100 = 8.6 \text{ per cent} \end{aligned}$$

Illustration 3: Life Style Garment Manufacturing Company has net earnings of Rs. 20 lakhs and all of its stockholders are in the bracket of 50 per cent. The management estimates that under the present conditions, the stockholder's required rate of returns is 12 per cent. 3 per cent is the expected brokerage to be paid if stockholders want to invest in alternative securities. Compute the cost of retained earnings.

Solution:

$$\begin{aligned} K_{re} &= K_e \left(\frac{1 - T_i}{1 - T_b} \right) \times 100 \\ &= \left(0.10 \times \frac{1 - 0.50}{1 - 0.03} \right) \times 100 \\ &= (0.10 \times 0.516) \times 100 = 5.2 \text{ per cent} \end{aligned}$$

Illustration 4: BPL company's equity share is currently being sold at Rs. 350.75 and it is currently paying a dividend of Rs. 5.25 per share. The dividend is expected to grow at 15 per cent per annum for one year. Income tax rate is 40 per cent and brokerage is 2 per cent. Calculate cost of retained earnings.

Solution:

$$\begin{aligned} K_{re} &= \left(\frac{D}{NP} + g \times \frac{1 - T_i}{1 - T_b} \right) \times 100 \\ &= \left(\frac{5.25}{350.75} + 0.15 \frac{1 - 0.40}{1 - 0.02} \right) \times 100 \\ &= [0.165 \times 0.613] \times 100 = 10.2 \text{ per cent} \end{aligned}$$

Cost of Preference Shares

The preference share is issued by companies to raise funds from investors. Preference share has two preferential rights over equity shares, (i) preference in payment of dividend, from distributable profits, (ii) preference in the payment of capital at the time of liquidation of the company.

Computation of cost of preference share capital have some conceptual difficulty. Payment of dividend is not legally binding on the company and even if dividends are paid, they are not a charge on earnings, they are distributed from distributable profits. This may create an idea that preference share capital is cost free, which is not true.

The cost of preference share capital is a function of the dividend expected by the investors. Generally, preference share capital is issued with an intention (a fixed rate) to pay dividends. In case dividends are not paid, it will affect the firm's fund raising capacity. For this reason, dividends on preference share capital should be paid regularly except when the firm does not make profits.

There are different types of preference shares, cumulative and non-cumulative, redeemable and irredeemable, participating and non-participating, and convertible and non-convertible. But computation of cost of preference share will be only for redeemable and irredeemable.

Cost of Irredeemable Preference Share/Perpetual Preference Share

The share that cannot be paid till the liquidation of the company is known as irredeemable preference share. The cost is measured by the following formula:

$$K_p \text{ (without tax)} = \frac{D}{\text{CMP or NP}}$$

Where,

K_p	=	Cost of preference share.
D	=	Dividend per share.
CMP	=	Market price per share.
NP	=	Net proceeds.

Cost of irredeemable preference stock (with dividend tax)

$$K_p \text{ (with tax)} = \frac{D(1 + Dt)}{\text{CMP or NP}}$$

Where,

Dt = tax on preference dividend

Illustration 5: HHC Ltd., issues 12 per cent perpetual preference shares of face value of Rs. 200 each. Compute cost of preference share (without tax).

Solution:

$$K_p = \frac{D}{NP} \times 100$$

$$K_p = \frac{24}{200} \times 100 = 12 \text{ per cent}$$

Illustration 6: (with dividend tax): A company is planning to issue 14 per cent irredeemable preference share at the face value of Rs. 250 per share, with an estimated flotation cost of 5%. What is the cost of preference share with 10% dividend tax.

Solution:

$$K_p = \frac{D(1 + Dt)}{NP} \times 100$$

$$= \frac{35(1 + 0.10)}{237.5} \times 100 = 14.737 \text{ per cent}$$

Illustration 7: Sai Ram & Co. is planning to issue 14 per cent perpetual preference shares, with face value of Rs. 100 each. Flotation costs are estimated at 4 per cent on sales price. Compute (a) cost of preference shares if they are issued at (i) face / par value, (ii) 10 per cent premium, and (iii) 5 per cent discount, (b) compute cost of preference share in these situation assuming 5 per cent dividend.

Solution:

Without dividend tax	With dividend tax
(i) Issued at face value $K_p = \frac{14}{(100 - 4)} = 14.6 \text{ per cent}$	(i) Issued at face value $K_p = \frac{14(1 + 0.05)}{96} = 15.4 \text{ per cent}$
(ii) Issued at 10% premium $K_p = \frac{14}{(110 - 4)} = 13.2 \text{ per cent}$	(ii) Issued at 10% premium $K_p = \frac{14(1 + 0.05)}{106} = 13.9 \text{ per cent}$
(iii) Issued at 5% discount $K_p = \frac{14}{(100 - 5 - 3.8)} = 15.4 \text{ per cent}$	(iii) Issued at 5% discount $K_p = \frac{14(1 + 0.05)}{91.2} = 16.2 \text{ per cent}$

Cost of Redeemable Preference Shares

Shares that are issued for a specific maturity period or redeemable after a specific period are known as redeemable preference shares. The explicit cost of redeemable preference shares is the discount rate that equates the net proceeds of the sale of preference shares with the present value of the future dividend and principle repayments. In other words, cost of preference share is the discount rate that equates the present value of cash inflows (sale proceeds) with the present value of cash outflows (dividend + principal repayment). Dividends will be paid at the end of each year, but the principle amount will be repaid either in lump sum at the end of maturity period or in installments (equal or unequal). If the principle amount is paid in installments, then the cash outflow for each year equals to dividend plus part of principal amount. Cost of preference shares, when the principal amount is repaid in one lumpsum amount:

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

$$NP = \frac{D_1}{(1 + K_p)^1} + \frac{D_2}{(1 + K_p)^2} + \frac{D_3}{(1 + K_p)^3} + \dots + \frac{P_n}{(1 + K_p)^n}$$

Where,

K_p = Cost of preference share.

NP = Net sales proceeds (after discount, flotation cost).

D = Dividend on preference share.

P_n = Repayment of principal amount at the end of 'n' years.

Illustration 8 (Lump sum repayment): A company issues Rs. 1,00,000, 10 per cent preference shares of Rs. 100 each redeemable after 10 years at face value. Cost of issue is 10 per cent. Calculate the cost of preference share.

Solution:

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

$$90 = \sum_{t=1}^{10} \frac{10}{(1 + K_p)^t} + \frac{\text{Rs. } 100}{(1 + K_p)^{10}}$$

The trial and error method is used here, for the computation of the cost of preference share.

Year	Cash outflow (Rs.)	PV factor		Present Values	
		10%	12%	10%	12%
1 - 10	10	6.145	5.650	61.45	56.5
10	100	0.386	0.322	38.60	32.2
Total PV of Cash outflow				100.05	88.70
(-) PV of Cash inflow				90.00	90.00
				10.05	(-) 1.3

In trials, PV of cash outflow did not equal to the PV of cash inflow (Rs. 100). Hence, cost of preference share is calculated by using interpolation formula.

$$K = \text{LDF}(\%) + \left((\text{HDF} - \text{LDF}) \frac{\text{LDFPV} - \text{PV of CIF}}{\text{LDFPV} - \text{HDFPV}} \right)$$

Where,

LDF = Lower discounting factor in %.

LDFPV = Lower discounting factor present value (Rs.).

HDFPV = Higher discounting factor present value (Rs.).

PV of CIF = Present value of cash inflows.

$$K_p = 10\% + \left((12\% - 10\%) \frac{100.05 - 90}{100.05 - 88.7} \right)$$

$$= 10\% + \left(2 \times \frac{10.05}{11.35} \right)$$

$$= 10\% + 2 \times 0.886 = 10\% + 1.772$$

$$= 11.77 \text{ per cent}$$

Short cut formula:

$$K_p = \frac{D + (f + d + pr - pi) / N_m}{(RV + NP) / 2}$$

Where,

D = Dividend per share.

f = Flotation cost (Rs).

d = Discount on issue of preference share (Rs).

pr = Premium on redemption of preference shares (Rs).

pi = Premium on issue of preference share (Rs).

N_m = Term of preference shares.

RV = Redeemable value of preference share.

NP = Net proceeds realized.

$$K_p = \frac{10 + (10 + 0 + 0 - 0)/10}{(100 + 90)/2}$$

$$= \frac{10 + (1)}{95} = 11.579 \text{ per cent}$$

Cost of Debt Capital

Companies may raise debt capital through issue of debentures or loan from financial institutions or deposits from public. All these resources involve a specific rate of interest. The interest paid on these sources of funds is a charge on the profit & loss account of the company. In other words, interest payments made by the firm on debt issue qualify tax deduction in determining net taxable income. Computation of cost of debenture or debt is relatively easy, because the interest rate that is payable on debt is fixed by the agreement between the firm and the creditors. Computation of cost of debenture or debt capital depends on their nature. The debt / debentures can be perpetual or irredeemable and redeemable cost of debt capital is equal to the interest paid on that debt, but from company's point of view it will be less than the interest payable, when the debt is issued at par, since the interest is tax deductible. Hence, computation of debt is always after tax cost.

Cost of Irredeemable Debt/Perpetual Debt

Perpetual debt provides permanent funds to the firm, because the funds will remain in the firm till liquidation. Computation of cost of perpetual debt is conceptually relatively easy. Cost of perpetual debt is the rate of return that lender expect (i.e., fixed interest rate). The coupon rate or the market yield on debt can be said to represent an approximation of cost of debt. Bonds / debentures can be issued at (i) par/face value, (ii) discount and (iii) premium.

The following formulae are used to compute cost of debentures or debt of bond:

- (i) Pre-tax cost

$$K_{di} = \frac{I}{P \text{ or } NP}$$

- (ii) Post-tax cost

$$K_{di} = \frac{I(1-t)}{P \text{ or } NP}$$

Where,

K_{di} = Pre-tax cost of debentures.

I = Interest

P = Principle amount or face value.

P = Net sales proceeds.

t = Tax rate.

Illustration 9: XYZ Company Ltd., decides to float perpetual 12 per cent, debentures of Rs. 100 each. The tax rate is 50 per cent. Calculate cost of debenture (pre and post tax cost).

Solution:

(i) Pre-tax cost

$$K_{di} = \frac{\text{Rs. } 12}{100} = 12 \text{ per cent}$$

(ii) Post-tax cost

$$K_d = \frac{12(1-0.5)}{100} = 6 \text{ per cent}$$

Generally, cost of debenture is equal to the interest rate, when debenture is issued at par and without considering tax. Cost will be less than the interest when we calculate cost after considering tax since it is tax deductible. From the cost of capital point of view, debenture cost is always in post tax cost.

Sometimes debentures may be issued at premium or discount. A company, which is having a good track record, will be issued at premium and a company that is new or unknown to the public or has a nominal or poor track record will be issued at discount. Whenever debentures are issued at premium or discount the cost of debenture will be affected, it will decrease or increase respectively.

Illustration 10: Rama & Co. has 15 per cent irredeemable debentures of Rs. 100 each for Rs. 10,00,000. The tax rate is 35 per cent. Determine debenture assuming it is issued at (i) face value/par value (ii) 10 per cent premium and (iii) 10 per cent discount.

Solution:

Issued at	Pre-tax	Post-tax
(i) Face value	$\frac{\text{Rs. } 15}{100} = 15 \text{ per cent}$	$\frac{15(1-0.35)}{100} = 9.8 \text{ per cent}$
(ii) 10% premium	$\frac{\text{Rs. } 15}{110} = 13.7 \text{ per cent}$ (100 + 10)	$\frac{15(1-0.35)}{110} = 8.9 \text{ per cent}$
(iii) 10% discount	$\frac{\text{Rs. } 15}{90} = 16.67 \text{ per cent}$ (100 - 10)	$\frac{15(1-0.35)}{90} = 10.9 \text{ per cent}$

Cost of Redeemable Debentures/Debt

Redeemable debentures that, are having a maturity period or are repayable after a certain given period of time. In other words, these type of debentures that are under legal obligation to repay the principal amount to its holders either at certain agreed intervals during the duration of loan or as a lumpsum amount at the end of its maturity period. These type of debentures are issued by many companies, when they require capital for fulfilling their temporary needs.

(i) Cost of irredeemable debentures

$$K_d = \sum_{t=1}^n \frac{NI_t}{(1+K_d)^t} + \frac{P_n}{(1+K_d)^n}$$

Where,

- Kd = Cost of debentures.
- n = Maturity period.
- NI = Net interest (after tax adjustment).
- P_n = Principal repayment in the year 'n'.

Illustration 11: BE Company issues Rs. 100 par value of debentures carrying 15 per cent interest. The debentures are repayable after 7 years at face value. The cost of issue is 3 per cent and tax rate is 45 per cent. Calculate the cost of debenture.

Solution:

$$(100 - 3) = \sum_{t=1}^7 \frac{15(1 - 0.45)}{(1 + Kd)^t} + \frac{100}{(1 + Kd)^n}$$

Year	Cash outflow (Rs.)	DF		PV of cash outflows (Rs.)	
		10%	12%	10%	12%
1 - 7	9.75	4.863	4.564	47.415	44.499
7	100	0.513	0.452	51.300	45.200
PV of cash out flows				98.715	89.699
(-) PV of Cash inflows				97.00	97.00
				1.715	(-) 7.301

Cost of debenture capital lies between 10 per cent and 12 per cent, because net present value Rs. 97 lies between the PV of 10 per cent and 12 per cent. Exact cost can be computed only with interpolation formula:

$$Kd = LDF + \left(\frac{HDF - LDF}{LDFPV - HDFPV} \right) (LDFPV - NP)$$

Where,

- LDF = Lower discounting factor.
- HDF = Higher discounting factor.
- LDFPV = Lower discounting factor present value.
- HDFPV = Higher discounting factor PV.
- PVCIF = Present value of cash inflows
- NP = Net proceeds.

$$Kd = 10\% + \left(2 \times \frac{98.715 - 97}{98.715 - 89.699} \right) \\ = 10\% + 0.38 = 10.38 \text{ per cent}$$

Short cut method:

$$K_p = \frac{I(1-t) + (f + d + pr - pi) / N_m}{(RV + NP) / 2}$$

Where,

- I = Interest.
- t = Tax rate.

- f = Flotation cost.
 d = Discount.
 p_r = Premium on redemption.
 p_i = Premium on issue.
 RV = Redeemable value.
 NP = Net proceed.
 N_m = Maturity period of debt.

$$K_p = \frac{15(1-0.45) + (3-0+0-0)/7}{(100-97)/2}$$

$$K_p = \frac{10.179}{98.50} = 10.33 \text{ per cent}$$

Illustration 12 (Installment repayment): Hari Ram & Co. issued 14 per cent debentures aggregate at Rs. 2,00,000. The face value of debenture is Rs. 100. Issue cost is 5 per cent. The company has agreed to repay the debenture in 5 equal installment at par value. Installment starts at the end of the year. The company's tax rate is 35 per cent. Compute cost of debenture.

Solution:

Sales proceeds = face value + flotation cost = Rs. 100 – 5 = Rs. 95

Installment amount = Face value + No. of installments = 100 ÷ 5 = Rs. 20.

Years	Cash outflow (Rs.)	DF Factor		PV of cash Outflows (Rs.)	
	(NI + Installment)	8%	13%	8%	13%
1	9.1 + 20 = 29.1	0.926	0.885	26.947	25.754
2	7.28 + 20 = 27.28	0.857	0.783	23.379	21.361
3	5.46 + 20 = 25.46	0.794	0.693	20.216	17.644
4	3.64 + 20 = 23.64	0.735	0.613	17.376	14.492
5	1.82 + 20 = 21.82	0.681	0.543	14.860	11.849
	PV of cash out flows			102.778	91.230
	PV of cash inflows			95.000	95.000
				(+) 7.778	(-)3.770

$$K_d = 8\% + \left((13 - 8) \times \frac{102.778 - 95}{102.778 - 91.1} \right)$$

$$= 8\% + \left(5 \times \frac{7.778}{11.678} \right)$$

$$= 8\% + 3.33 = 11.33 \text{ per cent}$$

Weighted Average Cost of Capital (WACC)

A company has to employ a combination of creditors and fund owners. The composite cost of capital lies between the least and most expensive funds. This approach enables

the maximisation of profits and the wealth of the equity shareholders by investing the funds in projects earning in excess of the overall cost of capital.

The composite cost of capital implies an average of the costs of each of the source of funds employed by the firm property, weighted by the proportion they hold in the firm's capital structure.

Steps involved in computation of WACC

- 1) Determination of the type of funds to be raised and their individual share in the total capitalisation of the firm.
- 2) Computation of cost of specific source of funds.
- 3) Assignment of weight to specific costs.
- 4) Multiply the cost of each source by the appropriate assigned weights.
- 5) Dividing the total weighted cost by the total weights to get overall cost of capital.

Once the company decides the funds that will be raised from different sources, then the computation of specific cost of each component or source is completed after which, the third step in computation of cost of capital is, assignment of weights to specific costs, or specific sources of funds. How to assign weights? Is there any base to assign weights? How many types of weights are there?

Assignment of Weights: The weights to specific funds may be assigned, based on the following:

- (i) **Book Values:** Book value weights are based on the values found on the balance sheet. The weight applicable to a given source of fund is simply the book value of the source of fund divided by the book value of the total funds.

❖ The merits of book values weights are:

- ◆ Calculation of weights is simple.
- ◆ Book values provide a usable base, when firm is not listed or security is not actively traded.
- ◆ Book values are really available from the published records of the firm.
- ◆ Analysis of capital structure in terms of debt – equity ratio is based on book value.

❖ **Disadvantages of book value weights:**

- ◆ There is no relation between book values and present economic values of the various sources of capital
- ◆ Book value proportions are not consistent with the concept of cost of capital because the latter is defined as the minimum rate of return to maintain the market value of the firm.

- (ii) **Capital Structure Weights:** Under this method, weights are assigned to the components of capital structure based on the targeted capital structure. Depending up on the target, capital structures have some difficulties. They are:

- ❖ A company may not have a well defined target capital structure.
- ❖ It may be difficult to precisely estimate the components of capital costs, if the target capital is different from present capital structure.

(iii) **Market Value Weights:** Under this method, assigned weights to a particular component of capital structure is equal to the market value of the component of capital divided by the market value of all components of capital and capital employed by the firm.

❖ **Advantages of market value weights:**

- ◆ Market values of securities are approximately close to the actual amount to be received from their sale.
- ◆ Costs of the specific resources of funds that constitute the capital structure of the firm, are calculated by keeping in mind the prevailing market prices.

❖ **Disadvantages of market value weights:**

- ◆ Market values may not be available when a firm is not listed or when the securities of the firm are very thinly traded.
- ◆ Market value may be distorted when securities prices are influenced by manipulation loading.
- ◆ Equity capital gets greater importance.

Most of the financial analysts prefer to use market value weights because it is theoretically consistent and sound.

Factors Affecting WACC

Weighted average cost of capital is affected by a number of factors. They are divided into two categories such as:

- (a) Controllable Factors (internal factor)
 - (b) Uncontrollable Factors (external factor)
- (a) **Controllable Factors:** Controllable factors are those factors that affect WACC, but the firm can control them. They are is
- (i) **Capital Structure Policy:** As we have assured, a firm has a given target capital structure where it assigns weights based on that target capital structure to calculate WACC. However, a firm can change its capital structure or proportions of components of capital that affect its WACC. For example, when a firm decides to use more debt and less equity, which will lead to reduction of WACC. At the same time increasing proportion of debt in capital structure increases the risk of both debt and equity holder, because it increases fixed financial commitment.
 - (ii) **Dividend Policy:** The required capital may be raised by equity or debt or both. Equity capital can be raised by issue of new equity shares or through retained earnings. Sometimes companies may prefer to raise equity capital by retention of earnings, due to issue of new equity shares, which are expensive (they involve flotation costs). Firms may feel that retained earnings is less costly when compared to issue of new equity. But if it is different it is more costly, since the retained earnings is income that is not paid as dividends hence, investors expect more return and so it affects the cost of capital.
 - (iii) **Investment Policy:** While estimating the initial cost of capital, generally we use the starting point as the required rate of return on the firm's existing

stock and bonds. Therefore, we implicitly assume that new capital will be invested in assets of the same type and with the same degree of risk. But it is not correct as no firm invest in assets similar to the ones that currently operate, when a firm changes its investment policy. For example, investment in diversified business.

- (b) **Uncontrollable Factors :** The factors that are not possible to be controlled by the firm and mostly affects the cost of capital. These factors are known as External factors.
- (i) **Tax Rates:** Tax rates are beyond the control of a firm. They have an important effect on the overall cost of the capital. Computation of debt involves consideration of tax. In addition, lowering capital gains tax rate relative to the rate on ordinary income makes stocks more attractive and reduces cost of equity and lower the overall cost of capital.
 - (ii) **Level of Interest Rates:** Cost of debt is interest rate. If interest rates increases, automatically cost of debt also increases. On the other hand, if interest rates are low then the cost of debt is less. The reduced cost of debt decreases WACC and this will encourage an additional investment.
 - (iii) **Market Risk Premium:** Market risk premium is determined by the risk in investing proposed stock and the investor's aversion to risk. Market risk is out of control risk, i.e., firms have no control on this factor.

The above are the important factors that affect the cost of capital.

Illustration 13: A firm has the following capital structure as the latest statement shows:

Source of funds	Rs.	After tax Cost %
Debt	30,00,000	4
Preference shares	10,00,000	85
Equity share	20,00,000	115
Retained earnings	40,00,000	10
Total	100,00,000	

Based on the book values compute the cost of capital.

Solution:

Source of Finance	Weights	Specific Cost (%)	Weighted Cost
Debt	0.30	0.04	0.012
Preference shares	0.10	0.08	0.008
Equity share	0.20	0.11	0.022
Retained earnings	0.40	0.10	0.040
	1.00		0.082

$$\begin{aligned} \text{Overall cost of capital (K}_o\text{)} &= \text{Total Weighted Cost} \times 100 \\ &= 0.082 \times 100 = 8.2 \text{ per cent} \end{aligned}$$

Cost of weight

$$\text{Debt weight} = \frac{\text{Debt capital}}{\text{Total capital}} = \frac{30,00,000}{1,00,00,000} = 0.30$$

Illustration 14: XYZ company supplied the following information and requested you to compute the cost of capital based on book values and market values.

Source of Finance	Book Value (Rs.)	Market Value (Rs.)	After Tax Cost (%)
Equity capital	10,00,000	15,00,000	12
Long term debt	8,00,000	7,50,000	7
Short term debt	2,00,000	2,00,000	4
Total	20,00,000	24,50,000	

Solution:

Computation of cost of capital based on book value

Source of Finance	Book Value (Rs.)	Weights	Specific cost	Weighted cost
(1)	(2)	(3)	(4)	(5) = (3) × (4)
Equity capital	10,00,000	0.50	0.12	0.060
Long term debt	8,00,000	0.40	0.07	0.028
Short term debt	2,00,000	0.10	0.04	0.004
Total	20,00,000	1.00		0.092

Cost of capital = $0.092 \times 100 = 9.2$ per cent

Cost of capital based on market value weight.

Source of Finance	Book Value (Rs.)	Weights	Specific cost	Weighted cost
(1)	(2)	(3)	(4)	(5) = (3) × (4)
Equity capital	15,00,000	0.613	0.12	0.074
Long term debt	7,50,000	0.307	0.07	0.022
Short term debt	2,00,000	0.080	0.04	0.003
	24,50,000	1.000		0.099

Cost of capital = $100 \times 0.099 = 9.9$ per cent

Weighted average cost of capital (alternative method)

Source of Finance	Market Value (Rs.)	Cost (%)	Total Cost
(1)	(2)	(3)	(4) = (2) × (3)
Equity capital	15,00,000	0.12	1,80,000
Long term debt	7,50,000	0.07	52,500
Short term debt	2,00,000	0.04	8,000
	24,50,000		2,40,500

$$\begin{aligned} \text{WACC} &= \frac{\text{Total Cost}}{\text{Total Capital}} \\ &= \frac{2,40,500}{24,50,000} \times 100 = 9.9\% \text{ approx. } 10 \text{ per cent} \end{aligned}$$

Marginal Cost of Capital

Companies may raise additional funds for expansion. Here, a financial manager may be required to calculate the cost of additional funds to be raised. The cost of additional funds is called marginal cost of capital. For example, a firm at present has Rs. 1,00,00,000 capital with WACC of 12 per cent, but it plans to raise Rs. 5,00,000

for expansion, such as additional funds, the cost that is related to this Rs. 5 lakhs is marginal cost of capital.

The weighted average cost of new or incremental, capital is known as the marginal cost of capital. The marginal cost of capital is the weighted average cost of new capital using the marginal weights. The marginal weights represent the proportion of various sources of funds to be employed in raising additional funds. The marginal cost of capital shall be equal to WACC, when a firm employs the existing proportion of capital structure and some cost of component of capital structure. But in practice WACC may not be equal to marginal cost of capital due to change in proportion and cost of various sources of funds used in raising new capital. The marginal cost of capital ignores the long term implications of the new financing plans. Hence, WACC should be preferred, to maximise the shareholders wealth in the long term.

Illustration 15: HLL has provided the following information and requested you to calculate (a) WACC using book-value weights and (b) weighted marginal cost of capital (assuming that specified cost do not change)

Source of Finance	Amount (Rs.)	Weights (%)	After tax cost (%)
Equity capital	14,00,000	0.452	9
Preference capital	8,00,000	0.258	12
Debentures	9,00,000	0.290	16

HLL wishes to raise an additional capital of Rs. 12,00,000 for the expansion of the project. The details are as follows

Equity capital	Rs. 3,00,000
Preference capital	Rs. 3,00,000
Debentures	Rs. 6,00,000

Solution:

Computation of WACC

Source of Finance	Weights	After tax Cost (%)	Weighted Cost
Equity capital	0.452	0.09	0.041
Preference capital	0.258	0.12	0.031
Debentures	0.290	0.16	0.046
			0.118

$$\text{WACC} = 0.118 \times 100 = 11.8 \text{ per cent}$$

Computation of Weighted Marginal Cost of Capital (WACC)

Source of Finance	Marginal Weights	After tax Cost (%)	Weighted marginal cost
Equity capital	0.50	0.09	0.045
Preference capital	0.25	0.12	0.030
Debentures	0.25	0.16	0.040
			0.115

$$\text{WACC} = 0.115 \times 100 = 11.5 \text{ per cent}$$

Summary

Cost of capital may be viewed in different ways: (i) From investors' view point – the measurement of the sacrifice made by him with regard to capital formation, (ii) Firms view point – it is the minimum required rate of returns needed to justify the use of capital, and (iii) Capital expenditure point-it is the minimum required rate of return used to value cash flows.

Cost of capital is the weight average cost of various sources of finance used by the firm. It comprises the risk less cost of the particular type of financing (r_f), the business risk premium, (b) and the financial risk premium (f). Symbolically (K_c) = $r_f + b + f$.

The cost of capital is useful in designing optimal capital structure, investment evaluation, and financial performance appraisal.

Computation of Cost of capital/of WACC involves five steps: (1) Determination of the type of funds to be raised and their individual share in the total capitalisation of the firm, (2) Computation of the cost of each type of funds, (3) Assigning weights to specific costs, (4) Multiplying the cost of the source by the (appropriate) assigned weights, and (5) Dividing the total weighted cost by the total weights to get over all cost of capital.

Test Yourself

1. What is cost of capital ?
2. Explicit vs Implicit Cost.
3. Define marginal cost of capital.
4. How is cost of perpetual debt computed ?
5. What is retained earnings ?
6. How is the cost of retained earnings computed ?
7. What is the relevance of cost of capital in capital budgeting decisions?
8. Distinguish between WACC and MCC.
9. "Marginal cost of capital nothing but the average cost of capital", explain.
10. The basic formula to calculate the cost of equity is $D/P + g$. Explain its rationale.
11. How is cost of debt calculated?
12. How is cost of preference share calculated ?
13. What are the steps involved in calculating a firm's WACC?
14. Explain the problems faced in determining the WACC ? How is it relevant to capital budgeting decisions ?
15. WACC (K_c) may be determined using book value and market value weights. Compare the pros and cons of using market value weights rather than book value weights in calculating K_c .

C H A P T E R 6

SOURCES OF WORKING CAPITAL

LEARNING OBJECTIVES

1. List out the sources of short term working capital.
2. Discuss the sources of long-term working capital.

Financing of Temporary or Variable or Short-term Working Capital

Sources of short-term funds have to be used (exclusively) for meeting the working capital requirements only and not for financing fixed assets and for meeting the margin money for working capital loans.

The various sources of short-term financing are as follows:

- 1) **Trade Credit:** Trade credit refers to the credit extended by the supplier of goods or services to his/her customer in the normal course of business. Trade credit occupies very important position in short-term financing due to the competition. Almost all the traders and manufacturers are required to extend credit facility (a portion), without which there is no possibility of staying back in the business. Trade credit is a spontaneous source of finance that arises in the normal business transactions of the firm without specific negotiations (automatic source of finance). In order to get this source of finance, the buyer should have acceptable and dependable credit worthiness and reputation in the market. Trade credit generally extended in the format open account or bills of exchange. Open account is the form of trade credit, where supplier sends goods to the buyer for the payment to be received in future as per terms of the sales invoice. As such trade credit constitute a very important source of finance, it represents 25 per cent to 50 per cent of the total short-term sources for financing working capital requirements.

Getting trade credit may be easy to the well-established or well-reputed firm, but for a new or the firm with financial problems will generally face problem in getting trade credit. Generally suppliers look for earning record, liquidity position and payment record which is extending credit. Building confidence in suppliers is possible only when the buyer discussing his/ her financial condition future plans and payment record. Trade credit involves some benefits and costs.

Advantages of Trade Credit: The main advantages are:

- ❖ Easy availability when compared to other sources of finance (except financially weak companies).
- ❖ Flexibility is another benefit, as the credit increases with the growth of the firm's sales.
- ❖ Informality as we have already seen that it is an automatic finance.

The above discussion on trade credit reveals two things. One, cost of trade credit is very high beyond the cash discount period, company should not have cash discount for prompt payment and Second, if the company is not able to avail cash discount it should pay only at the end of last day of credit period, even if it can delay by one or two days, it does not affect the credit standing.

- 2) **Accruals:** Accrued expenses are those expenses which the company owes to the other persons or organisations, but not yet due and not yet paid the amount. In other words, accruals represent a liability that a firm has to pay for the services or goods, which it has already received. It is spontaneous and interest-free sources of financing. Salaries, wages, interest and taxes are the major constituents of accruals. Salaries and wages are usually paid on monthly and weekly basis respectively. The amounts of salaries and wages have owed but not yet paid and shown them as accrued salaries and wages on the balance sheet at the end of financial year. Longer the time lag in payment of these expenses, the greater is the amount of funds provided by the employees. Similarly, interest and tax are other accruals, as source of short-term finance. Tax will be paid on earnings. Income tax is paid to the government on quarterly basis and some other taxes may be payable half-yearly or annually. Amount of taxes due as on the date of the balance sheet but not paid till then and they are showed as accrued taxes on the balance sheet. Like taxes, interest is paid periodically in the year but the funds are used continuously by a firm. All other such items of expenses can be used as a source of short-term finance but shown on the balance sheet.

The amount of accrual varies with the level of activities of a firm. When the level of activity expands, accruals increase, they automatically act as a source of finance. Accruals are treated as "cost free" source or finance, since it does not involve any payment of interest. But in actual terms, it may not be true, since payment of salaries and wages is determined by provisions of law and industry practice. Similarly, tax payment governed by laws and delay in payment of tax leads to pay penalty. Hence, a firm must be noted that use of accruals as a source of working capital or it may not be possible to delay in payment of these items of expenses.

- 3) **Deferred Income:** Deferred incomes are incomes received in advance by the firm for supply of goods or services in future period. These income receipts increase the firm's liquidity and constitute an important source of short-term source finance. These payments are not showed as revenue till the supply of goods or services, but showed in the balance sheet as income received in advance. Advance payment can be demanded by only firms having monopoly power, great demand for its products and services and if the firm is manufacturing a special product on a special order.
- 4) **Commercial Papers (CPs):** Commercial paper represents a short-term unsecured promissory note issued by firms that have a fairly high credit (standing) rating. It was first introduced in USA and it was an important money market instruments. In India, Reserve Bank of India introduced CP on the recommendations of the Vaghul Working Group on money market. CP is a source of short-term finance to only large firms with sound financial position.

Features of CP:

- ❖ The maturity period of CP ranges from 15 to 365 day (but in India it ranges between 91 to 180 days).
- ❖ It is sold at a discount from its face value and redeemed at its face value.

- ❖ Return on CP is the difference between par value and redeemable value.
- ❖ It may be sold directly to investors or indirectly (through) dealers.
- ❖ There is no developed secondary market for CP.

"Eligibility" Criteria for issuing CP:

CP is unsecured promissory note, the issue of CP is being regulated by the Reserve Bank of India. RBI has laid down the following conditions to determine the eligibility of a company that wishes to raise funds through the issue of CPs.

- ❖ The Tangible Net Worth (TNW) of the company, as per latest audited balance sheet should not be less than Rs. 4 crore.
- ❖ The company should have been sanctioned as a fund based limit for bank(s) finance and/or the All India Financial Institutions.
- ❖ Company can issue CPs amounting to 75% of the permitted bank (working capital limit) credit.
- ❖ Company's CPs receives a minimum rating of (P2 from CRISIL, A-2 form ICRA, etc).
- ❖ The minimum size of each CP is Rs. 5 lakhs or multiples thereof.
- ❖ The size of any single issue should not be less than Rs. 1 crore.
- ❖ The CP is in the form of usance promissory note negotiable by endorsement and delivery.

Advantages of CP:

- ❖ It is an alternative source of finance and proves to be helpful during the period of tight bank credit.
- ❖ It is a cheaper source of short-term finance when compared to the bank credit.

Disadvantages of CP:

- ❖ It is available only for large and financially sound companies.
- ❖ It cannot be redeemed before the maturity date.

- 5) **Public Deposits:** Public deposits or term deposits are in the nature of unsecured deposits, have been solicited by the firms (both large and small) from general public primarily for the purpose of financing their working capital requirements.

Regulations: Fixed deposits accepted by companies are governed by the Companies (Acceptance of Deposits) Amendment Rules 1978. The main features of this regulation are:

- ❖ A firm cannot issue public deposits for more than 25 per cent of its share capital and free reserves.
- ❖ The public deposits can be issued for a period ranging from a minimum 6 months to maximum 3 years. Public deposits for a period of three months, however, can as well be issued, but only for an amount up to 10% of the company's share capital and free reserves. Maximum period of 5 years is allowed for non-banking financial corporation (NBFC's).
- ❖ The company that had raised funds by way of issue of public deposits is required to set aside, a deposit and / or investment, by the 30th April each

year an amount equal to 10 per cent of the maturity deposits by the 31st March of the next year. The amount, so set aside can be used only for repairing the amount of deposits.

- ❖ Finally, a company's and accepting the public deposits is required to disclose some true, fair, vital and relevant facts in regards to its financial position and performance.

Advantages: Advantages of public deposit can be studied from two different views.

a) Company point of view

- ◆ Simple procedure involved in issuing public deposits.
- ◆ No restrictive covenants are involved.
- ◆ No security is offered against public deposits.
- ◆ Cheaper (post-tax cost is fairly reasonable).

b) Investors point of view

- ◆ Higher interest rates when compared to other investment avenues.
- ◆ Short maturity period.

Disadvantages: These also can be studied from two different points :

a) Company point of view

- ◆ Limited amount of funds can be raised.
- ◆ Funds available only for a short period.

b) Investor point of view

- ◆ Risk since there is no security against PD.
- ◆ Income received (interest) is taxable.

6) **Inter-Corporate Deposits (ICDs):** A deposit made by one firm with another firm is known as inter-corporate deposits (ICDs). Generally, these deposits are usually made for a period up to six months. Such deposits may be of three types:

- ❖ **Call Deposits:** Deposits are expected to be payable on call. In other words, whenever its repayment is demanded on just one days notice. But, in actual practice, the lender has to wait for at least 2 or 3 days to get back the amount. Inter corporate deposits generally have 12 per cent interest per annum.
- ❖ **Three Months Deposits:** These deposits are more popular among companies for investing the surplus funds. The borrower takes this type of deposits for tiding over a short-term cash inadequacy. The interest rate on these types of deposits is around 14 per cent per annum.
- ❖ **Six-Months Deposits:** Generally, the inter-corporate deposits are made for a maximum period of six months. These types of deposits are usually given to 'A' category borrowers only and they carry an interest rate of around 16% per annum.

Features of ICDs:

- ❖ There are no legal regulations, which makes an ICD transaction very convenient.
- ❖ Inter-corporate deposits are given and taken in secrecy.
- ❖ Inter-corporate deposits are given based on borrowers financial sound, but in practice lender lends money based on personal contacts.

- 7) **Commercial Banks:** Commercial banks are the major source of working capital finance to industries and commerce. Granting loan to business is one of their primary functions. Getting bank loan is not an easy task since the lending bank office may ask number of questions about the prospective borrower's financial position and its plans for the future. At the same time bank will want to monitor of the borrower's business progress. But there is a good side to this, that is borrower's share price tends to rise, because investor know that convince banks is very difficult.

Forms of Bank Finance: Banks provide different types of tailored made loans that are suitable for specific needs of a firm. The different types of forms of loans are:

- (1) Loans, (2) Overdrafts, (3) Cash credits, (4) Purchase or discounting of bills and (5) Letter of Credit.
- (1) **Loans:** Loan in an advance is lumpsum given to borrower against some security. Loan amount is paid to the applicant in the form of cash or by credit to his/her account. In practice the loan amount is paid to the customer by crediting his/her account. Interest will be charged on the entire loan amount from the date the loan is sanctioned. Borrower can repay the loan either in lumpsum or in installments depending on conditions. If the loan is repayable in installment basis interest will be calculated on quarterly and on reduced balances. Generally, working capital loans will be granted for one-year period.
 - (2) **Overdrafts:** Overdraft facility is an agreement between the borrower and the banker, where the borrower is allowed to withdraw funds in excess of the balance in his/her current accounts up to a certain limit during a specified period. It is flexible from the borrower's point of view because the borrower can withdraw and repay the cash whenever he/she wants within the given stipulations. Interest is charged on daily over drawn balances and not on the overdraft limit given by the bank. But bank charges some minimum charges.
 - (3) **Cash Credit:** It is the most popular source of working capital finance in India. A cash credit facility is an arrangement where a bank permits a borrower to withdraw money up to a sanctioned credit limit against tangible security or guarantees. Borrower does not require to withdraw the total sanctioned credit at a time, rather, he can withdraw according to his/her requirements and he can also repay the surplus cash in his cash credit account. Interest is chargeable on actually used amount and there is no commitment charge. Cash credit is a flexible source of working capital from borrower's point of view.
 - (4) **Purchasing or Discounting of Bills:** Bills receivable arises out of sales transaction, where the seller of goods draws the bill on the purchaser. The bill may be documentary or clean bill. Once the bill is accepted by the purchaser, then the drawer (seller) of the bill can go to bank for discount or sale. The credit worthiness of the drawer (seller) is satisfactory, then bank purchases or discounts the bill and reduces funds by way of crediting to customers account. The credited

amount will be less than the bill amount. At the end of maturity period of the bill, bank presents the bill to drawee (acceptor) for payment. If the bill is discounted and dishonored by the drawee, then the customer (seller) is liable to pay the bill amount and any other expenses incurred to bank.

- (5) **Letter of Credit [L/C]:** There are two non-fund based sources of working capital, viz., letter of credit (L/Cs) and Bank Guarantees (B/Gs). These are also known as quasi-credit facilities, due to non-payment of amount immediately. A Letter of Credit (L/C) is a written document issued by the Buyer's Banker (BB) at the request of the buyer's, in favour of the seller, where by the Buyers Banker gives an undertaking to the seller, that the bank pay the obligations of its customer up to a specified amount, if the customer fails to pay the value of goods purchased. It helps to bank's customer to obtain credit from the seller (supplier), which is possible by assurance of the payment. Thereby, it allows the supplier to extend credit, since the risk of non-payment is transferred to the BB. Letter of credit facility is available from bank only for the companies that are financially sound and Bank charges the customer for providing this facility.

Financing of Permanent or Long-term Working Capital

Permanent working capital or fixed working capital is that working capital required to maintain the minimum sales. As we have read that networking capital means a part of current assets that should be financed by long-term sources of finance. The following are the sources of long-term working capital or long-term sources of finance.

Internal Financing Sources

As we have classified source of finance as internal and external, which is based on the generation of finance source. A new company can raise the required long-term funds from external sources, but an undertaking, which is well established, can generate funds not only from external sources but also from internal sources. Internal source of finance is available only for firms that are existing and well established.

The internal sources of finance are:

- A. Retained earnings/ploughing back of profits, and
- B. Depreciation charges.

The following discussion gives clear view about the internal sources of finance.

Retained Earnings/Ploughing Back of Profits

Retained earnings is an important source of internal financing of well-established companies. Retained earnings are the portion of earnings available to equity shareholders, which are ploughed back in the company. In other words, a part of earnings available to equity shareholders that are retained for future investment. Accumulation of profits by a firm for financing developmental programmes. Hence, the process of accumulating company profits regularly and their utilisation in the business is known as retained earnings or ploughing back of profits or internal financing or self-investment. Retained earnings are part of equity, since they are part of equity, which are sacrificed by equity shareholders. In this source of finance companies, generally retained or ploughed back about 20 per cent to 70 per cent of earnings available to equity shareholders for the purpose of financing of the growth of the company. This becomes a main source of long-term finance, when the management capitalizes profits. It is known as capitalization of profits or issue of bonus shares.

Retained earnings may be used for expansion programmes of company, replacement of obsolete assets, modernisation of plant and equipment, redemption of preference shares or debentures, loans etc.

Factors Influencing Retained Earnings

As we have read that use of internal funds as a source of finance is only for well-established companies. Retained earnings are influenced by a number of factors:

- 1) **Earnings Capacity of a Company:** Ploughing back of profits arise only when the company have sufficient (profits) earnings. Larger the earnings, larger the ploughing back of profits. It can be supported by Psychological Law of Consumption given by Keynes who is a famous economist.
- 2) **Types of Dividend Policy:** Ploughing back of profits depends on the dividend policy of a firm. In other words, a retained earning depends on the dividend policy adopted by the top management (BOD's) with regards to distribution of earnings. A company, which intended to retain more earnings, needs to follow conservative dividend policy. The retained earnings policy is also affected by the expectation of shareholders. When there is more percentage of shareholders who are in high income tax bracket, expects to retain profits. On the other hand, where the shareholders who are depend on regular income, expects more dividends, i.e., less retained earnings.
- 3) **Taxation Policy of the Government:** Earnings available to shareholders are the profit after taxes minus preference shareholders dividend. When there is high tax rate less profit after tax and less retained earnings and vice versa.
- 4) **Profitable Investment Opportunities:** A firm that has more profitable investment opportunities feels to retain profits for financing of that investment and vice versa.
- 5) **Other Factors:** Apart from the above-discussed factors, the following will also affect retained earnings.
 - ❖ Top management attitude and philosophy
 - ❖ Custom of the industry
 - ❖ Economic and social environment of the country (Prevailing)
 - ❖ Industry life cycle, etc.

Advantages/Merits of Retained Earnings: The advantages of retained earnings may be studied under three view points:

(a) Advantages/Merits to Company:

- ❖ Firm can raise funds easily, since there are no obligations involved with shareholders.
- ❖ It is less costly, when compared to other sources of long-term finance (equity shares, preference shares, and debentures), since it does not involve flotation cost.
- ❖ It increases credit worthiness of the company because retained earnings increases owners' equity.
- ❖ No dilution of control, when a company depends on retained earnings.
- ❖ It helps to maintain stable dividend policy in the year of less or no profits, the company can use to retain earnings to pay uniform dividend.

- ❖ It helps in improving efficiency, by the use of retained earnings to replace the depletion and obsolescence assets.
- ❖ It enables to redeem long-term liabilities such as debentures, long-term loans, preference shares, which involve a fixed cost.
- ❖ It acts as a cushion to absorb hazards refers to the down in the trade cycle (depression, recession, declining).

(b) ***Advantages/Merits to Shareholders/Owners:***

- ❖ It increases in the value of shares in the long-run of stable dividend policy, improvement of efficiency, credit worthiness etc..
- ❖ Increase in the collateral value of shares, since the value of share price increased and it is accepted by the lenders as collateral security.
- ❖ It enhances (earnings) dividends, when the retained earnings are invested in profitable investment avenues.
- ❖ It reduces income tax burden, which is needed to be paid if dividends are declared.

(c) ***Advantages/Merits to the Society/Nation:***

- ❖ It increases the rate of capital formation, which indirectly helps to promote economic development of the nation.
- ❖ It stimulates industrialization, by internal financing.
- ❖ It provides employment, by establishment of more industries (profitable investment avenues).
- ❖ It helps to increase productivity, since retained earnings used for modernization, replacement of old machineries and formulation of new companies, which help to utilize the scarcely available resources optimally.
- ❖ It improves standard of living by providing employment, efficient use of scarce resources, increase in productivity, producing good quality products at reasonable prices.

Disadvantages/Demerits of Retained Earnings: The following are the important disadvantages of retained earnings:

- Limited funds available by way of retained earnings.
- Continuous retention of profits may lead to over capitalization.
- Creation of monopolies, since retained earnings in bigger organisations helps to grow bigger which may lead to the monopoly.
- Loss to shareholders, when a firm pays less dividends or no dividends due to retained earnings, shareholders may sell their shares for meeting their expenditure.
- The management may misuse the retained earnings, which is not helpful to maximize shareholders wealth.
- The cost of retained earnings is high, retained earnings are the dividends foregone by ordinary shareholders, which involve an opportunity cost.
- Retained earnings leads to evasion of super profit tax, which is the revenue loss to the Government.

Depreciation Charges

Depreciation is the distribution cost or the basic value of tangible capital assets, over the estimated useful life of the asset in a systematic and rational manner. In other words, depreciation is the allocation of capital expenditure to various periods over which the capital expenditure is expected to benefit the company. For example, a machinery costing Rs. 1,00,000, has 5 years life period with no scrap value. If the machine is depreciated based on straight line method of depreciation, the depreciation charge for a year is Rs. 20,000 (Rs. 1,00,000 / 5), which is shown in profit & loss account debt side and it reduces profit by Rs. 20,000. But it is only book entry and not cash outflow. It is out of pocket cost. There is a lot of debate among academicians and business executives regarding the treatment of depreciation as source of finance. What ever may be the arguments either for or against, but one thing is clear that it is a out of pocket cost or non-cash item of expense. Hence, it is considered as a internal source of finance.

External Financing Sources

Share Capital

Meaning of Share

A share is a small unit of capital of a company. In other words, share capital of a company (planned to raise) divided into number of equal parts that known is share. Section 2 (46) of the Companies Act, 1956, defines share as, "a share in the share capital of a company and includes stock, except when a distinction between stock and share is expressed or implied". It is a legal definition of share. Stock and share have different meanings. According to Section 94 (i)(c) of the Companies Act, 1956 stock means, a share, which is fully paid up. Lord Justice James Lindley gives a good definition, as "A share is that proportionate part of capital to which a member is entitled."⁽¹⁾ For example, XYZ company has share capital of Rs. 1,00,000, of Rs. 10 each. Then the capital is divided into 10,000 shares (i.e., Rs. 1,00,000 / Rs. 10). Shareholder is a person who buys one or more shares in the company.

Kinds of Shares

In our country Companies used to raise funds (before Companies Act, 1956) by issue of three types of shares, i.e., preference shares, equity (ordinary) shares, and deferred shares. But the Companies Act has limited the type of shares into two - preference shares, and equity (ordinary) shares.

Equity Shares

Equity means 'equal'. Equity share is a share that gives equal right to holders. Equity shareholders have to share the reward and risk associated with ownership of company. For example, ABC Company has 10,000 equity shareholders and it has earned Rs. 10,000 profit last year and assume it may earn a loss of Rs. 10,000 in the next year. Here, the shareholder will get Re. 1 as profit from last year and Re. 1 loss in the coming year's loss. It is also called as ordinary share capital. Equity shareholders are the owners of the company, who have control over the working of the company. They are paid dividend at the rate recommended by Board of Directors (BoDs). The dividend rate depends on the profits, more profits more dividends and vice versa. If there are no profits, no dividends will be payable. But some companies pays dividends even if the company has no profits to maintain dividends stability. The amount required to pay

dividends will be transferred from general reserve account. The equity shareholders take more risk when compared to preference shareholders.

Features of Equity Stock

The following are the features of equity stock:

- **Permanent Capital:** An equity source is the main long-term or permanent source of finance. They can be redeemed or refunded only at the time of liquidation that too from the residue left after meeting all the obligations. In other words, there is no agreement between equity shareholders and the company with regard to refund of capital. Shareholders cannot sell shares to company, but he/she can sell shares in the stock market to others, if he/she wants to get back his/her money. Hence, it is permanent source of finance for company.
- **Residual Claim to Income:** Equity shareholders have a residual claim to the income of a company. Residual claim means the income leftover after paying all outsider claims. The residual income is also known as earnings available to equity shareholders, which is equal to profit after tax minus preference dividend. But the total residual income may or may not be paid as dividends, since the BoDs have the right to decide the portion of earnings available to shareholders that will be paid as dividends. Payment of dividend depends on retention or plough back of profits. For example, if the earnings available to equity shareholders are Rs. 1,00,000, and the BoDs decide to retain 50 per cent of them, then the remaining 50 per cent (i.e., Rs. 50,000) is paid as dividends. There is no legal obligation to pay dividends even if residual income is available.
- **Residual Claim to Assets:** Equity shareholders have a residual claim on firm's assets. In an event of liquidation of a firm, the assets are used first to settle the claims of outside creditors and preference shareholders, if anything left that is equity shareholders residue. In other words, equity shareholders have last priority on assets, hence, their capital become cushion to absorb losses on liquidation.
- **Voting right/Right to Control:** Equity shareholders as real owners of the company they have voting right, in appointing Directors and Auditors of the company, participate and vote in annual general meeting, which helps to control the company. BoDs have the control power of company, because the major decisions are take by BoDs. But in actual practice majority of individual shareholders never bother to utilize the voting right, since they are scattered and they are unorganized. So the control over the company is ineffective.
- **Pre-emptive Right:** Equity shareholders have pre-emptive right, which means they have legal right to buy new issues, before offering to the public. Section 81 of the Companies Act 1956, puts company under legal compulsion to offer new shares to the existing shareholders before offering to the public. The number of additional shares offered depends on the number of shares owned in relation to the total shares outstanding and on the issue new shares. For example, Mr. B owns four shares of a company having 200 shares of equity outstanding. Mr. B is entitled the pre-emptive right to buy 2 per cent $[(4/200) \times 100 = 2 \text{ per cent}]$ additional shares to be offered by the company. Pre-emptive right is the option given to the shareholders to buy a specified number of shares at a given price. The shareholder can exercise or sell in the market or leave the option partially or fully.
- **Limited Liability:** This is the prime feature of equity share. Although, equity shareholders are the owners of the company, their liability is limited to the extent of the investment in the share.

Advantages/Merits of Equity Shares \

The advantages of equity shares can be discussed from the point of view of company and investors.

(a) *Advantages/Merits to Company:*

- ❖ It is permanent long-term source of finance.
- ❖ There is no repayment liability.
- ❖ It does not create any obligation to pay dividend.
- ❖ This capital can be issued without creating any charge over assets of the company.
- ❖ Issue of equity share capital increases the credit worthiness of the company.

(b) *Advantages/Merits to Investors:*

- ❖ Equity share provides more income (residual income).
- ❖ Equity shares gives right to participate in the control and management of the company.
- ❖ Capital appreciation (if share price increased when compared purchase price).

Disadvantages/Demerits of Equity Shares

The advantages of equity shares can be discussed from the point of view of company and investors.

(a) *Disadvantages/Demerits to Company:*

- ❖ High cost source of fund.
- ❖ Involves high flotation costs.
- ❖ Issue of additional shares dilutes control.
- ❖ No tax advantage (dividends are not tax deductible).
- ❖ It make capital structure rigid.

(b) *Disadvantages/Demerits to Investors:*

- ❖ No guarantee, and regularity in receipt of dividend.
- ❖ No guarantee in receipt of principle amount of investment.
- ❖ Loss of capital due to fluctuations in share prices.

Summary

Estimation of working capital required is completed, then the next step is financing of working capital. Statement of working capital gives clear picture about the components, (raw materials, work-in-process, finished goods and receivables) and required investment in these components of working capital. Financing of current assets is the responsibility of finance manager who may require spending lot of time for raising finance.

Working capital should be financed by suitable and optimal mix of short-term source of funds and long-term source of funds.

Contd...

Sources of short-term financing funds are: trade credit, accruals, differed incomes, Commercial Papers (CPs), Public Deposits (PDs), Inter Corporate Deposits (ICDs), and commercial banks.

Net working capital should be financed by long-term sources of finance. The sources of long-term working capital are: retained earnings, issue of shares (ordinary or equity shares and preference shares), debentures, public deposits, loan from financial institutions, Life Insurance Corporation of India (LIC), General Insurance Corporation (GIC), Unit Trust of India (UTI), State Financial Corporations (SFC's), Industrial Development Bank of India (IDBI), etc.

Test Yourself

1. "Is Trade Credit source of working capital finance"? Discuss.
2. "Accruals are a free source of finance", comment.
3. Write a brief note on CP as a source of finance.
4. What is public deposit? Discuss its advantages and disadvantages.
5. Discuss the types of ICD's.
6. Write a brief note on L/C.
7. Briefly discuss the sources of short-term working capital.
8. Discuss in detail the sources of long-term working capital.

WORKING CAPITAL MANAGEMENT

LEARNING OBJECTIVES

1. Understand the meaning, and definition, of working capital
2. Understand the Concept and kinds of working capital
3. Understand the objectives of working capital management
4. Explain the factors that should be considered while estimating working capital

Meaning and Definition of Working Capital

Working capital refers to short-term funds to meet operating expenses. To quote Ramamoorthy, "It refers to the funds, which a company must possess to finance its day-to-day operations". It is concerned with the management of the firm's current assets and current liabilities. It relates to the with the problems that arise in attempting to manage the current assets, current liabilities and their inter-relationship that exists between them. If a firm cannot maintain a satisfactory level of working capital, it is likely to become insolvent and may even be forced into bankruptcy.

Concepts of Working Capital

The concept of working capital has been a matter of great controversy among the financial wizards and they view it differently. There is no universally accepted definition of working capital. Broadly, there are two concepts of working capital commonly found in the existing literature of finance such as:

- Gross Working Capital (Quantitative Concept) and
- Net Working Capital (Qualitative Concept).

Both these concepts of working capital have operational significance. The two concepts are not to be regarded as mutually exclusive. Each has its relevance in specific situations from the management point of view.

Each concept of working capital has its own significance – the 'gross concept' emphasising the 'use' and the 'net concept' the 'source' – an integration of both these concepts is necessary in order to understand working capital management in the context of risk, return and uncertainty.

Gross Working Capital Concept

According to this concept, the total current assets are termed as the gross working capital or circulating capital. Total current assets include; cash, marketable securities, accounts receivables, inventory, prepaid expense, advance payment of tax; etc. This concept also called as 'quantitative or broader approach'. To quote Weston and Brigham, "Gross Working Capital refers to firm's investments in short term assets

such as cash, short term securities, accounts receivables and inventories". The concept helps in making optimum investment in current assets and their financing. According to Walker, "Use of this concept is helpful in providing for the current amount of working capital at the right time so that the firm is able to realise the greatest return on investment". The supporters of this concept like Mead, Field, and Baker and Malott, argue that the management is very much concerned with the total current assets as they constitute the total funds available for operating process.

Significance

Gross Working Capital Concept focuses attention on the two aspects of current assets management, they are:

- (i) ***Optimum Investment in Current Assets:*** Investment in current assets must be just adequate to the needs of the firm. In other words, current assets investment should not be inadequate or excessive. Inadequate working capital can disturb production and can also threaten the solvency of the firm, if it fails to meet its current obligations. On the other hand, excessive investment in current assets should be avoided, since it impairs the firm's profitability.
- (ii) ***Financing of Current Assets:*** Need for working capital arise due to the increasing level of business activity. Therefore, there is a need to provide/ arrange it quickly. Similarly, some times surplus funds may arise, thus they should be invested in short-term securities. They should not be kept as idle.

Net Working Capital Concept

As per this concept, the excess of current assets over current liabilities represents net working capital. Similar view is expressed by Guthmann and Dougall, Gerstenberg, Goel, Park and Gladson, Kennedy and McMullen, and Myer in their distinguished works. 'Accounts Hand Book' has also fully supported this view. The famous economists like, Sailer Lincoln, and Stevens, fully supported this concept and viewed that the net working capital helps creditors and investors to judge the financial soundness of a firm.

Net Working Capital Concept represents the amount of the current assets, which would remain after all the current liabilities were paid. It may be either positive or negative. It will be positive, if current assets exceed the current liabilities and negative, if the current liabilities are in excess of current assets. Another alternative definition is that net working capital refers to that portion of firm's current assets, which financed with long-term funds.

Net Working Capital Concept indicates or measures the liquidity and also suggests the extent to which working capital needs may be financed by the permanent source of funds. To quote Roy Chowdary, "Net Working Capital indicates the liquidity of the business whilst gross working capital denotes the quantum of working capital with which business has to operate".

Significance

Net Working Capital Concept focuses attention on the two aspects of current assets management, they are: i) Maintaining liquidity position, and ii) To decide upon the extent of long-term capital in financing current assets.

- i) ***Maintaining Liquidity Position:*** For maintaining liquidity position there is a need to maintain current assets sufficiently in excess of current liabilities. In

other words, excess current assets helps in meeting its financial obligation within the operating cycle of the firm. Generally for every one rupee of current asset there will be one rupee of current liability. As discussed above, negative and excess working capital both are bad to the firm.

- ii) **To decide upon the Extent of Long-term Capital in Financing Current Assets:** Net Working Capital (NWC) means the portion of current assets that should be financed by long-term funds. This concept helps to decide the extent of long-term funds required in finance current assets. For example, if there are Rs. 1,00,000 current assets and Rs. 75,000 current liabilities, the extent of current assets should be decided by the NWC base. The NWC is the difference between current assets and current liabilities. In the above example NWC is Rs. 25,000. This is the amount that is supposed to be financed by long-term funds. Hence, NWC helps management to decide the extent to which current assets should be financed with equity capital and borrowed funds.

Kinds of Working Capital

The categorization of working capital can be made either based on its concept or the need to maintain current assets either permanently and/or temporarily. As per conceptual view, it may be classified into *gross working capital* or *net working capital*, which were already explained in detail

Gerstenberg has conveniently classified the working capital into *regular* or *permanent* working capital and *temporary* or *variable* working capital. The variable working capital is again bifurcated into seasonal and special working capital. See Figure 1.

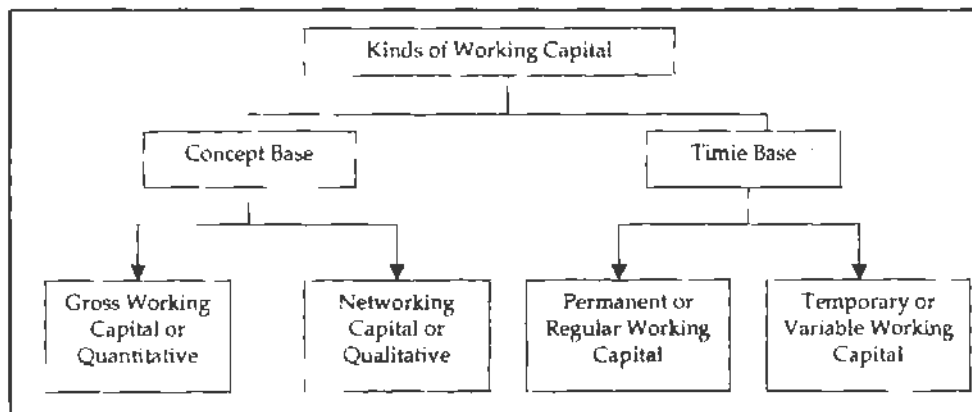


Figure 1

Permanent Working Capital

Permanent working capital is the minimum investment kept in the form of inventory of raw materials, work-in-process, finished goods, stores & spares, and book debts to facilitate uninterrupted operation in a firm. Though this investment is stable in short run, it certainly varies in long run depending upon the expansion programmes undertaken by a firm. It may increase or decrease over a period of time. The minimum level of current assets maintained in a firm is usually known as permanent or regular working capital.

Temporary Working Capital

A firm is required to maintain an additional current assets temporarily over and above permanent working capital to satisfy cyclical demands. Any additional working capital apart from permanent working capital required to support the changing production and sales activities is referred to as temporary or variable working capital. In other words, an amount over and above the permanent level of working capital is temporary, fluctuating or variable working capital. At times, additional working capital is required to meet the unforeseen events like floods, strikes, fire, and price hike tendencies and contingencies.

Distinction Between Permanent and Temporary Working Capital

The difference between permanent and temporary working capital can be shown in Figure 2 and 3.

The above figure depicts the permanent or regular working capital that is stable over a period, whereas temporary or variable working capital is oscillating, or showing ups and down – some times working capital requirement has increased or decreased. The above figure 2 will hold good to those firms, where there is no development and have seasonal or cyclic fluctuations.

But for the growing firms figure 3 will be suitable.

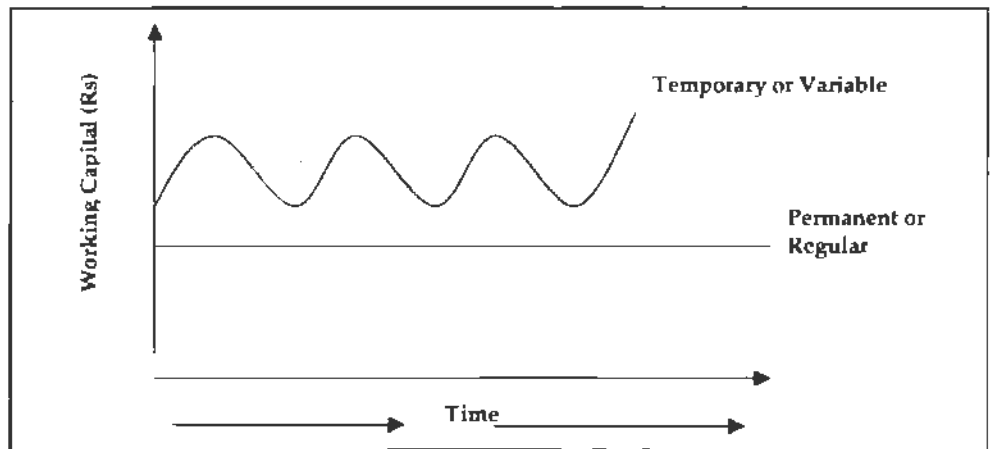


Figure 2

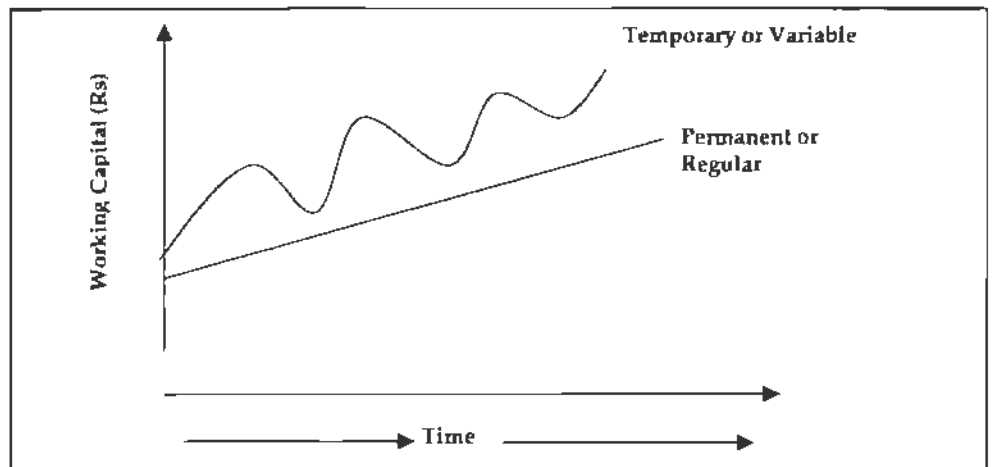


Figure 3

Over a long period, permanent working capital also changes with the additional funds, required for expansion programs.

Objectives of Working Capital Management

The objectives of working capital management could be stated as,

- i) To ensure optimum investment in current assets.
- ii) To strike a balance between the twin objectives of liquidity and profitability in the use of funds.
- iii) To ensure adequate flow of funds for current operations.
- iv) To speed up the flow of funds or to minimize the stagnation of funds.

Factors Influencing Working Capital

A business undertaking should plan its operations in such a way that it should have neither too much nor too little working capital. There are no set of rules or formulae to determine the working capital requirements of a firm. The total working capital requirement is determined by a wide variety of factors. These factors, however, affect different firms' differently. Also the relative importance of these factors changes even in the same firm in course of time. Therefore, an analysis of relevant factors should be made in order to determine the total investment in working capital. A brief description of the general factors influencing the working capital needs of a firm are as follows:

1. **Nature of Business:** The amount of working capital is basically related to the nature of business. The proportion of current assets needed in some lines of business activity varies from other lines. For instance, trading and finance firms have a very small investment in fixed assets, but they require more working capital. In contrast, public utility concerns rendering public services require huge investment in fixed assets. The requirement of current assets in such concerns is usually less due to cash nature of business and selling service. In trading concerns, the amount of working capital required is less than the manufacturing concern, since there is no production of goods and services involved, but in service industry like banks the amount of working capital required is very high. The relative importance of current assets to total assets will indicate the required intensity of planning and control efforts in working capital management area.
2. **Size of Business:** It may be argued that a firm's size, measured in terms of assets or sales, affects need for working capital. Size may be measured in terms of a scale of operation. A firm having with large-scale operations will need more working capital required than a small firm having small-scale operations. A small firm may use extra current assets as a cushion against cash flow interruptions.

Bigger firms have many sources of funds, thereby it will require less amount of working capital as compared to the smaller ones.
3. **Production Cycle Process:** This is another factor, which has bearing on the quantum of working capital, is the production cycle. The term production or manufacturing cycle refers to the time involved in the manufacturing of goods. It covers the time span between the procurement of raw materials and the completion of the manufacturing process leading to the production of finished goods. Longer the production cycle, the higher will be the working capital

requirement and vice versa. Manufacturing firms have large production cycle, so they require high working capital, but in the case of short production cycle firms require less working capital. Working capital requirements can be reduced with the help of certain policy steps, like terms of credit for raw materials and the suppliers. Unless the sequences of production process leading to conversion into finished goods are kept under close observation to achieve better production and productivity, more and more working capital funds will be tied up. In this context, it should be noted that production planning and control are vital.

4. **Production Policy:** Production policy means whether, it is continuous or seasonal demand for products. What kind of production policy should be followed in above cases? There are two options to such companies, either they confine their production only to periods when goods are purchased or they follow a steady production policy throughout the year and produce goods at a level to meet peak demand. Suppose in the case where, production and sales goes simultaneously, the amount of working capital required is less (example is FMCG goods business), but the sales will be only seasonal and production will take place throughout the year thus continuously the amount of working capital required is very high. (Umbrella business).
5. **Credit Policy or Terms of Purchase and Sales:** The credit policy relating to sales and purchases also affects the working capital. If a company purchases raw materials in cash and sells goods on credit, it will require larger amount of working capital. On the contrary, a concern having credit facilities for the purchase of raw materials and allowing no credit to its customers, will require lesser amount of working capital.
6. **Business Cycle:** The amount of working capital requirements of a firm varies with every movement of business cycle. The variations in business conditions may be in two directions (a) *Upward phase* – when boom conditions prevail, in this case more working capital is required to cover the lag between the increased sales and receipt of cash as well as to finance purchase of additional material. (b) *Downswing phase* – in this case, the need for working capital will be very less, since there is no growth in sales.
7. **Growth and Expansion:** As company grows, it is logical to expect that a larger amount of working capital is required. It is very difficult to determine the relationship between the growth in the volume of business of a company and increase in its working capital required. Other things being equal, growth industries require more working capital than those the static. The critical fact, however is that the need for increased working capital funds does not follow the growth in business activities but precedes it. Advance planning of working capital is therefore, a continuing necessity for a growing concern, or else, the company may have substantial earnings but little cash.
8. **Scarce Availability of Raw Materials:** The availability of certain raw materials on a continuous basis without interruption would sometimes affect the working capital requirement. There may be some materials, which cannot be procured easily either because of either their sources are few or they are irregular. Therefore, the firm might be compelled to purchase more than required to manage smooth production. In this case, the amount of working capital required is large. In other case, the availability of raw materials are easy and there is no fluctuations thus the amount of working capital required is less.

9. **Profit Level:** Firms may differ in their capacity to generate profit from business. Some firms enjoy a dominant position, due to quality product or good marketing management or monopoly power in the market and earn a high profit margin. Other firms may earn low profits. The net profit is a source of working capital to the extent that it has been earned in cash. A high net profit margin contributes towards the working capital pool. A firm with high profit level requires less working capital and vice versa.
10. **Level of Taxes:** The net profit is calculated after deduction of tax. The amount of taxes to be paid is determined by the tax authorities. So the management has no discretion in this respect. Hence, companies very often pay taxes in advance on the basis of the profit of the previous year. Therefore, tax is an important aspect of working capital planning. If tax liability increases, it leads to an increase in the requirement of working capital and vice versa. So tax planning can, therefore, be said to be an integral part of working capital planning.
11. **Dividend Policy:** Dividend has a bearing on working capital, since it is appropriation profits. The payment of dividend reduces cash resources and thereby, affects working capital to that extent. Conversely, if the firm does not pay dividends but retains profits, the working capital increases. In other words, declaration of dividends leads to more working capital requirement and vice versa.
12. **Depreciation Policy:** It also exerts an influence on the quantum of working capital required. Depreciation charge is out of pocket cost. The affect of depreciation policy on working capital is indirect. More depreciation provisions reduce the amount of required working capital and vice versa.
13. **Price Level Changes:** Increasing prices necessitate the use of more funds for managing an existing level of activity. In the same level of current assets, higher cash outlays are required. The effect of raising prices is that a higher the amount of working capital is required. However, in the case of companies, which can raise their prices proportionately, there is no serious problem regarding working capital required. Moreover, the price rise does not have a uniform effect on all commodities. The effects of raising price levels will be different for different firms depending upon their pricing policies, nature of the product etc.
14. **Operating Efficiency:** The operating efficiency of the firm relates to the optimum utilisation of resources at minimum costs. Efficiency of operations accelerates the pace of cash cycle and involves the working capital turnover. In this case the amount of working capital needed is less since it releases pressure by improving profitability and improving the internal generation of funds.
15. **Availability of Credit:** The need for working capital in a firm will be less, if it avails liberal credit facilities. Similarly, the availability of credit from banks also influences the working capital needs of the firm. A firm enjoying bank credit facilities can secure funds to finance its working capital requirement very easily, whenever it requires. It can therefore, perform its business activities with less working capital than a firm without such credit facility.
16. **Other Factors:** In addition to the above factors, there are a number of other factors, which affect the requirement of working capital. Some of them are: close co-ordination between production and distribution policies, an absence of specialization in the distribution of products, the means of transportation and

Symbols used in the formulas:

- BP = Budgeted Production (in units)
 RMC = Raw Materials Cost per unit
 ARM HP = Avg. Raw Materials Holding Period
 EWIP = Estimated Work-in-Process cost per unit
 ATSWIP = Avg. Time Span of Work-in-Process inventory
 CGP = Cost of Goods Produced (excluding depreciation) per unit
 FGHP = Finished Goods Holding Period
 BCS = Budgeted Credit Sales in units
 CS = Cost of Sales (excluding depreciation) per unit
 ADCP = Avg. Debt Collection Period
 CPAS = Credit Period Allowed by Suppliers
 DWC = Direct Wages Cost per unit
 LPW = Lag in Payment of Wages
 OHC = Overhead Cost per unit of production
 LPOH = Lag in Payment of Overheads

Estimation of components of current assets and current liabilities:

1. **Estimation of Current Assets:**

- a) **Investment in Raw Materials Inventory:** $BP \text{ (in units)} \times RMC \text{ per unit} \times ARM \text{ HP (months/days)} \div 12 \text{ months/365 days}$.
- b) **Investment in Work-in-process Inventory:** Work-in-process cost (per unit) is proportionate share of the cost of direct materials and conversion costs. Conversion costs include labor and manufacturing overheads costs excluding depreciation, since it is out of pocket cost. Generally, raw materials cost is fully considered, if there is no information about the raw materials requirement. With regards to the share of labor and overhead cost, it is based on the work completion stage. For example if the work is completed to the extent of 50 per cent then only 50 per cent labour cost and overhead cost is taken into consideration for estimation of work-in-process cost. If there is no information about the completion stage then the option is left out to the estimation of working capital (it is better to consider that work completion stage is 50 per cent).
- $BP \text{ (in units)} \times EWIP \text{ per unit} \times ATSWIP \text{ (months/days)} \div 12 \text{ months/365 days}$
- c) **Investment in Finished Goods Inventory:** $BP \text{ (in units)} \times CGS \text{ per unit} \times FGHP \text{ (months/days)} \div 12 \text{ months/365 days}$
- d) **Investment in Debtors:** $BCS \text{ (in units)} \times CS \text{ per unit} \times ADCP \text{ (months/days)} \div 12 \text{ months/365 days}$
- e) **Cash and Bank Balance:** Maintenance of minimum working capital includes a minimum cash balance, but it is very difficult to calculate minimum

cash balance required. Generally determination of minimum cash balance would be based on the motives for holding cash of business firm, attitude of management towards risk, accessibility of the firm to the sources of finance, when needed and past experience etc. Generally in examinations the minimum cash balance will be provided

2. **Estimation of Current Liabilities:**

- a) **Trade Debtors:** $BP \text{ (in units)} \times RMC \text{ per unit production} \times CPAS \text{ (months/days)} \div 12 \text{ months} / 365 \text{ days.}$
- b) **Direct Wages:** $BP \text{ (in units)} \times DWC \text{ per unit} \times LPW \text{ (months/ days)} \div 12 \text{ months} / 365 \text{ days.}$
- c) **Overheads:** $BP \text{ (in units)} \times OHC \text{ per unit of production} \times LPOH \text{ (months/days)} \div 12 \text{ months} / 365 \text{ days.}$

Illustration 1: From the following information of VSGR Company Ltd., estimate the working capital needed to finance a level of activity of 1,10,000 units of production after adding a 10 per cent safety contingency.

	Amount (per unit)
Raw materials	78
Direct labour	29
Overheads (excluding depreciation)	58
Total cost	165
Profit	24
Selling price	189

Additional information:

Average raw materials in stock: One month

Average materials-in-process (50 per cent completion stage): Half a month

Average finished goods in stock: One month

Credit allowed by suppliers: One month

Credit allowed to customers: two months

Time lag in payment of wages: One and half weeks

Overhead expenses: one month

One fourth of the sales is on cash basis. Cash balance is expected to be Rs. 2,15,000. You may assume that production is carried on evenly throughout the year and wages and overhead expenses accrue similarly.

Estimation of Working Capital Needed

Particulars	Amount (Rs)	Amount (Rs)
A. Estimation of Current Assets:		
i) Raw materials inventory: One month: $(1,10,000 \times 78 \times 4/52)$	6,60,000	
ii) Work-in-process inventory: Half a month		
Raw materials $(1,10,000 \times 78 \times 2/52) = 3,30,000$		
Direct labour $(1,10,000 \times 14.5 \times 2/52) = 61,346.15$		
Overheads $(1,10,000 \times 29 \times 2/52) = 1,22,692.31$	5,14,038.46	
iii) Finished goods inventory: One month: $(1,10,000 \times 165 \times 4/52)$	13,96,153.85	
iv) Debtors: Two months. $(82,500 \times 165 \times 8/52)$	20,94,230.77	
v). Cash balance required	2,15,000	
Total Current Assets		48,79,423.08
B. Estimation of Current Liabilities:		
i) Creditors: One month: $(1,10,000 \times 78 \times 4/52)$	6,60,000	
ii) Expenses:		
Overheads $(1,10,000 \times 58 \times 4/52) = 4,90,769.23$		
Labour $(1,10,000 \times 29 \times 3/104) = 92,019.23$	12,42,788.46	
Total Current Liabilities		19,02,788.46
C. Working Capital(A-B)		29,76,663.62
Add: 10% Contingency		2,97,663.46
D. Working Capital Required		32,74,327.08

Summary

Working capital management is concerned with the problems that arise in attempting to manage the current assets, current liabilities and their inter-relationship that exists between them.

Working capital management goal is maintain a satisfactory level of working capital.

Net working capital concept focuses attention on the two aspects of current assets management, they are: Maintaining liquidity position, and to decide upon the extent of long-term capital in financing current assets.

Working capital has conveniently classified the working capital into two: regular or permanent and temporary or variable working capital. Permanent working capital refers to the minimum level of current assets maintained in a firm. Temporary working capital refers to additional current assets temporarily over and above permanent working capital to satisfy cyclical demands.

The objectives of working capital management could be stated as, to ensure optimum investment in current assets, to strike a balance between the twin objectives of liquidity and profitability in the use of funds, to ensure adequate flow of funds for current operations, and to speed up the flow of funds or to minimize the stagnation of funds.

The dangerous excessive working capital are: unnecessary accumulation of inventories, indication of defective credit policy and stock collection period, degeneration in to managerial inefficiency, and speculative profits grow.

The dangers of inadequate working capital are: stagnates growth, difficult to implement operating plans, difficult even to meet day-to-day commitments, inefficient utilisation of fixed assets, unable to avail attractive credit opportunities, firm loses its reputation.

Test Yourself

1. What is working capital?
2. What do you mean by gross working capital?
3. What do you understand by net working capital?
4. Distinguish between permanent working capital and variable working capital.
5. What is working capital management?
6. Distinguish between permanent working capital and variable working capital.
7. Give a note on different types of working capital.
8. Outline the dangers of inadequate working capital.
9. Narrate the dangers of excess working capital.
10. "Working capital must be adequate but at the same time not excessive". Comment.
11. Give a note regarding the factors determining working capital needs of a business firm.
12. Discuss the steps involved in estimation of working capital needed by a firm.
13. What is working capital management? What is the need to maintain optimum working capital? Discuss the consequences of inadequate and excess working capital.

C H A P T E R
8
CASH MANAGEMENT

LEARNING OBJECTIVES

1. Discuss the objectives of cash management.
2. Explain the factors determining cash needs.
3. Explain cash budget, procedure and purpose of cash budget.
4. Discuss steps involved in preparing cash budget.
5. Know the strategies for accelerating cash inflows.
6. Understand Money market Instruments.

Objectives of Cash Management

One of the prime responsibilities of the financial manager is that managing cash to make balance between profitability and liquidity. In other words, he/she has to maintain optimum cash balance. Optimum cash means it should not be excess or inadequate. Maintenance of excess cash reserve to meet the challenges, the excess cash will remain idle, and idle cash earn nothing, but involves cost. So it will reduce profit. On the other hand, having inadequate cash balance will affect the liquidity of the firm. Hence, there is need to maintain balance between profitability and liquidity. In other words, there should not be excess cash or inadequate cash.

From the above, we can trace the following as the objectives of cash management:

- 1) To meet cash payment needs, and
 - 2) To maintain minimum cash balance.
- 1) **To Meet Cash Payments:** The prime objective of cash management is to meet various cash payments needed to pay in business operations. The payments are like payment to supplier of raw materials, payment of wages and salaries, payment of electricity bills, telephone bills and so on. Firm should maintain cash balances to meet the payments, otherwise it will not be able to run business. To quote Bollen, "Cash is an oil to lubricate the ever-turning wheels of business: without it, the process grinds to a stop". Hence, one of the cash management objective is to meet the payments with the maintenance of sufficient cash.
 - 2) **To Maintain Minimum Cash Balance (Reserve):** This is second important objective of cash management. It means the firm should not maintain excess cash balances. Excess cash balance may ensure prompt payment, but if the excess balance will remain idle, as cash is a non-earning asset and the firm will have to forego profits. On the other hand, maintenance of low level of cash balance, may not help to pay the obligations. Hence, the aim of cash management is to maintain optimum cash balance.

Factors Determining Cash Needs

From the above, we can say that a firm has to decide the cash balance based on their needs, which is determined after taking into consideration of the following factors.

- 1) **Synchronisation of Cash Flows:** Synchronisation of cash flows arises only when there is no balance between the expected cash inflows and cash outflows. There is no need to manage cash balance, if there is perfect match between cash inflows and cash outflows. Otherwise, there is a need to manage cash balance for managing synchronisation. This synchronisation is forecasted through the preparation of cash budget for a period of 12 months or the planning period. A well-prepared cash budget will definitely point out the months or periods when the firm will have surplus or deficit cash.
- 2) **Short Costs:** This is another factor to be considered while determining the cash needs. Short costs are those costs that arise with a short fall of cash for the firm requirements. Shortage of cash can be found through preparation of cash budget. Cash shortage is not cost free, it involves cost whether it is expected or unexpected shortage. The expenses incurred as a result of shortfall are called short costs. They include the following:
 - ❖ **Cost of Transaction:** Whenever there is a shortage of cash it should be financed. Financing may be done through the borrowings from banks or sale of marketable securities (if the firm have). If the firm is planning to finance the deficit cash by sale of marketable securities, then the firm is expected to spend some expenses for brokerage.
 - ❖ **Cost of Borrowing:** If the firm does not have marketable securities with it, then it prefers borrowing as a source of financing, shortage of cash. It involves costs like interest on loan, commitment charges and other expenses relating to the loan.
 - ❖ **Cost of Deterioration of the Credit Rating:** Generally credit rating is given by credit rating agencies (CRISIL, ICRA and CARE). Low credit rating firms may have to go for bank loans with high interest charges, since they cannot raise the required amount from the public. Low credit rating may also leads to the stoppage of supplies, demands for cash payment refusal to sell, loss of image and attendant decline in sales and profits.
 - ❖ **Cost of Loss of Cash Discount:** Sufficient cash helps to get cash discount benefits, but shortage of cash cannot help to obtain cash discounts.
 - ❖ **Cost of Penalty Rates:** Whenever there is shortage of cash firm may not be able to honor currently returned obligations, which in turn demand penalty.
- 3) **Surplus Cash Balance Costs:** It is self-explanatory. It means that the cost associated with excess or surplus cash balance. Cash is not an earning asset. Surplus cash funds are idle, an impact of idle cash is that the firm losses opportunities to invest those funds and thereby lose interest, which would otherwise have been earned.
- 4) **Management Costs:** Management costs are those costs involved with setting up and operating cash management staff. These cost are generally fixed over a period, and are mainly include staff, salary, storage, handling cost of security and so on.

Cash Budget

Cash budget is an important tool for the flow of cash in any firm over a future period of time. In other words, it is a statement showing the estimated cash inflows and cash outflows over a planning period. It pinpoints the surplus or deficit cash of a firm as it moves from one period to another period. The surplus or deficit data helps the financial manager to determine the future cash needs of the firm, plan for the financing of those needs and exercise control over the cash and liquidity of the firm. Cash budget is also known as short-term cash forecasting.

Purpose of Cash Budget

Cash budget has proved to be of great help and benefit in the following areas:

- Estimating cash requirements
- Planning short-term finance planning
- Scheduling payments, in respect of acquiring capital goods
- Planning and phasing the purchase of raw materials
- Evolving and implementing credit policies
- Checking and verifying the accuracy of long-term cash forecasting.

Preparation of Cash Budget or Elements of Cash Budget

The above benefit areas clear that the main aim of preparing cash budget is to predict the cash flows over a given period of time and to determine whether at any point of time there is likely to be surplus or deficit of cash. Preparation of cash budget involves the following steps:

Step 1 – Selection of period of time (planning horizon): Planning horizon is that period for which cash budget is prepared. There are no fixed rules for cash budget preparation. Planning horizon of a cash budget may differ from firm to firm, depending upon the size of the firm. Cash budget period should not be too short or too long. If it is too short many important events may come out in the planning period and cannot be accounted for the preparation of cash budget, which becomes expensive. On the other hand, if it is too long the estimates will be inaccurate. Then how to determine planning horizon? It is determined on the basis of situation and the necessity of a particular case. A firm whose business is affected by seasonal variations may prepare monthly cash budgets. If the cash flow fluctuates, daily or weekly cash budgets should be prepared. Longer period cash budgets may be prepared when the cash flows are stable in nature.

Step 2 – Selection of factor that has bearing on cash flows: The factors that generate cash flows are divided into two broad categories. (a) Operating, and (b) Financial.

- **Operating Cash Flows:** Operating cash inflows are cash sales, collection of accounts receivables and disposal of fixed assets and the operating cash outflows are bills payables, purchase of raw materials, wages, factory expenses, administrative expenses, maintenance expenses and purchase of fixed assets.
- **Financial Cash Flows:** Loans and borrowings, sale of securities, dividend received, refund of tax, rent received, interest received and issue of new shares and debentures cash outflows are redemption of loan, repurchase of shares, income tax payments, interest paid and dividend paid.

Illustration 1: From the following information prepare cash budget for VSI Co. Ltd.:

Particulars	Jan	Feb	March	April
Opening cash balance	20,000			
Collection from customer	1,30,000	1,60,000	1,65,000	2,30,000
Payments :				
Raw materials purchase	25,000	45,000	40,000	63,200
Salary and wages	1,00,000	1,05,000	1,00,000	1,14,200
Other expenses	15,000	10,000	15,000	12,000
Income tax	6,000	---	---	---
Machinery	---	---	20,000	---

The firm wants to maintain a minimum cash balance of Rs. 25,000 for each month. Creditors are allowed one-month credit. There is no lag in payment of salary, other expenses.

Solution:

Cash Budget for the Period January to April (Rs.)

Particulars	Jan	Feb	March	April
Opening cash balance	20,000	29,000	49,000	54,000
Cash collection from customer	1,30,000	1,60,000	1,65,000	2,30,000
(A) Total receipts	1,50,000	1,89,000	2,14,000	2,84,000
Payments :				
Raw materials	---	25,000	45,000	40,000
Salary	1,00,000	1,05,000	1,00,000	1,14,200
Other expenses	15,000	10,000	15,000	12,000
Income tax	6,000	---	---	---
Machinery	---	---	20,000	---
(B) Total payments	1,21,000	1,40,000	1,60,000	1,66,200
Closing Balance (A - B)	29,000	49,000	54,000	1,17,800

Illustration 2: Prepare cash budget for the 3 months ending on 30-06-2004 from the following information.

(a)

(Amount in Rs.)

Month	Sales	Materials	Wages	Overheads
Feb	14,000	9,600	3,000	1,700
March	15,000	9,000	3,000	1,900
April	16,000	9,200	3,200	2,000
May	17,000	10,000	3,600	2,200
June	18,000	10,400	4,000	2,300

(b) **Credit terms are:** Sales / Debtors - 10 per cent, sales are on cash, 50 per cent of the credit, sales are collected next month and the balance in the following month.

❖ Creditors (suppliers) - 2 months

❖ Wages - $\frac{1}{4}$ month; overheads - $\frac{1}{2}$ month

(c) Cash and Bank balance as on 1st April 2004 is expected to be Rs. 6,000.

- (d) **Other information:** Machinery will be installed in Feb.'04 at a cost of Rs. 96,000. The monthly installment of Rs. 2,000 is payable from April onward.

Dividend at 5 per cent on preference share capital of Rs. 20,000 will be payable on May and 1st June.

Advance to be received for sale of vehicles Rs. 9,000 in June.

Dividends from investments amounting to Rs. 1,000 are expected to be received in June.

Income tax (advance) to be paid in June is 2,000 (ICWA - Inter)

Solution:

Particulars	April	May	June
(A) Opening balance	6,000	3,950	3,000
Receipts: Sales Note (1)	14,650	15,650	16,650
Dividend	---	---	1,000
Advance	---	---	9,000
(B) Total receipts	14,650	15,650	26,650
Payments:			
Creditors	9,600	9,000	9,200
Wages Note (2)	3,150	3,500	3,900
Overheads Note (3)	1,950	2,100	2,250
Installment (on machinery)	2,000	2,000	2,000
Dividend	---	---	10,000
Tax	---	---	20,000
(C) Total payments	16,700	16,600	29,350
(D) Surplus / Deficit (B - C)	(2,050)	(950)	(2,700)
(E) Balance cash (A - B)	3,950	3,000	300

Working Note:

- (1) Cash collection from Sales

Particulars	April	May	June
Feb (14,000 - 10% of 14,000) 50%	6,300	---	---
March (15,000 - 10% of 15,000) 50%	6,750	6,750	---
April (10% of 16,000)	1,600	---	---
(16,000 - 10% of 16,000) 50%	---	7,200	7,200
May (10% of 17,000)	---	1,700	---
(17,000 - 10% of 17,000) 50%	---	---	7,650
June (10% of 18,000)	---	---	1,800
	14,650	15,650	16,650

- (2) 75 per cent of the March + 25 per cent of the previous month
 (3) 50 per cent of the month + 50 per cent of the previous month

Managing Cash Flows

After estimation of cash flows, then the next financial manager's job is to ensure that there should not be more deviation between the projected cash flows and the actual cash flows for that efficient cash management is must. That financial management

will have the control on collection of receipts and cash disbursements. As the objectives of cash management is to accelerate cash receipts as much as possible and decelerate or delay cash payments as much as possible. In other words, the various collection and disbursement methods can be employed to improve cash management efficiently constitutes two sides of the same coin. Both collections and disbursements exercise a joint impact on the overall efficiency of cash management. The idea is that speed collection of accounts receivables so that the firm can use money sooner. otherwise, it has to borrow money, wherein costs are involved. Conversely, firm wants to pay accounts payables late without affecting credit standing with suppliers, so that firm can make use of the money it already has. Hence, for efficient cash management firm has (A) to collect accounts receivables as early as possible, and (B) it has to delay the accounts payables without affecting credit standing.

Accelerating Cash Collections

Accelerating speedy cash collection can conserve cash and reduce its requirements for cash balances of a firm. Cash inflow process can be accelerated through systematic planning. The following are the methods of accelerating cash collections:

- 1) **Prompt Payment of Customers:** In speed collection, the first hurdle could be the firm itself. It may take a long time to process the invoice. Prompt payment by customers will be possible by prompt billing. The seller has to inform to customers about the amount of payment and period of payment in advance. Automation of billing and enclosure of self-addressed enveloped, will be helpful for speed payment of cash. The other way of prompting customers to pay earlier is to offer cash discount. Cash discount helps customer to save money and they would readily avail discounts.
- 2) **Early Conversion of Payments into Cash:** After using cheques by customer in favour of the firm collections can be quickened. Conversion of cheques into cash is the second hurdle. There is a time lag between the time a cheque is prepared by customer and the time the funds are credited to firm's account. It is also known as cash cycle. Cash cycle is the time required to convert the raw materials into cash. There are three steps involved in the cash cycle, viz., (i) Mailing time—The time taken by the post offices in transferring the cheques from the customer to the firm. The time lag is referred to as "postal float". (ii) Lethargy - time taken in processing the cheques within the company and sending them to bank for deposit and (iii) Bank Float - Collection within the bank or the time taken by the bank in collecting the payment from the customer's bank. The postal float, lethargy and bank float-collectively known as "deposit float". To quote Rama Moorthy, deposit float as the sum of cheques written by the customer that are not yet usable by the firm. In India deposit float can assume sizeable opportunities as cheques normally take a longer time to get realised than in most countries. Accelerated collection of cash is possible when a firm reduces the transit, lethargy and bank float.

How can the deposit float be reduced?

It is possible through the options of decentralised collection policy. There are two important methods available to use in a decentralised collection network, they are concentration banking and Lock-Box system.

- 3) **Concentration Banking or Decentralised Collections:** A firm operating its business spread over a vast area and its branches located at different places

would do well to decentralise its collections. The decentralised collection procedure in US is called as "concentration banking." Concentration banking is a system of operating through a number of collection centers, instead of a single collection centre centralised at the company's head office premises. Under this system, a firm will have a large number of bank accounts in the operated areas, but all the areas may not have collection centres. Opening its collection centre depends on the volume of business. In this system, the customers are instructed to send their payments to the collection centre covering the area under which they come and these are deposited in the local account of the concerned collection centre. On realisation of the proceeds of the cheques, these may be remitted for credit to the Head Office Account, by way of telegraphic transfer, daily or weekly, as per the quantum of collections and the local requirements of funds for expenses. Hence, concentration banking reduces float, which saves time and reduces in the operating cash needs. This system should be adopted only when the savings are higher than the cost.

- 4) **Lock-Box System:** This is another technique of accelerating collection of cash. It is more popular in USA and European countries. Under this arrangement, a firm rents a post office box and authorises its bank to pick up remittances in the box. The boxes will be placed at different centres on the basis of number of consumers. Customers are filled with instructions to mail remittances to the box. The local authorised bank of the firm, at the respective places pick up the mail several times a day and the same deposits into the firm's account. After the collection of cheques the bank, send a deposit slip along with the list of payments and other required encloses.

Advantages of Lock-box system are:

- (a) The bank handles the remittances prior to deposit at a lower cost;
- (b) The process of collection through the banking system begins sooner the receipt of cheque and saves time.
- (c) Lock-box system involves cost, since the services provided by the bank are chargeable or requires to maintain a minimum cash balance that involves an opportunity cost. A financial manager has to compare the benefits derived from use of lock-box system and when benefits are higher than the cost involved then it should be adopted.

Slowing Down Cash Payments

Operating cash requirement can be reduced by accelerating cash collections and slowing down cash payments. Increased availability of cash depends on the combination of speed collections and slow payments. Following methods can be used to slowing down the payments.

- **Paying on Last Date:** A prudent businessman would always prefer to make the payment only on the last day, when it is due and never earlier. But early payments entitles a firm to cash discounts. If there is no discount offer on early payments of accounts payables has no advantage, but delayed beyond trade credit period affects the firms credit standing that makes difficult to get trade credit in future. Hence, a firm would be well advised to pay payments only on the last dates.
- **Centralised Payments:** Under this system, all payments are made from one central place that is Head Office. The benefits of centralised payment system are:

It increases the transit time. In other words, payment from a centralised place takes more time to send the cheques to customers.

Reduction in operating cash requirement since the firm has centralised bank account, a relatively smaller total cash balance will be needed.

Controlled schedules and payments made exactly on the last day.

- **Paying the Float:** Float is the amount of money tied up in cheques that have been written, but have yet to be collected. In simple words, float refers to the difference between the balance in firms cash book (bank column) and balance in passbook of the bank. There is a time lag between issue of cheque by the company and its presentation to the bank by the customer's bank for collection of money, where cash is required later when the cheque is presented for collection. So, firm can issue cheque without having sufficient cash in its bank account at the time of its issue to its customers, because by the time of presentation of the Cheque for encashment, firm can arrange funds. Use of float in this way referred to as cheque kiting. Cheque kiting can be done in two ways—(a) paying from a distant bank and (b) cheque encashment analysis.
 - a) **Paying From a Distant Bank:** As discussed in centralised payments.
 - b) **Cheque Encashment Analysis:** On the basis of firm's past experience (if firm has been paying from a few years onward), it can find out the lag in the issue of cheques and their encashment. If more time lag is there then the firm will pay with delay and vice versa. It will help the firm to save cash.

Computation of Optimum Cash Balance

A firm has to maintain sufficient liquidity by managing minimum cash balance. Firm needed cash to pay suppliers of raw materials, pay salaries and other expenses as well as paying interest, tax and dividends. Sufficient liquidity means the availability of cash to pay the firm obligations in time. Generally, the minimum cash balance is equal to the cash needed for transaction plus safety cash that can be maintained based on firm's past experience. Maintenance of cash balance provides sufficient liquidity but involve opportunity cost (loss of interest), whereas less cash balance maintenance weakens liquidity and involves profitability. A firm has to maintain optimum cash balance. Optimal cash balance is that cash balance where the firm's opportunity cost equals to transaction cost and the total cost are minimum. Then how to determine optimum cash balance?

Optimum cash balance can be determined by a number of mathematical models. But here the most important two models are discussed. They are:

Baumol Model (Inventory Model)

Miller—Orr Model (Statistical Model)

Baumol Model

This model was developed by Baumol. This model is suitable only when the cost flows are predictable (under certainty). It considers optimum cash balance similar to the economic order quantity, since it is based on EOQ Concept and also in both the cases there is trade off between cost of borrowing (sale of securities cost) and opportunity the cost. The point where the total cost is minimum. Figure 1 shows Baumol model.

Assumptions: Baumal model is based on the following:

The firm knows its cash needs with certainty.

The cash payments (disbursement) of the firm occur uniformly over a period of time and is known with certainty.

The opportunity cost of holding cash is known and it remains stable over time.

The transaction cost is known and remains stable.

Elements of Total Cost

The total cost associated with management of cash under this model involves two elements (a) Conversion cost (transaction cost) and (b) Opportunity cost (interest cost).

- a) **Conversion Cost (Transaction cost):** Conversion costs are those costs that are associated with sale of marketable security and raise whenever firm converts marketable security into cash. Conversion Cost $(C) = C [F/M]$

Where: C = Cost per conversion; F = Expected cash need for future period

M = Amount of marketable securities sold in each sale.

- b) **Opportunity Cost:** Is the (cost benefit) foregone by holding idle cash. In other words, opportunity cost is the interest foregone on an average cash balance. Symbolically,

Opportunity cost $(O) = I (M \div 2)$

Where, I = Interest rate that could have been earned

$M \div 2$ = Average cash balance $[(\text{Opening cash} + \text{Closing cash})/2]$

Total cost = Conversion cost + Opportunity cost

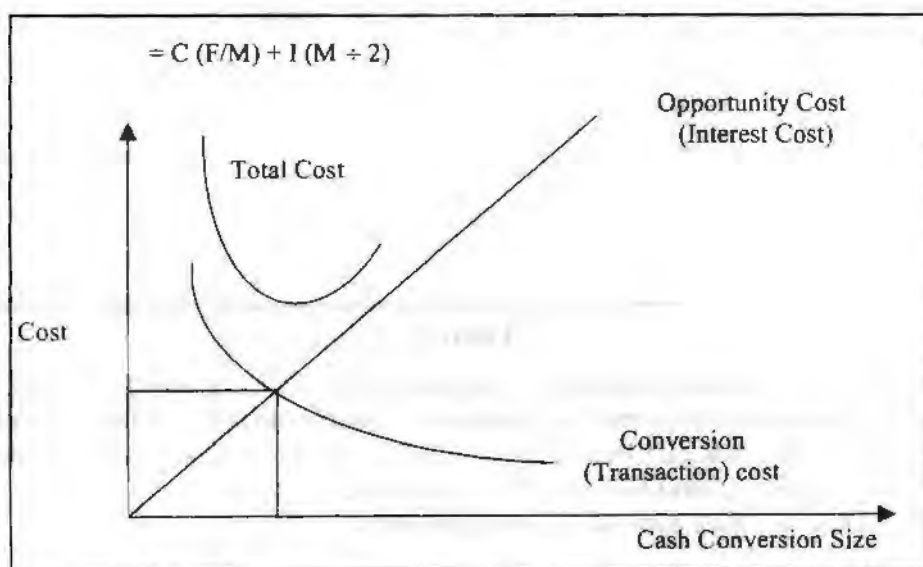


Figure 1

Economical (optimal) Conversion lot size:

$$ECL = \sqrt{\frac{2CF}{O}}$$

Where,

ECL = Economic Conversion Lot; F = Expected cash needed for future period

C = Cost per conversion; O = Opportunity cost

Illustration 3: VS International Coy Ltd., estimated cash needs of Rs. 20 lakhs for a year. Cost of transaction of marketable securities is Rs. 2000 per lot. The company has marketable securities in lot sizes of Rs. 1,00,000, Rs. 2,00,000, Rs. 4,00,000, Rs. 5,00,000 and Rs. 10,00,000. Determine economic conversion lot size if 20% is the opportunity cost.

Solution:

$$ECL = \sqrt{\frac{2 \times 2000 \times 20,00,000}{0.20}} = \text{Rs. } 2,00,000$$

Miller and Orr Model

The Miller and Orr model is in fact an attempt to make Baumol model more elastic with regards to the pattern of periodic changes in cash balances. Baumol's model is based on the assumption that uniform and certain level of cash balances. But in practice firms do not use uniform cash balances nor are they able to predict daily cash inflows and outflows. The Miller Orr Model overcomes the limitations of Baumol model. It's augmented on the Baumol Model and came out of a statistical model. That is useful for the firms with uncertain cash flows. The Miller and Orr model provides two control limits—the upper control limit and the lower control limit along with a return point. Figure 2 shows the two control limits and return point.

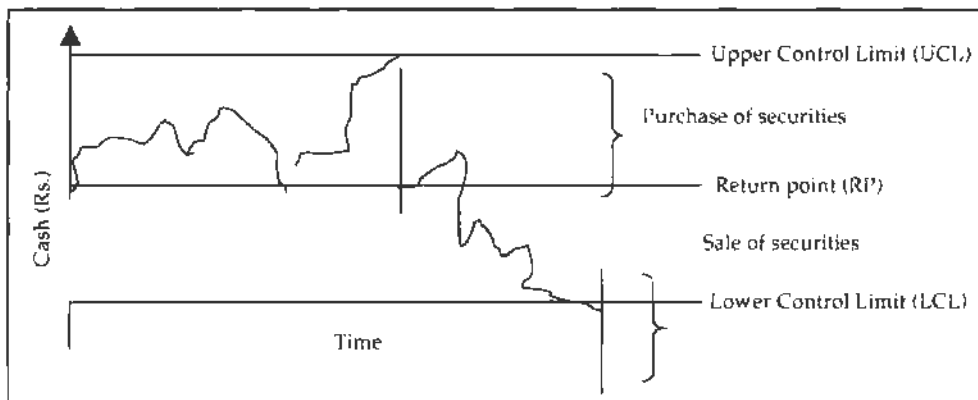


Figure 2

According to this model, cash balance fluctuates between LCL and UCL. Whenever, cash balance touches UCL then the firm purchases sufficient (UCL - RP) marketable securities to take bank cash balance to return point. On the other hand when the firm touches the lower control limit, it will sell the marketable securities to the extent of (RP - LCL), take back cash balance to return point.

The cash balance at the lower control limit (LCL) is set by the firm as per requirement of maintaining minimum cash balance. The cash balances at upper control limit (UCL) and record points will be determined on the basis of the transaction cost (C), the interest rate (O) and standard deviation (s) of net cash flows.

The following formula is used to determine the spread between UCL and LCL (called Z) are MO model

$$Z(RP) = \sqrt[3]{\frac{3C\sigma^2}{4O} + LCL} \text{ or } \left(\frac{3}{4} \times \frac{C\sigma^2}{O}\right)^{1/3} + LCL$$

Where: Z = Control limit of cash balance (or) return point

C = Transaction cost s = Variance of net cash flow LCL = Lower control limit

O = Opportunity cost or interest rate earned on marketable security

Money Market Instruments or Marketable Securities

Money market refers to the market for short-term securities. It has no physical market place and it consists of a loose agglomeration of banks and dealers linked together by telex, telephones and computers. A huge volume of securities is regularly traded on the market and the competition is energetic. The following are most prominent short-term securities available for investment of surplus cash.

- (a) **Units of Unit 1964 Scheme:** This scheme is one of the units of Unit Trust of India (UTI), it is known as the Unit Scheme 1964 (in short US 64). It is the most popular mutual fund scheme in India, which comprises the following features :
 - (i) it is an open ended scheme - as it can be purchased and sold back to the UTI itself on the continuous basis, (ii) the units have face value of Rs. 10 for sale and the purchase of units are not determined on the basis of the Net Asset Value (NAV) of the units, as should be the case for a truly open-ended scheme. It is instead, they are determined administratively by the UTI taking into account the element of accrued interest, from time to time, usually at monthly intervals. Thus the units of the US 64 scheme offer a convenient and attractive investment avenue for short-term funds for the following reasons: (i) Existence of active secondary market, (ii) Units appreciate over time in a fairly predictable manner as the UTI makes a gradual upward revision in its selling and repurchase price from July to June, each year.
- (b) **Ready Forward (RPs or repos):** In the ready forward deal, a commercial bank or some other organisation may enter into an arrangement with a company, intending to park its surplus funds for a short period, under which the bank may sell some securities to one company and repurchases the same securities at prices (i.e., both buying and selling prices) determined as mutually agreed. Hence, it is termed as 'ready forward'. Ready forwards, are however, permitted only in a limited number of specified securities. Ready forward does not provide any income to the company in the form interest, but the company's income is the difference between the buying and selling prices. The income earned on the ready forward is taxable as usual. The rate of return on a ready forward deal is closely related to the market conditions prevailing in the money market, which is generally tight during the busy season, also at the time of the annual closing.
- (c) **Treasury Bills:** Treasury bills are the obligations of the government for a short-term period of less than one year, ranging from 91 days to its multiple like 182 days and 364 days. They are sold at a discount rate and redeemed at the face value and the difference between the rates constitutes to the income. In other words, they are not issued at any interest rate. The yield on treasury bills is low, when compared to other gainful short-term investment avenues. But it has several attractive features, like First, they are issued in a bearer form, which makes them easily transferable mere by delivery of the documents, without any endorsement. Second, the secondary market for bills make them highly liquid,

and also allows to purchase of bills with very short maturities. Third, they are risk free since they are having financial backing of the government.

- (d) **Commercial Papers (CPs):** Commercial paper is short-term, unsecured promissory note issued by large companies. It was introduced in 1990 with a view to enabling the highly rated corporate borrowers to diversify the sources of their short-term borrowings, as also provide an additional instrument to the investors, to park their surplus funds for a short period. Eligibility, any firm which planning to issue of commercial papers is has to fulfill the guidelines given by RBI, such as (i) the tangible net worth of the issuing company should not be less than Rs. 4 crore, as per latest balance sheet. (ii) the company should have been sanctioned a working capital limit by the bank(s) or all India Financial Institutions (IFIs) (iii) the company should have been classified as a Standard Asset by the financing bank(s) financial institutions, and (iv) a minimum credit rating of P-2 of CRISIL (Credit Rating Information Services of India Limited), or such equivalent rating by any other agency approved by RBI (like ICRA - Investment Information and Credit Rating Agency of India Limited, CARE - Credit Analysis and Research Limited).

Mode of Issue: Commercial papers can be directly (companies with high credit rating) issued or through dealers. These are generally sold at a discount (in bearer form) to the face value, as determined by the buyer, but some times they can be issued carrying interest and made payable to the order of the investor. Commercial paper should not be under written or co-accepted. They can be issued with a maturity of minimum period of 15 days (reduced from 30 days) to a maximum period of up to one year. They are issued in the denomination of Rs. 5 lakh or multiples thereof. Any single investor has to invest a minimum amount of Rs. 5 lakh. The main attraction of CPs is interest rate that is typically higher than that offered by the treasury bills or certificates of deposits. The only disadvantage is that it does not have an active secondary market.

- (e) **Certificate of Deposit (CDs):** Certificate of deposit represents the receipts of funds deposited with a bank specified period, like the bank term deposits, but the only difference is CDs are negotiable. CDs may be issued in registered form or bearer form. The later form is more popular since, it can be transacted more easily in the secondary market. Not like treasury bills (issued at discount) CDs are issued at an explicit rate of interest. On maturity, the investor gets the principle amount along with interest accumulated.

Certificate of deposits are popular form of short-term investment of surplus funds for companies due to the following reasons: (i) these can be issued by banks in the required denominations and maturities period suits to the needs of investors, (ii) CDs are fairly liquid, (iii) They are virtually risk-free and (iv) CDs generally offer higher rate of interest then the treasury bills and even bank term deposits.

- (f) **Banker's Acceptance:** Banker's acceptances are time drafts drawn on a bank by a firm (the drawer or exporter) in order to obtain payment for goods that he/she has shipped to a customer which maintains an account with that specific bank. In other words, it is a short-term promissory trade note for which a bank (by having 'accepted' them) promises to pay the holder the face amount at maturity. The draft guarantees payment by the accepting bank at a specific point of time. Hence, the acceptance becomes a marketable security. The document is not issued in specialised denominations, since one party uses acceptances to finance the acquisition of good. The size of bank acceptances is

determined by the cost of goods being purchased. They serve a wide range of maturities and are sold on a discount basis, payable to the bearer. There is no secondary market for acceptances of large banks. Due to their greater financial risk and lesser liquidity, acceptances provide investors a yield advantage over treasury bills of same maturity. Acceptances of major banks are safe investment.

- (g) **Inter-Corporate Deposits (ICDs):** This is a popular short-term investment avenue for companies in India. As the name itself suggests, an inter-corporate deposit is that deposit made by one corporate body (company) with another corporate company. The deposits are usually made for a maximum of six months.

There are three types inter-corporate deposits:

- (i) **Call Deposits:** These types of deposits are expected to be paid on call, which is whenever its repayment is demanded. Generally, these deposits are called back giving a day's notice. But in actual practice the lender has to for at least three days.
- (ii) **Three-month Deposits:** These are more popular among the corporate bodies for parking the surplus funds correspondingly for tiding over the short-term financial crunch faced by some others.
- (iii) **Six-month Deposits:** Generally, inter-corporate deposits do not extend beyond six months period. This type of deposits is usually made with 'A' category companies only.

Inter-corporate deposits are in the nature of unsecured deposits. Hence, due care has to be taken to assess and ascertain the credit worthiness and willingness of the company concerned, with whom it is intended to be made. In addition, it must make sure that it adheres the following requirements, as stipulated by sections 370 and 372 of the Company's Act, 1956 which states a company cannot lend more than 10 per cent of its net worth without prior approval of the central government and a special resolution permitting such excess lending.

- (h) **Badla Financing:** A company providing badla financing is essentially lending money to a stock market operator who wishes to carry forward his/her transaction from one settlement period to another. Generally, such finance is provided through a broker and that too against the security of the shares already brought by the stock market operator. Badla has single greatest advantage that it offers very attractive rate of interest. But it is coupled with gain there are several risks like the stock market broker may not honor his commitment, or the broker may become a defaulter. Soothe following precautionary and safety measures should borne in mind while providing badla financing: (i) provide finance only for reputed and financially strong stockbroker, (ii) select intrinsically sound shares, (iii) ask or keep adequate margin, if share is highly volatile, and (iv) secure possession of share certificates.
- (i) **Bills Discounting:** Generally bill arises out of trade transaction. Bill is drawn by the seller (drawer) on the buyer (drawee) for the value of goods delivered to him. During the pendency of the bill, if the seller needs funds he/she may get it discounted. On the maturity, the bill is presented to the drawee for payment. A bill of exchange is a self-liquidating instrument. Discounting is superior to the inter-corporate deposits. While participating in bill discounting a company should

ensure that the bill is trade bill and not accommodation bill, try to go for bills backed by letters of credit rather than open bills as the former are more secure.

Summary

Cash is one of the components of current assets and it is a medium of exchange for purpose of goods and services and for discharging liabilities.

In cash management, the term 'cash' has used in two senses: Narrow sense and Broad sense. In narrow sense, cash covers currency and generally accepted equivalents of cash, viz., cheques, demand drafts and banks demand deposits. Broad Sense, cash includes not only the above stated but also near cash assets. There are bank's time deposits and marketable securities. The marketable security can easily sold and converted into cash. Here cash management is in broader sense.

Cash budget is a statement showing the estimated cash inflows and cash outflows over a planning period. It pinpoints the surplus or deficit cash of a firm as it moves from one period to another period. Cash budget is prepared for the purpose of estimating cash requirements; Planning short-term finance planning; Scheduling payments, in respect of acquiring capital goods; Planning and phasing the purchase of raw materials; Evolving and implementing credit policies; Checking and verifying the accuracy of long-term cash forecasting. Preparation of cash budget involves two steps: (1) Selection of period of time (planning horizon). Planning horizon is that period for which cash budget is prepared. (2) Selection of factor that has bearing on cash flows.

Money market refers to the market for short-term securities. The most prominent short-term securities available for investment of surplus cash are: Units of Unit 1964 Scheme, Ready Forward (RPs or repos), Treasury Bills, Commercial Papers (CPs), Certificate of Deposit (CDs), Banker's Acceptance, Inter-Corporate Deposits (ICDs), Badla Financing, and Bills Discounting.

Test Yourself

1. What is cash management?
2. Name the objectives of cash management.
3. How do you determine (Baumol) economic conversion lot size?
4. Give the meaning of repos.
5. What is commercial paper (CP)?
6. What is certificate of deposits (CD)?
7. What is cash budget?
8. List out the objectives of preparing cash budget.
9. What is float?
10. What is deposit float?
11. Briefly discuss the elements of cash budget.
12. What is lock box system? How does it help to reduce the cash balances?
13. Discuss the important features of the Miller and Orr model.
14. Efficient cash management will aim at maximizing the cash inflows and slowing cash outflows". Discuss.

15. Briefly discuss the various avenues or opportunities available to the companies to park their surplus funds for a short-term.
16. Write short notes on:
 - (a) US 64 scheme
 - (b) ICD's
 - (c) CD's
 - (d) Discounting of (time) bills, and
 - (e) Commercial Papers (CPs)
 - (f) Badla Financing, and
 - (g) Treasury Bills (TBs)

C H A P T E R

9

RECEIVABLES MANAGEMENT

LEARNING OBJECTIVES

1. Say what are accounts receivables and their characteristics.
2. Define accounts receivables management.
3. Define credit policy and types of credit policies.
4. Discuss the aspects of receivables management.
5. Explain Monitoring Receivable.

Meaning and Characteristics

Meaning

The term receivable is defined as "debt owed to the firm by customers arising from sale of goods or services in the ordinary course of business". When the firm sells its products services on credit, and it does not receive cash for it immediately, but would be collected in near future. Till collection they form as a current assets.

Characteristics

The accounts receivables arising out of credit sales have the following characteristics'.

1. **Risk Involvement:** Receivables involve risk, since payment takes Bajaj in future, and future is uncertain so they should carefully analyzed.
2. **Based on Economic Value:** Accounts receivables are based on economic value. The economic value in goods or services passes to the buyer currently in return the seller expects an equivalent value from the buyer latter.
3. **Implies Futurity:** Buyer will make cash payment of the goods or services received by him/her in a future period. [i.e., generally after credit period]

Meaning of Accounts Receivables Management

Accounts Receivable Management means making decisions relating to the investment in these current assets as an integral part of operating process, the objective being maximization of return on investment in receivables. In other words, accounts receivables management involves maintenance of receivables of optimum level, the degree of credit sales to be made, and the debtors collection. In simple words, the key function of credit management is to optimize the sales at the minimum possible cost of credit. According to Joseph, "The purpose of any commercial enterprise is the earning of profit. Credit in itself is utilized to increase sales, but sales must return a profit". The offer of goods on credit should not only optimise sales but also lead to maximization

of overall return on investment. Management of receivable, therefore, should be based on sound credit policies and practices.

Factors Influencing the Size of Investment in Receivables

The level of investment in receivables is affected by the following factors:

- (a) **Volume of Credit Sales:** Size of credit sale is the prime factor that affects the level of investment in receivables. Investment in receivable increase when the firm sells major portion of goods on credit base and vice versa. In other words an increase in credit sales, increase the level of receivables and vice versa.
- (b) **Credit Policy of the Firm:** There are two types of credit policies such as lenient and stringent credit policy. A firm that is following lenient credit policy tends to sell on credit to customers very liberally, which will increase the size of receivables. On the other hand, a firm that following stringent credit policy will have low size of receivables because the firm is very selective in providing of stringent credit. A firm that is providing string one credit, may be able to collect debts promptly this will keep the level of receivables under control.
- (c) **Trade Terms:** It is the most important factor (variable) in determining the level of investment in receivables. The important credit terms are credit period and cash discount. If credit period is more when compared to other companies/ industry, then the investment in receivables will be more. Cash discount reduces the investment in receivables because it encourages early payments.
- (d) **Seasonality of Business:** A firm doing seasonal business has to provide credit sales in the other seasons. When the firm provides credit automatically the level of investment in receivables will increase with the comparison of the level of receivables in the season; because in season firm will sell goods on cash basis only. For example, refrigerators, air-cooling products will be sold on credit in the winter season, and on cash in summer season.
- (e) **Collection Policy:** Collection policy is needed because all customer do not pay the firm's bill in time. A firm's liberal collection policy will not be able to reduce investment in receivables, but in future sales may be increased. On the other hand, a firm that follow stringent collection policy will definitely reduce receivables, but it may reduce future sales. Therefore, the collection policy should aim at accelerating collections from slow payers and reducing bad debt base.
- (f) **Bill Discounting and Endorsement:** Bill discounting and endorsing bill to the third party, which the firm has to pay, will reduce the size of investment in receivables. If the bills are dishonored on the due date, again the investment in receivable will increase because discounted bills or endorsed bills have to be paid by the firm.

Credit Policy

A firm's credit policy regarding its credit standards, credit period, cash discounts, and collection procedures. The credit policy may be lenient or stringent (tight).

Lenient Credit Policy

It is that policy where the seller sells goods on very liberal credit terms and standards. In other words, goods are sold to the customers whose creditworthiness is not up to the standards or whose financial position is doubtful.

Advantages of Liberal Credit Policy

- ***Increase in Sales:*** Lenient credit policy expands sales because of the liberal credit terms and favorable incentives granted to customers.
- ***Higher Profits:*** Increase in sales leads to increase in profits, because higher level of production and sales reduces permit cost.

Disadvantages of Lenient credit policy

Apart from the advantages it has some disadvantages:

- ***Bad Debt Loss:*** A firm that follows lenient credit policy may suffer from bad debt losses that arise due to the non-payment credit sales.
- ***Liquidity Problem:*** Lenient credit policy not only increases bad debt losses but also creates liquidity problem, because when the firm is not able to receive the payment at a due date, it may become difficult to pay currently maturing obligations.

Stringent Credit Policy

Stringent credit policy seller sells goods on credit on a highly selective basis only i.e., the customers who have proven creditworthiness and financially sound.

Advantages of Stringent Credit Policy

- ***Less Bad Losses:*** A firm that adopts stringent credit policy will have minimum bad debt losses, because it had granted credit only the customers who are creditworthy.
- ***Sound Liquidity Position:*** The firm that follows stringent credit policy will have sound liquidity position, due to the receipt of all payments from customers on due date, the firm can easily pay the currently maturing obligations.

Disadvantages of Stringent Credit Policy

- ***Less Sales:*** Stringent credit policy restricts sales, because it is not extending credit to average creditworthiness customers.
- ***Less Profits:*** Less sales automatically reduces profits, because firm may not be able to produce goods economically, and it may not be able to use resources efficiently that leads increase in production cost per unit.

In fact, firms follow credit policy that lies between lenient and stringent credit policy. In other words, they follow optimum credit policy. Optimum credit policy involves a balance between costs and benefits. The major considerations in costs are liquidity and opportunity costs. The optimum credit policy occurs at point where there is a trade off between liquidity and profitability. Therefore, the management has to strike a balance between easy credit to promote sales and profit and tight credit to improve liquidity. The important variables of credit policy should be identified before establishing an optimum credit policy.

Credit Policy Variables

As we have seen in the credit policy that majority of firms follow a credit policy that lies between stringent and lenient, that is optimum credit policy. Optimum credit policy is one, which maximizes firm's operating profit. For establishing optimum credit policy,

the financial manager must consider the important decision variables, which have bearing on the level of receivables. In other words, the credit policy variables have bearing on level of sales, bad debt loss, discounts taken by customers, and the collection expenses. The major credit policy variable include the following:

(a) Credit Standards, (b) Credit Terms, and (c) Collection Policy and Procedures.

Credit Standards

Firm has to select some customers for extension of credit. For this firm has to evaluate the customer. In evaluation of customers what standards should be applied? Credit standards refer to the minimum criteria for the extension of credit to a customer. Credit ratings, credit references, average payment periods, and certain financial ratios provide a quantitative basis for establishing and enforcing credit standards. The firm's decision, to accept or reject a customer, and to extend credit depends on credit standards. Firms may have more number of standards in this respect, but at one point it may decide not to extend credit to any customer, even though his/her credit rating is strong. On the other point, firm may decide to provide goods on credit to all customers irrespective of their credit creditworthiness. Practical ones lies between these two points.

Adoption of liberal credit standards increases sales by attracting more customers, but these credit standards increase bad debt loss, loss of opportunity cost and higher collection costs. On the other hand, rigid credit standards, opposite effects. They reduce sales, bad debt loss, save opportunity cost due less investment in receivables. When ever firms plans to go for new standards (generally liberalization of standards) they have to determine the changes in net profit after taking into consideration all the benefits and costs of the change of policy. If the change in net profit is positive, it is better to go for new standards and vice versa.

Calculation of Change in Net Profit

Particulars	Amount (Rs.)
Increase in Sales	X X X X
Less: Variable Cost	X X X
Contribution	X X X
Less: Bad debt loss on new sales	XX
Earnings Before Tax (EBT)	XXX
Less: Tax	XX
Earnings After Tax (EAT)	XXX
Less: Opportunity cost	XX
Change in Net Profit	XXX

(1) Calculation of Bad Debt Loss on New Sales

Increase in Sales × Ratio of bad debt loss on sales

Or

Bad Debt Loss with proposed credit period	XXXX
Less: Bad Debt Loss with proposed credit period	XXXX
Bad Debt Loss on New Sales	XXXX

(2) Opportunity Cost = Increase in Investment × Cost of Capital

Increase in Investment = (Increase in Sales ÷ 365) × Average Collection Period
× Ratio of Variable Cost to Sales

Or

= Cost of Sales ÷ Receivables Turnover

Or

= Total Variable Cost of Annual Sales ÷ Receivables Turnover

Receivable Turnover = 365 ÷ Average Collection Period

Average Collection Period = (Trade Debtors × No. of Working Days) ÷ Net
Credit Sales

Illustration 1: Dream Well Company's present annual sales are Rs. 5,00,000, cost of capital is 15 % and the company is in the 40% tax bracket. Company categorized its customers into four categories, viz., C1, C2, C3 and C4 (C1 customer have the highest credit standing and those in C4 have lowest credit standing). At present, Company has provided unlimited credit to categories C1 and C2, where as limited credit facility to Category C3 and no credit to Category C4, since their credit standing (rating) is very low. Due to the present credit standards the company foregoing sales to the extent of Rs. 50,000 to the customers in category C3 and Rs. 40,000 to the C4 category customers. To attract for the foregoing sales to the C3 and C4 category customers, company is considering to relax, credit standards, thus C3 customers would be provided unlimited credit facility and C4 category would be provided limited credit facility. As a result of relaxation in credit standards the sales are expected to increase by Rs. 75,000 and it involves 12 per cent bad debt loss on increased sales. The estimated contribution margin ratio is 25 per cent and average collection period if 50 days.

Determine the change in net profit and suggest whether the company consider the relaxation of credit standards or not.

Solution:

Calculation of Change in Net Profit

Particulars	Amount (Rs.)
Increased Sales	75,000
Less: Variable Cost (Rs.75,000 × 0.75)	56,250
Contribution	18,750
Less: Bad debt loss on new sales (Rs.75,000 × 0.12)	9,000
Earnings Before Tax (EBT)	9,750
Less: Tax at 40 %	3,900
Earnings After Tax (EAT)	5,850
Less: Opportunity cost (See Note)	1,156
Increase in Net Profit	4,694

Note: Calculation of Opportunity Cost: Increase in Investment × Cost of Capital

Increase in Sales = Avg. Collection Period × Ratio of Variable Cost to Sales × Cost of Capital

$$(75,000 \div 365) 50 \times 0.75 \times 0.15 = \text{Rs. } 1,156$$

Suggestion: The firm can relax its credit standards since the change in net profit is positive.

Illustration 2: Good Luck Ltd.'s present sales are Rs. 5,00,000 annual. Company categorized its customers into four categories, viz., A1, A2, A3 and A4 (A1 customer have the highest credit rating and those in A4 have lowest credit rating). At present, Company has provided unlimited credit to categories A1 and A2, where as limited credit facility to Category A3 and no credit to Category A4, since their credit rating is very low. Presently the Company's bad debt loss percentage is 10%. Due to the present credit standards, the company is foregoing sales to the extent of Rs. 50,000 to the customers in category A3 and Rs. 40,000 to the A4 category customers. To attract the foregoing sales to the A3 and A4 category customers, company is considering to relax credit standards, under that category A3 customers would be provided unlimited credit facility and customers in A4 category would be provided limited credit facility. As a result of relaxation in credit standards the sales are expected to increase by Rs. 75,000 and it involves a bad debt loss ratio of 20%. Variable cost to sales ratio is 80% and average collection period if 50 days. It required rate of return is 20% and the company's tax rate is in the 35%. Assume 360 days year.

You are required to suggest whether the company consider the relaxation of credit standards or not.

Solution:-

Calculation of Change in Net Profit

Particulars	Amount (Rs.)
Increased Sales	75,000
Less: Variable Cost (Rs.75,000 × 0.80)	60,000
Contribution	15,000
Less: Bad debt loss on new sales (Note -1)	65,000
Earnings Before Tax (EBT)	- 50,000
Less: Tax at 35 %	-----
Earnings After Tax (EAT)	- 50,000
Less: Opportunity cost (Note -2)	1,644
Increase in Net Profit	- 51,644

Note:

- Calculation of Bad debt loss:**

	Rs.
Bad debt loss with new policy ($5,75,000 \times 0.20$)	1,15,000
Less: Bad debt loss with present policy ($5,00,000 \times 0.10$)	50,000
Increase in Bad debt loss	65,000
- Calculation of Opportunity Cost:** Increase in Investment × Cost of Capital

Increase in Sales = Avg. Collection Period × Ratio of Variable Cost to Sales × Cost of Capital

$(75,000 \div 360) 50 \times 0.80 \times 0.20 = \text{Rs. } 1666.667$

Suggestion: The proposed policy is feasible, since the change in net profit is negative (i.e., net loss).

Monitoring Accounts Receivables

Just evaluation of individual accounts does not help in efficient accounts receivables management without continuous monitoring and control of receivables. In other words success of collection effort depends on monitoring and controlling receivables. Then how to monitor and control receivables? There are traditional techniques available for monitoring accounts receivables. They are (a) Receivables turnover, (b) Average Collection period, (c) Aging Schedule and (d) Collection matrix.

Receivables Turnover

Receivables turnover provides relationship between credit sales and debtors (receivables) of a firm. It indicates how quickly receivables or debtors are converted into cash. Ramamurthy observes "collection of debtors is the concluding stage for process of sales transaction". The liquidity of receivables is therefore, is measured through the receivables (debtors) turnover rate.

Debtors or Receivables Turnover Rate = $\text{Credit Sales} \div \text{Average Debtors or receivables}$

Debtors turnover rate is expressed in terms of times. Analyst may not be able to access credit sales information, average debtors and bills receivables.

To avoid of non-availability of the above information and to evaluate receivables turnover there is another method available for analyst.

Debtors or Receivables Turnover Rate = $\text{Total Net Sales} \div \text{Average Debtors (including receivables)}$

Average Collection Period (ACP)

Turnover rate converted into average collection period is a significant measure of the collection activities of debtors. Average collection period is a measure of how long it takes from the time sales is made to the time to cash is collected from the customers.

$\text{ACP} = 365 \div \text{Debtors or Receivables turnover.}$

Illustration 6: A company's credit sales are Rs. 20 lakhs in a year. The opening debts are Rs. 2 lakhs and closing debtors are Rs. 2,10,000 Determine Debtors turnover and ACP.

Solution:

Debtors Turnover Ratio = $\text{Rs. } 20,00,000 \div (\text{Rs. } 2,00,000 + \text{Rs. } 2,10,000) / 2 = 9.75$ times

$$\text{ACP} = 365 \div 9.75 = 37.43 \text{ Days}$$

Aging Schedule

As we have seen in the above average collection period measures quality of receivables in an aggregate manner, which is the limitation of ACP. This can be overcome by preparing aging schedule. Aging schedule is a statement that shows age wise grouping of debtors. In other words, it breaks down debtors according to the length of time for which they have been outstanding. A hypothetical aging schedule is as follows:

Age Group (in days)	Amount Outstanding (Rs.)	Percentage of Debtors to total Debtors
Less than 30	40,00,000	40
31 – 45	20,00,000	20
46 – 60	30,00,000	30
Above 60	10,00,000	10
Total	1,00,00,000	100

Aging schedule is helpful for identifying slow paying debtors, with which firm may have to encounter a stringent collection policy. The actual aging schedule of the firm is compared with industry standard aging schedule or with bench mark aging schedule for deciding whether the debtors are in control or not.

Collection Matrix

Traditional methods (debtors turnover rate, average collection period) of receivables management are very popular, but they have limitations, that they are on aggregate data and fail to relate the outstanding accounts receivables of a period with credit sales of the same period. The problem of aggregating data can be eliminated by preparing and analyzing collection matrix. Collection matrix is a method (statement) showing percentage of receivables collected during the month of sales and subsequent months. It helps in studying the efficiency of collections whether they are improving or deteriorating. Following table shows hypothetical collection matrix.

Percentage of Receivables collected During the	April	May	June	July	August
Sales (Rs. Lakhs)	350	340	320	300	250
Month of Sales	10	12	14	11	08
First Month following	30	38	40	30	34
Second Month following	25	24	22	20	21
Third Month following	20	26	22	19	18
Fourth Month following	15	10	02	15	20
Fifth Month following	-	-	-	05	09

From the above table, it may be read for April sales are Rs. 350 lakhs. The pattern of collections are 10 per cent in the same month (April), 30 per cent of sales in May, 25 per cent of sales in June, 20 per cent of sales in July and the remaining 15 per cent in the August.

Summary

The term receivable is defined as debt owed to the firm by customers arising from sale of goods or services in the ordinary course of business. The accounts receivables arising out of credit sales has the characteristics Risk Involvement, Based on Economic Value, and Implies Futurity.

Accounts Receivable management involves maintenance of receivables of optimum level, the degree of credit sales to be made, and the debtors collection.

The objectives of accounts receivables management are: Maximising the value of the Firm, Optimum Investment in Sundry Debtors, Control and Dr. Bhatt the Cost of Trade Credit.

The management of accounts receivables is not cost free. It involves cost and its association with accounts receivables results in: Opportunity Cost / Capital Cost, Collection Cost, and Bad Debts.

The economic value of goods or services sold on credit, will be paid by adoption of different modes—(1) Cash Mode, (2) Open Account, (3) Letter of Credit and (4) Consignment.

Receivables management involves the decisions areas: credit standards, credit period, cash discounts, and collection procedures.

Liberal credit policy is that policy where the seller sells goods on very liberal credit terms and standards, which increase in sales, higher profits. But it involves bad debt loss, and liquidity problem.

Stringent credit policy seller sells goods on credit on a highly selective basis only, which reduces bad losses, sound liquidity position. These benefits are accompanied by less sales less profits.

The major controllable variables of credit policy are: (a) Credit Standards, (b) Credit Terms, and (c) Collection Policy and Procedures.

Credit Standards refer to the minimum criteria for the extension of credit to a customer. The firm's decision, to accept or reject a customer to extend credit depends on credit standards. Practical ones lies between these two points, liberal credit standards and rigid credit standards.

The success of collection effort depends on monitoring and controlling receivables. Then how to monitor and control receivables? There are traditional techniques available for monitoring accounts receivables. They are (a) Receivables turnover, (b) Average Collection period, (c) Aging Schedule and (d) Collection matrix.

Test Yourself

1. What do you mean by Receivables?
2. List out the steps involved in credit evaluation.
3. Name the characteristics of Receivables?
4. What is Receivables Management?
5. List out the objectives of receivables management.
6. Name various costs of accounts receivables management.
7. Give three benefits of receivables management.
8. Discuss the various costs of receivables management.
9. Discuss the major modes of payment.
10. Discuss the issues involved in receivables management.
11. What is credit policy? Discuss the different types of credit policy.
12. What is credit policy? Discuss the different types of credit policy.
13. Discuss the sources of credit information.
14. Briefly discuss the factors that influence the size of investment in receivables.
15. What is the role of credit policy variables in the credit policy of a firm? Discuss.
16. "The credit policy of a firm is criticized because the bad debt losses have increased". Discuss under what situations this criticism may not be justified.

C H A P T E R

10

INVENTORY MANAGEMENT

LEARNING OBJECTIVES

1. Define inventory management.
2. Identify the objectives of inventory management
3. Explain the tools and techniques of inventory management.

Inventory management occupies the most significant position in the structure of working capital. Management of inventory may be defined as the sum of total of those activities necessary for the acquisition, storage, disposal or use of materials. It is one of the important component of current assets. Inventory management is an important area of working capital management, which plays a crucial role in economic operation of the firm. Maintenance of large size of inventories by a firm required a considerable amount of funds to be invested on them. Efficient and effective inventory management is necessary in order to avoid unnecessary investment and inadequate investment.

A considerable amount of funds is required to be committed in inventories. It is absolutely imperative to manage inventories efficiently and effectively in order to optimize investment in them. Prudent inventory management is one of the challenging tasks of the financial manager. Efficient management of inventory reduces the cost of production and consequently increases the profitability of the enterprise by minimising the different types of costs associated with holding inventory. An undertaking, neglecting the management of inventories, will be jeo pardising its long term profitability and may fail ultimately. It is possible for a firm to reduce its level of inventories to a considerable degree, i.e., 10 to 20 per cent of current assets without adverse effects on production and sales by using simple inventory planning and control techniques. If business planning can be perfect, a firm may succeed even in attaining the "Zero inventory" norm which as the Japanese management seems to suggest, is not too unrealistic a goal. The reduction in inventories carries a favourable impact on the company's profitability. The efficiency of inventory management in any firm depends on the inventory management practices adopted by it.

Meaning and Definition of Inventory

The term "Inventory" is originated from the French word "Inventaire" and the Latin "Inventarium", which implies a list of things found. The term inventory has been defined by the American Institute of Accountants 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. The term inventory refers to the stockpile of the products a firm is offering for sales and the components that make up the product. Inventories are the stocks of the product of a company, manufacturing for sale and the components that make up the product. The various forms in which inventories exist in a manufacturing company are: (i) raw materials,

(ii) work-in process, (iii) finished goods, and (iv) stores & spares. However, in commercial parlance, inventory usually includes stores, raw materials, work-in-process and finished goods. The term inventory includes materials – raw materials in process, finished packaging, spares and others stocked in order to meet an unexpected demand or distribution in the future.

Components of Inventory

From the above definitions, we can draw the components of inventory. The various forms in which inventories exist in a manufacturing firm are, raw materials, work-in process, finished goods, and stores & spares. The following figure 1 gives the components:

- (i) **Raw Materials:** Raw materials are those inputs that are converted into finished goods through a manufacturing or conversion process. These form a major input for manufacturing a product. In other words, they are very much needed for uninterrupted production.
- (ii) **Work-in-Process:** Work-in-process is a stage of stocks between raw materials and finished goods. Work-in-process inventories are semi-finished products. They represent products that need to under go some other process to become finished goods.

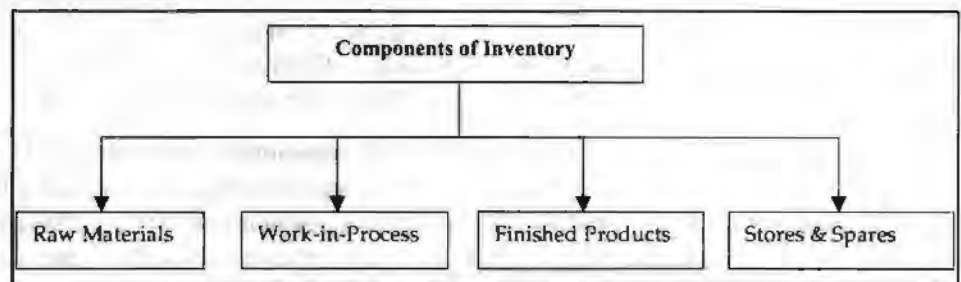


Figure 1

- (iii) **Finished Products:** Finished products are those products, which are completely manufactured and ready for sale. The stock of finished goods provides a buffer between production and market.
- (iv) **Stores & Spares:** Stores & spares inventory (include office and plant cleaning materials like, soap, brooms, oil, fuel, light, bulbs etc.) are purchased and stored for the purpose of maintenance of machinery.

Inventory Management Motives

Managing inventories involves lack of funds and inventory holding costs. Maintenance of inventory is expensive, then why should firms hold inventories? There are three general motives for holding inventories:

- (i) **The Transaction Motive:** Transaction motive includes production of goods and sale of goods. Transaction motive facilitates uninterrupted production and delivery of order at a given time (right time).
- (ii) **The Precautionary Motive:** This motive necessitates the holding of inventories for unexpected changes in demand and supply factors.
- (iii) **The Speculative Motive:** This compels to hold some inventories to take the advantage of changes in prices and getting quantity discounts.

Objectives

The objectives of inventory management may be viewed in two ways and they are operational and financial. The operational objective is to maintain sufficient inventory, to meet demand for product by efficiently organizing the firm's production and sales operations, and financial view is to minimise inefficient inventory and reduce inventory-carrying costs.

These two conflicting objectives of inventory management can also be expressed in terms of costs and benefits associated with inventory. The firm should maintain investments in inventory which implies that maintaining an inventory involves cost, such that smaller the inventory the lower the carrying cost and vice versa. But inventory facilitates (benefits) the smooth functioning of the production. An effective inventory management should:

- Ensure a continuous supply of raw materials and supplies to facilitate uninterrupted production.
- Maintain sufficient stocks of raw materials in periods of short supply and anticipate price changes.
- Maintain sufficient finished goods inventory for smooth sales operation, and efficient customer service.
- Minimize the carrying costs and time, and
- Control investment in inventories and keep it at an optimum level.
- Others: apart from the above, the following are also objects of inventory management. Control of materials costs, elimination of duplication in ordering by centralization of purchasers, supply of right quality of goods of reasonable prices, provide data for short-term and long-term for planning and control of inventories.

Therefore, management of inventory needs careful and accurate planning so as to avoid both excess and inadequate inventory in relation to the operational requirement of a firm. To achieve higher operational efficiency and profitability of a firm, it is very essential to reduce the amount of capital locked up in inventories. This will not only help in achieving higher return on investment by minimizing tied-up working capital, but will also improve the liquidity position of the enterprise.

Tools and Techniques of Inventory Management/Control

Financial manager should aim at determination of optimum inventory level based on costs and benefits to maximize shareholders' wealth. In other words, determination and maintenance of optimum inventory level, helps to maximize owner's wealth. Inventory management problems can be handled by sophisticated/refined mathematical techniques. The major problem areas are (a) classification problem to determine the type of control required, (b) the order quantity problem, (c) the order point problem, and (d) determination of safety stocks. (14) But these are more suitable parts of production and operations management, and out of the scope of this book. In other words, they are out of the area of financial manager. Financial manager needs to be familiar with these techniques because inventory management involves financial costs. Use of a particular technique depends on the convenience of the company. Whatever the techniques may be used by the firm the ultimate objective of inventory control programme is to provide maximum customer service at a minimum cost. In the following, some of the inventory control techniques are discussed:

ABC Analysis

This is the one of the widely used technique to identify various items of inventory for the purpose of inventory control. In other words, it is very effective and useful tool for classifying, monitoring and control of inventories. The firm should not keep same degree of control on all the items of inventory. It is based on Pareto's Law. It is also known as Selective Inventory Control. The firm should put maximum control on those items whose value is the highest, with the comparison of the other two items. The technique concentrates on important items and is also known as Control by Importance and Exception [CIE]. Usually a firm has to maintain several types of inventories, for proper control of them, firm should have to classify inventories in the instance of their relative value. Hence it is also known as Proportional Value Analysis (PVA). The higher value items are classified 'A items' and would be under tight control. At the other end of the classification, we find category 'C items', on this type of inventory, we cannot afford expenses of rigid controls, frequent ordering and expending, because of the low value or low amounts in this area. Thus with the 'C items', we may maintain somewhat higher safety stocks, order more months of supply, expect lower levels of customer service, or all the three. 'B items' fall in between 'A item' and 'C item' and require reasonable attention of management.

According to this technique the task of inventory management is proper classification of all inventory items in to three categories namely A, B and C category. The ideal categorization of inventory items is show in Table 1.

Table 1

Category	No. of Items(%)	Item value (%)
A	15	70
B	30	20
C	55	10
Total	100	100

The above table indicates that only 15 per cent of the items may account for 70 percent of the value [A category items], on which greater attention is required, where as 55 per cent of items may account for 10 per cent of the table value of inventory (C category items), will be paid a reasonless attention. The remaining 30 per cent of inventory account for 20 per cent of total value of inventory (B category items) will be paid a reasonable attention as this, category value lies between the two other categories. The above data can be shown by the following Figure 2.

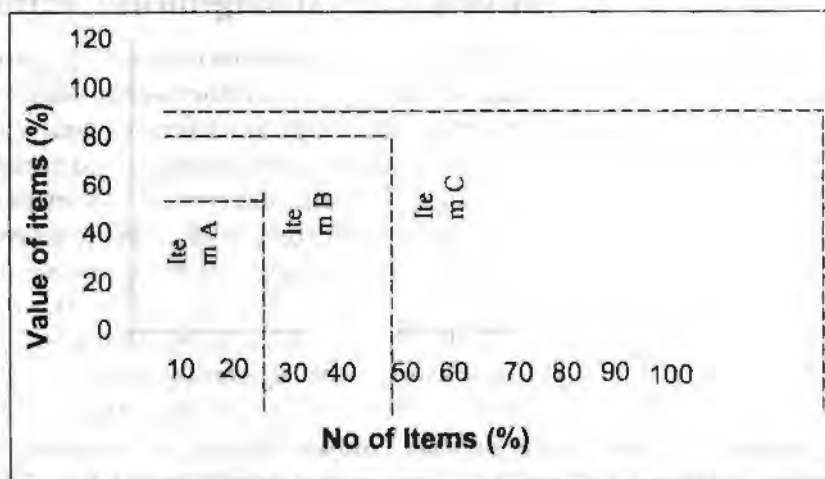


Figure 2

In the above figure number of items (%) are shown on 'X' axis and value of items (%) are represented on 'Y' axis. Greater attention will be paid on category 'A' item, because of greater benefit. The control of 'C' items may be released due to less benefits (some times control cost may exceed benefit of control) and reasonable attention should be paid to category 'B' items.

Economic Order Quantity (EOQ)

Once categorization of inventory items is completed, then the next question is how much inventory should be bought in one order on each replenishment? Should quantity to be purchased be large or small? Buying inventory items in large quantities has its own virtues, but it increases carrying costs. Then what is the solution for the determination of an order where the total inventory costs are minimum? To this problem the answer is Economic Order Quantity (EOQ).

Meaning of EOQ

Economic order quantity refers to that level of inventory at which the total cost of inventory is minimum. The total inventory cost comprising ordering and carrying costs. Shortage costs are excluded in adding total cost of inventory due to the difficulty in computation of shortage cost. EOQ also known as Economic Lot Size (ELS).

Assumptions of EOQ Model

The following assumptions are implied in the calculation of EOQ:

- Demand for the product is constant and uniform throughout the period.
- Lead time (time from ordering to receipt) is constant.
- Price per unit of product is constant.
- Inventory holding cost is based on average inventory.
- Ordering costs are constant.
- All demands for the product will be satisfied (no back orders are allowed).

EOQ Formula

EOQ can be obtained by adopting two methods (a) Trial and Error approach and (b) Short cut or Simple mathematical formula. Here for calculation of EOQ we have adopted simple short cut method. The formula is

$$EOQ = \sqrt{\frac{2AO}{CC}}$$

Where: A = Annual usage,

O = Ordering cost per order

CC = Carrying cost per unit

CC = Price per unit × Carrying cost per unit
in percentage

The above simple formula will not be sufficient to determine EOQ when more complex cost equations are involved.

EOQ is applicable both to single items and to any group of stock items with similar holding and ordering costs. Its use causes the sum of the two costs to be lower than under any other system of replenishment.

Limitations of EOQ

Apart from the above application it has its own limitations that are mainly due to the restrictive nature of the assumptions on which it is based.

- ***Constant Usage:*** This may not be possible to predict, if usage varies unpredictably, as it often does, no formula will work well.
- ***Faulty Basic Information:*** Ordering and carrying costs is the base for EOQ calculation. It assumes that ordering cost is constant per order is fixed, but actually varies from commodity to commodity. Carrying cost also can vary with the company's opportunity cost of capital.
- ***Costly Calculations:*** In many cases, the cost estimation, cost of possession and acquisition and calculating EOQ exceeds the savings made by buying that quantity.

Order Point Problem

After determination of EOQ, then at what level should the order be placed? If the inventory level is too high, it will be unnecessary blocks the capital, and if the level is too low, it will disturb the production by frequent stock out and also involves high ordering cost. Hence, an efficient management of inventory needs to maintain optimum inventory level, where there is no stock out and the costs are minimum. The different stock levels are (a) Minimum level, (b) Reorder level, (c) Maximum level, (d) Average stock level, and (e) Dangers level.

- (a) ***Minimum Level:*** Minimum stock is that level that must be maintained always production will be disturbed, if it is less than the minimum level. How to fix minimum level? While determination of minimum stock level, lead time, consumption rate, the material nature must be considered.
- ❖ Lead-time is the time taken to receive the delivery after placing orders with the supplier. In other words, the number of days required to receive the inventory from the date of placing order. Lead time also called as procurement time of inventory.
 - ❖ The average quantity of raw materials consumed daily. The consumption rate is calculated based on the past experience and production plan.
 - ❖ Requirement of materials for normal or regular production or special order production. If the material is required for special order production, then the minimum stock level need not maintain.

Formula for calculation Minimum Stock Level

Minimum stock level = Re-order level – [Normal Usage × Average delivery time]

- (b) ***Reordering Level:*** Reorder level is that level of inventory at in weeks, which an order should be placed for replenishing the current stock of inventory. Generally, the reorder level lies between minimum stock level and maximum stock level.

Re-order point = Lead time (in days) × Average Daily usage

The above formula is based on the assumption that (a) Consistent daily usage, and (b) Fixed lead-time.

- (c) **Safety Stock:** Prediction of average daily usage and lead-time is difficult. Raw materials may vary from day-to-day or from week-to-week, it is in the case of lead-time also. Lead-time may be delayed, if the usage increases then the company faces problem of stock out. To avoid stock out firm may require to maintain safety stock. Formula (under uncertainty of usage and lead time).

$$\text{Re-order point} = \text{Lead time (in days)} \times \text{Average usage} + \text{Safety stock}$$

- (d) **Maximum Level:** Maximum level of stock, is that level of stock beyond which a firm should not maintain the stock. If the firm stocks inventory beyond the maximum stock level it is called as overstocking. Excess inventory (overstock) involves heavy cost of inventory, because it blocks firms funds in investment inventory, excess carrying cost, wastage, obsolescence, and theft cost. Hence, firm should not stock above the maximum stock level. Safety stock is that minimum additional inventory to serve as a safety margin or better or buffer or cushion to meet an unanticipated and increase in usage resulting from an unusually high demand and or an uncontrollable late receipt of incoming inventory.

$$\text{Maximum Stock Level} = \text{Reorder Level} + \text{Reorder Quantity} - (\text{Minimum Usage} \times \text{Minimum Delivery Time})$$

- (e) **Average Stock Level:** Average Stock Level = Minimum level + [Reorder Quantity \div 2]
- (f) **Danger Stock Level:** Danger level is that level of materials beyond which materials should not fall in any situation. When it falls in danger level it will disturb production. Hence, the firm should not allow the stock level to go to danger level, if at all falls in that level then immediately stock should be arranged even if it costly.

$$\text{Danger Level} = \text{Average Usage} \times \text{Minimum Deliver Time [for emergency purchase]}$$

Summary

Inventory management occupies the most significant position in the structure of working capital. Management of inventory may be defined as the sum of total of those activities necessary for the acquisition, storage, disposal or use of materials.

Efficient management of inventory reduces the cost of production and consequently increases the profitability of the enterprise by minimising the different types of costs associated with holding inventory.

The two conflicting objectives of inventory management are: (1) maintain investments in inventory and (2) to facilitate (benefits) the smooth functioning of the production, which in turn meet the demand.

An effective inventory management should: Ensure a continuous supply of raw materials and supplies to facilitate uninterrupted production; maintain sufficient finished goods inventory for smooth sales operation, and efficient customer service; minimize the carrying costs and time; and control investment in inventories and keep it at an optimum level.

Inventory management problems can be handled by sophisticated/refined mathematical techniques. The major problem areas are (a) classification problem to determine the type of control required, (b) the order quantity problem, (c) the order point problem, and (d) determination of safety stocks.

Contd...

The most widely used inventory control technique is ABC Analysis [classification problem]. According to this technique, the task of inventory management is proper classification of all inventory items in to three categories namely A, B and C category. 'A' item, because greater benefit. The control of 'C' items may be released due to less benefits (some times control cost may exceed benefit of control) and reasonable attention should be paid on category 'B' items.

Economic Order Quantity (EOQ) [Order Quantity Problem] refers to that level of inventory at which the total cost of inventory is minimum. The total inventory cost comprising ordering and carrying costs. EOQ also known as Economic Lot Size (ELS). EOQ can be obtained by adopting two methods (a) Trial and Error approach and (b) Short cut or Simple mathematical formula. Here, for calculation of EOQ we have adopted simple short cut method. The formula is:

$$EOQ = \sqrt{\frac{2AO}{CC}}$$

Order Point Problem relates to the determination of the different stock levels are (a) Minimum level, (b) Reorder level, (c) Maximum level, (d) Average stock level, and (e) Dangers level.

- (a) Minimum Level is that level that must be maintained always production will be disturbed if it is less than the minimum level. Symbolically,

$$\text{Minimum stock level} = \text{Re-order level} - [\text{Normal Usage} \times \text{Average delivery time}]$$

- (b) Reordering Level is that level of inventory in weeks, which an order should be placed for replenishing the current stock of inventory. Generally the reorder level lies between minimum stock level and maximum stock level. Symbolically,

$$\text{Re-order point} = \text{Lead time (in days)} \times \text{Average Daily usage}$$

Safety stock is that minimum additional inventory to serve as a safety margin or better or buffer or cushion to meet an unanticipated and increase in usage resulting from an unusually high demand and or an uncontrollable late receipt of incoming inventory. To avoid stock out, firm may require to maintain safety stock. Formula (under uncertainty of usage and lead time).

$$\text{Re-order point} = \text{Lead time (in days)} \times \text{Average usage} + \text{Safety stock}$$

- (c) Maximum Level of stock, is that level of stock beyond which a firm should not maintain the stock. Symbolically,

$$\text{Maximum Stock Level} = \text{Re-order Level} + \text{Re-order Quantity} - (\text{Minimum Usage} \times \text{Minimum Delivery Time})$$

- (d) Average Stock Level Average Stock Level = Minimum level + [Reorder Quantity ÷ 2]

- (e) Danger Stock Level is that level of materials beyond which materials should not fall in any situation. Symbolically,

$$\text{Danger Level} = \text{Average Usage} \times \text{Minimum Deliver Time [for emergency purchase]}$$

Test Yourself

1. What is EOQ?
2. What is inventory management?

3. What is ordering cost?
4. State any two objectives of inventory management.
5. What do you understand by ABC analysis?
6. How do you compute EOQ?
7. State the assumption of EOQ.
8. Write a brief note on ABC analysis.
9. "There are two dangerous situations that management should usually avoid in controlling inventories". Explain.
10. What are the various stock levels?

MANAGEMENT OF PROFITS/ DIVIDEND POLICY

LEARNING OBJECTIVES

1. Explain the meaning of dividend policy of management of profits.
2. Discuss the different types of dividend policies, advantages and limitations of stable dividend policy.
3. Understand the factors that influence a firm's dividend policy.
4. Explain the forms of dividend payment.
5. Understand what is stock dividend.

Meaning and Definition

From the point of view of dividend decision it is better to call management of profits as management of earnings. Earnings mean net earnings available to equity shareholders from where a firm actually declares dividends or retain profits for financing of investment opportunities.

Net earnings = Operating Profit - (Interest + Tax + Preference Dividend)

Meaning of Management of Earnings

Management of earnings means, how the earnings of a firm are determined and how they are utilised or appropriated or allocated or distributed. In other words, how the business firm apportions their earnings is between dividends and retentions for financing of investment opportunities. Retention of earnings's also known as plough back of profits. Management of earnings is an important finance activity of a business undertaking. Since proper management of earnings helps to maximise shareholder's wealth. Particularly in Joint Stock companies where owners are different from the management team, who are selected / appointed by owners. Usually management team or Board of Directors (BOD's) do not distribute the total net earnings to the shareholders as dividends. They may retain a part of it for financing of investment opportunities or expansion programmes by keeping future growth of the firm in mind. Management of earnings policy must maximise value of the firm, thereby maximise benefits to its owners. On the other hand improper retained earnings and absence of financial control measures are the indicators of inefficient management of earnings that may not help to maximise value of the firm, but they may lead to the liquidation of the company.

Dividend Policy

As we have seen in the above, management of earnings means allocation of earnings among dividends and plough of profits. The term 'dividend' refers to that portion of

company's net earnings that is paid out to the equity shareholders (not for preference shareholders, since they are entitled to have a fixed rate of dividend). Dividend policy of a firm decides the portion of earnings is to be paid as dividends to ordinary shareholders and the portion that is ploughed back in the firm for investment purpose. The total net earnings of equity may be paid as dividends (100% dividend payout ratio), which may consequently result in slower growth and lower market price or a part of net earnings may be paid as dividends, higher capital gains and higher market price. When a company uses a part of its net earnings for dividend payments then, the remaining earnings are retained. Thus, there is an inverse relationship between retained earnings and payment of cash dividend—the larger the cash dividends and lesser the retention, smaller the cash dividends and larger retentions. Hence, the alternative use of net earnings or net profit dividends and retained earnings are competitive and conflicting.

Dividend decision affects the value of the firm. The cash available for the payment of dividends is affected by the firm's investment decision, and financing decision. A decision, which is related to investment leads to less cash available for payment of dividends. Thus, there is a relation between investment decision and financing decision. Distribution of net earnings between dividends and retention would obviously affect owners' wealth. Now the company is in dilemma which alternative is consistent to maximise shareholders wealth. The firm has to pay dividends to shareholders if dividends lead to the maximisation of wealth for them, otherwise the company should retain them for financing profitable investment opportunities.

Types of Dividend Policies

Dividend decision of a firm is taken after taking into consideration, its operating and financial condition. When there are variations in these conditions the firm may require to adopt the one that is suitable for the present conditions. What are the different types of dividend policies available to the financial manager? The types of dividend policies are as follows :

Stable Dividend Policy: The term "stability" refers to the consistency or lack of variability in the stream of dividend payments. In more precise terms, stable dividend means payment of a certain minimum amount of dividend regularly. There are three distinct forms of stability, they are:

- (a) **Constant Dividend Per Share:** A company that follows this policy will pay a fixed amount per share as dividend. For example Rs. 2 as a dividend on the face value of share of Rs. 10 each. The level of earnings would not affect this policy or the dividend payments. This type of dividend policy is more suitable for the company whose earnings are stable over a number of years. Stability of dividend does not mean stagnation in dividend payout. In fact, the prime feature of this policy is to study positive change.
- (b) **Constant Payout Ratio:** The ratio of dividend to earnings is known as payout ratio. In other words, dividend per share is divided by earnings per share to get dividend payout ratio. It is also known as constant percentage of net earnings. In this policy a fixed percentage of earnings are paid as dividends each year. Here the ratio is fixed or constant, but dividend per share varies according to the fluctuations in the earnings. For example, if a company follows a 30 per cent payout ratio it means for every one rupee of net earnings, Re. 0.30, paid as dividends. Assume if a company earned Rs. 10 last year and Rs. 15 in the current year. Then the dividend amount for last year is Rs. 3 ($10 \times 30/100$) and Rs. 4.5 ($15 \times 30/100$) for the current year. The relationship between EPS and DPS is shown in figure 1.

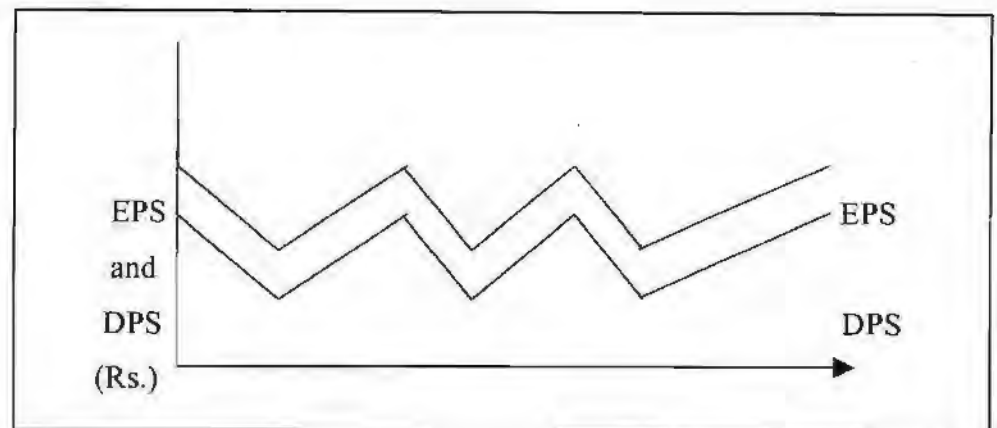


Figure 1

This policy is suitable for a company that is not confident getting stable earnings.

- (c) **Stable Rupee Dividend Plus Extra Dividend:** Under this policy the management fixes the minimum dividend per share to reduce the possibility of not paying dividend. An extra dividend is paid in the years of prosperity. This type of policy is more suitable to the company having minimum earnings and over the minimum, the earnings may fluctuate.

Factors Influencing Dividend Policy

Maximisation of owners' wealth is the objective of the financial manager's job. Whatever decision he/she takes, whether it is investment decision, financing decision or dividend decision, he/she has to maximise value of the firm. There is a positive relation between dividend policy of a firm and value of the firm, that is payment of dividend affects the value (increases) of the firm. Dividend policy means, the formation of a policy by the company regarding the payment of dividend from profits to ordinary shareholders year to year. It determines the ratio between dividend and retained earnings. Then, what type of dividend policy do firms adopt? Whether it is 20 per cent, or 40 per cent or 80 per cent or any other percentage of earnings available to shareholders? The two important dimensions of dividend policy are, what should be the dividend payout ratio? How stable should the dividends be over time? The policy relating to dividend payout ratio and earnings retention varies not only from industry to industry but also among companies within a given industry and within a company from time to time. These variations are because of factors influencing/affecting dividend policy. But financial executives have to make a balanced judgement between the financial needs of the company and desires of the shareholders. In other words, financial executives have to determine optimum dividend policy that should strike the balance between current dividends and future growth which maximises the price of the firm's shares. The dividend payout ratio of a firm should be determined with reference to two objectives - *one* maximisation of shareholders' wealth and *second* providing sufficient funds to finance growth. The determinants of dividend policy will vary from firm to firm. The following are the various factors that have a bearing on the dividend policy.

- 1) **Nature of Earnings:** The nature of business has an important bearing on the dividend policy. The industrial units that are having stability of earnings may formulate (adopt) stable or a more consistent dividend policy than other, that are having unstable earnings, because they can predict easily their earnings. Firms that are involved in necessities suffer less from stable incomes than the firms that are involved in luxury goods. The industries / firms that are having stable

earnings can adopt stable or high dividend policy, while the other firms that are having instable earnings should follow a variable or low dividend policy.

- 2) **Age of Company:** The age of company has more impact on distribution of profits as dividends. A newly started and growing company may require much of its earnings for financing expansion programs or growth requirements and it may follow rigid dividend policy, where in, most of the earnings are retained while an old company with good track record and good name in the public can formulate a clear cut and more consistent dividend policy. This type of companies may even pay 100 per cent dividend payout ratio and the required amount for growth can be raised from the public.
- 3) **Liquidity Position of Company:** Generally dividends are paid in the form of cash, hence, it entails, cash. Although, a firm may have sufficient profits to declare dividends, but it may not have sufficient cash to pay dividends. Thus, availability of cash and sound financial position of the firm is an important factor in taking dividend decision. The liquidity of a company depends very much on the investment and financial decisions of a firm, while in turn determining the rate of expansion and the manner of financing. If cash position of a firm is weak, stock dividend will be better and if cash position is good it can go for payment of dividend by cash.
- 4) **Equity Shareholders Preference for Current Income:** Legally, the Board of Directors has discretion to decide the distribution of the earnings of a firm. The shareholders who are legal owners of the firm appoint the (BOD's). Hence, directors have to take into consideration owners' preferences, while deciding dividend payment. Shareholders' preference for current dividends or capital gains, that is, depend on their economic status and the effect of tax differential on dividends and capital gains. When shareholders' have more preference in current dividend than capital gains, the firm may be required to follow liberal dividend policy, on the other hand if shareholders have preferred capital gains (it may be due to tax or economically sound) than the current dividend, then the firm may be required to retain more earnings.
- 5) **Requirements of Institutional Investors:** Institutional investors like LICs, GICs and Mutual funds (UTI), have investment policy, which says that these type of institutes have to invest only in companies that have a continuous dividend payment record with stability. These purchase large blocks of shares for relatively, to hold a long period of time. Hence, they represent a significant force in the financial markets, and their demand for company's securities may increase the share price and there by owners' wealth. To attract institutional investors firms may require to follow stable dividend policy. Apart from theoretical postulates for the desirability of stable dividends, there are also many empirical studies, classic among them being that of Lintner, to support the viewpoint that companies pursue a stable dividend policy. Most firms are in favour of stable dividend per share but they are very careful not to raise dividends per share a level that can safely be sustained in, the future. This cautious creep up of dividends per share results in, stable dividend per share pattern during fluctuating earnings per share periods, and a rising step function pattern of dividends per share during increasing earning per share periods.
- 6) **Legal Rules:** Legal rules restrictions are significant as they provide framework within which dividend policy is formulated. In other words, dividend policy of a firm has to be evolved within the legal framework and rules and regulations. The legal rules have to do with capital impairment rule, net profits and insolvency rule.

Capital Impairment Rule: First these provisions require that, the dividend can be paid from earnings either from current years earnings or from past years earnings and be reflected in the earned surplus. If firm pays dividend out of capital, that adversely affects the security of its lenders. The purpose of this rule is to protect creditors (preference shareholders and auditors of the firm) by providing sufficient equity base because they have originally relied on that base. Therefore, the financial manager should keep in mind the legal rules while declaring dividends.

Net Profits: This rule is essentially a result of the earlier rule. A firm can pay cash dividends within the limits of current profits plus accumulate balance of retained earnings. According to Sec. 205 of the companies Act, 1956, dividends shall be declared or paid only from current profits or past profits after recovery of depreciation'. But Central Govt. is empowered to all (only in public interest) any company to pay dividends for any financial year out of profits of the company without providing depreciation. A firm can take profits of past years if the current year's profits are not sufficient to maintain stable dividend policy. If there are any losses that are to be carried forward, they should be set apart from current years earnings before declaration of dividends. So financial manager has to strong within the boundaries, at the same time has to consider many financial variables and constraints in deciding the amount that is to be paid as dividends.

Insolvency Rule: A firm is said to be insolvent in two cases. *One*, in a legal sense, the recorded value of liabilities exceeding the recorded value of assets, or *second*, as in a technical sense, as the firm's inability to pay its creditors as obligations came due. If the firm is insolvent in either sense, it is prohibited the payment of dividends. The rationale of this rule is to protect the creditors.

- 7) **Contractual Requirements:** Generally lenders may put conditions in a bond indenture or loan agreement often includes a restriction of the payment of dividend. This is done to protect their interests when the firm is experiencing low liquidity or profitability. The restrictions may be in three forms. *Firstly*, firms may be prohibited from paying dividends in excess to a certain percentage say 10 per cent. *Secondly*, a ceiling in terms of net profits that may be used for dividend payment may be laid down. Say only 50 per cent of net profits or a given absolute amount of net profits can be paid as dividends. *Finally*, dividends may be restricted by insisting upon a minimum of earnings to be retained. Reinvestment reduces debt equity ratio, which enhances the margin of pillow for the lenders. Therefore, keeping in mind all the restrictions of lenders dividend declaration should be done.
- 8) **Financial Needs of the Company:** This is one of the key factors, which influence the dividend policy of a firm. Financial needs means funds required for foreseeable future investment. The required funds may be determined with the help of long-term financial forecasts. A firm that has sufficient profitable investment opportunity, should follow low dividend payout ratio. On the other hand, a firm that has no profitable investment opportunities or few investment opportunities adopts high dividend payout ratio policy (that low retention) because owners' can reinvest dividends elsewhere at higher rate of return then the firm can do, and nominal retention of profit is required to replace the modernize firm's assets.
- 9) **Access to the Capital Market (External Sources):** Access to the capital market means the firms ability to raise funds from the capital market. A company, which has easy access to the capital market provides that flexibility in deciding

dividend policy. Easy access is possible only to the companies that are well established and hence here a profit track record. Generally dividend policy and investment decisions are interrelated, but in this situation they are independent. The management may tempt to declare a high rate of dividend that attract investors and maintain existing shareholders.

On the other hand, a firm that has difficulty in accessing capital market to raise required funds, will not be able to pay more dividends. It has to depend on internal funds, so management should follow a conservative dividend policy by maintaining a low rate of dividend and plough back a sizeable portion of profits to face any contingency. Likewise, the lending financial institutions advance loans in stiffer terms, it may be desirable to rely on internal sources of financing and accordingly conservative dividend policy should be pursued.

- 10) **Control Objective:** Control over the company is also an important factor, which influences dividend policy. When a firm distributes more earning as dividends in the form of cash it reduces its cash position. As a result, the firm will have to issue shares to the public to raise funds required to finance investment opportunities that leads to loss of control, since, the existing shareholders will have to share control with new owners. Financing investment projects by way of internal source avoids, loss of control. Hence, if the shareholders and management of the firms are reluctant to dilution of control, thus the firm should retain more earnings for investment programmes, by following conservative dividend policy.
- 11) **Inflation:** Inflation is the state of economy in which the prices of products or goods have been increasing. Inflation is a factor that influences dividend policy indirectly. Indian accounting system is based on historical costs. The funds accumulated from depreciation may not be sufficient to replace the absolute asset or equipment, since depreciation is provided based on historical costs. Consequently, to replace assets and equipment, firm has to depend upon retained earnings, this leads to the payment of low dividend, during inflation period.
- 12) **Dividend Policy of Competitors:** Keeping one eye on competitors' dividend policy is very important. If the firm wants to retain the existing shareholders or it want to maintain share price in the market, and if it is planning to raise funds from public for expansion programs, it has to pay dividends at par with its competitors. Hence, it is one of the factors that influence dividend policy of a firm.
- 13) **Past Dividend Rates of the Company:** This is the factor that influences the dividend policy of an existing company (that has already paid dividends). Owners' and prospective investors prefer stability in dividends. Stability of dividends means the payment of dividend regularly, at a constant dividend per share (it may be a fixed percentage on book value or a fixed percentage on earnings available to equity share holders). Generally firms' tries to maintain stability in dividends that is based on past dividend rates of the company. Hence, directors will have to keep in mind the past dividend rates.
- 14) **Others:** Apart from the above discussed, there are some other factors, which influence dividend policy of a firm, such as Trade Cycles, Corporate taxation policy, attitude of investors group and repayment of loan.

Forms of Dividends

Dividend is the portion of earnings available to equity shareholders that equally (per share basis) is distributed among the shareholders. General practice is to pay dividends

in cash, this form may take place when the cash is available or during liquidity of the company. Sometimes firms may declare dividends in the form of Scrip, bond, stock and property dividends. The following discussion deals with the different forms of dividends.

- 1) **Cash Dividend:** Generally many companies pay dividends in the form of cash. But payment of dividend in the form of cash requires enough cash in the bank or in hands. In other words, there should not be any shortage of cash for payment of dividends. Sufficient cash is available only when a company prepares cash budget to estimate the required amount for the period for which the budget is prepared. If the company finds any shortage of cash, it should make arrangements to borrow funds. But it may be difficult to prepare a cash budget with the expected amount needed for payment of dividends.
- 2) **Scrip Dividend:** In this form of dividends, the equity shareholders are issued transferable promissory notes for a shorter maturity period that may or may not be interest bearing. It is a simple payment of dividends in the form of promissory notes. Payment of dividend in this form takes place only when the firm is suffering from shortage of cash or weak liquidity position. Payment of dividends in the form of cash is justifiable only when the company has earned profits and it will take some time to convert current assets into cash.
- 3) **Bond Dividend:** Both scrip dividend and bond dividend are same, but they differ in terms of maturity. Bond dividends carries longer maturity whereas, scrip dividend carries shorter maturity. The effect of both forms of dividends on the company is the same. Bond dividend bears interest.
- 4) **Property Dividend:** The name itself suggests that payment of dividend takes place in the form of property. In other words, payment of dividends in the form of assets. This form of dividends takes place only when a firm has assets that are no longer necessary in the operation of business and shareholders are ready to accept dividend in the form of assets. This form of dividend payment is not popular in India.
- 5) **Stock Dividend (Bonus Shares):** Stock dividend is the payment of additional shares of common stocks to the ordinary shareholders. In other words, distribution of bonus shares to the stockholders instead of cash dividend. It is known as stock dividend in USA to the existing shareholder. Bonus shares are shares issued to the existing shareholders as a result of capitalisation of resources. The declaration of bonus shares will increase the paid up share capital and reduces retention of earnings. But there would not be any change in net worth. Issue of bonus shares increases the number of outstanding shares. Distribution of bonus shares is done proportionately. Payment of dividend in the form of bonus share does not affect the wealth of owners', since earnings per share and market price per share will fall proportionately. When there is no wealth maximisation why do firms pay dividend in the form of bonus shares ?

Walter's Model

Prof. James E Walter argues that the choice of dividend payout ratio almost always affects the value of the firm Prof. Walter has very scholarly studied the significance of the relationship between internal rate of return (R) and cost of capital (K) in determining optimum dividend policy which maximizes the wealth of shareholders.

Walters models is based on the following assumptions:

- 1) The firm finances its entire investments by means of retained earning only.
- 2) Internal rate or return (R) and cost of capital (K) of the firm remains constant.
- 3) The firms earning are either distributed as dividend or reinvested internally.
- 4) Beginning earnings and dividends of the firm will never change.
- 5) The firm has a very long or infinite life.

$$P = \frac{D + r/k(E - D)}{K}$$

P= Market price per share.

D= Dividend per share

E= Earning per share

R= Interest rate per capital

K= Cost of capital.

According to the theory, the optimum dividend policy depends on the relationship between the firm's internal rate of return and cost of capital. If $R > K$, the firms should retain the entire earnings.

Walter's view on optimum dividend payout ratio can be summarized as below:

- a) **Growth Firms ($R > K$):** The firms having $R > K$ may be referred to as growth opportunities. These firms naturally can earn a return which is more than what shareholders could earn on their own. So optimum payout ratio for growth firm is 0%.
- b) **Normal Firms ($R = K$):** If R is equal to K the firm is known as normal firm. These firms earn a rate of return which is equal to that of shareholders in this case dividend policy will not have any influence on the price per share. So there is nothing like optimum payout ratio for a normal firm. All the payout ratios are optimum.
- c) **Declining Firms ($R < K$):** If the company earns a return which is less than, what the shareholders can earn on their investments, it is known as declining firm. Here it should not make any sense to retain the earnings. So entire earnings optimum payout ratio for a declining firms is 100%.

So according to walter the optimum payout ratio is either 0% (when $R > K$) or 100% (when $R < K$).

Criticisms

Walter's model based on certain assumptions, which are true for walter but not true in the real world. The following are the limitations of the Walter's model.

- 1) Walter assumes that there is no external financing. When $R > K$, the firm must issue additional security and finance its profitable investments, if the company uses only retained earnings, all the profitable investments cannot be undertaken. So the investment decision of the firm will be sub-optimum.

- 2) Constant R, Internal rate of return cannot remain same. It actually diminishes as and when we make more and more investments.
- 3) Constant K, Cost of capital of a company cannot remain same. Risk of the company definitely changes with additional investments of retained earnings.

Illustration 1: Given the following information about Sunrise Industries Ltd. Show the effect of the dividend policy on the market price per share, using Walter's model.

EPS= Rs.8

Cost of capital (K) = 12%

Assumed rate of return

- a) 15%
- b) 10%
- c) 12%

Solution:

To show the effect of different dividend policies on the shareholders of the firm for 15% and 12%, let us consider 0%, 25%, 50%, 75% and 100% payout ratios.

I when R>K (15>12)

At 0% payout ratio (dividend=0)

$$P = \frac{D + R/K(E - D)}{K}$$

$$= \frac{0 + 0.15 / 0.12(8 - 0)}{0.12}$$

$$= \text{Rs. } 83.33$$

At 25% payout ratio.

$$P = \frac{4 + 0.15 / 0.12(8 - 4)}{0.12}$$

$$= \text{Rs. } 79.16$$

At 50% payout ratio

$$P = \frac{4 + 0.15 / 0.12(8 - 4)}{0.12}$$

$$= \text{Rs. } 75.$$

At 75% payout ratio

$$P = \frac{6 + 0.15 / 0.12(8 - 6)}{0.12}$$

$$= \text{Rs. } 70.83$$

At 100% payout ratio

$$P = \frac{8 + 0.15 / 0.12(8 - 8)}{0.12}$$

$$= 66.67$$

Therefore, when $R > K$, price share will be maximum at 0% payout ratio. Price per share decreases as and when payout ratio is increased.

II when $R < K$ (10% < 12%)

At 0% payout ratio

$$P = \frac{0 + 0.10/0.12(8 - 0)}{0.12}$$

$$= \text{Rs. } 55.55$$

At 25% payout ratio

$$P = \frac{2 + 0.10/0.12(8 - 2)}{0.12}$$

$$= \text{Rs. } 58.33$$

At 50% payout ratio

$$P = \frac{4 + 0.10/0.12(8 - 4)}{0.12}$$

$$= \text{Rs. } 61.11$$

At 75% payout ratio

$$P = \frac{6 + 0.10/0.12(8 - 6)}{0.12}$$

$$= \text{Rs. } 63.88$$

At 100% payout ratio

$$P = \frac{8 + 0.10/0.12(8 - 8)}{0.12}$$

$$= \text{Rs. } 66.66$$

Therefore, when $R < K$, price per will be maximum at 100% payout ratio. Price per share increases as and when the payout ratio is increased.

III when $R = K$ (12% = 12%)

At 0% payout ratio

$$P = \frac{0 + 0.12/0.12(8 - 0)}{0.12}$$

$$= \text{Rs. } 66.66$$

At 25% payout ratio

$$P = \frac{2 + 0.12/0.12(8 - 2)}{0.12}$$

$$= \text{Rs. } 66.66$$

At 50% payout ratio

$$P = \frac{4 + 0.12/0.12(8 - 4)}{0.12}$$

$$= \text{Rs. } 66.66$$

At 75% payout ratio

$$P = \frac{6 + 0.12/0.12(8 - 6)}{0.12}$$

$$= \text{Rs. } 66.66$$

At 100% payout ratio

$$P = \frac{8 + 0.12/0.12(8 - 8)}{0.12}$$

$$= \text{Rs. } 66.66$$

Therefore, when $R=K$, price per share remains the same at all payout ratios. So, there is no one-payout ratio, which is optimum.

Gordon's Model

Another theory, which contents that dividends are relevant, is the Gordon's model. This model which opines that dividend policy of a firm affects its value is based on the following

Assumptions:

- a) The firm is an all equity firm (no debt).
- b) There is no outside financing and all investments are financed exclusively by retained earnings.
- c) Internal rate of return (R) of the firm remains constant.
- d) Cost of capital (K) of the firm also remains same regardless of the changes in the risk complexion of the firm.
- e) The firm derives its earnings in perpetuity.
- f) The retention ratio (b) once decided upon is constant. Thus, the growth rate (g) is also constant ($g=b$).
- g) $K > g$.
- h) A corporate tax does not exist.

Gordon used the following formula to find out price per share

$$P = \frac{E_1(1 - b)}{K - b}$$

P = price per share

K = cost of capital

E_1 = earnings per share

b = retention ratio

$(1-b)$ = payout ratio

$g = b$, growth rate. (r = internal rate of return)

According to Gordon, when $R > K$, the price per share increases as the dividend payout ratio decreases.

When $R < K$ the price per share increases as the dividend payout ratio increases.

When $R=K$ the prices per share remains unchanged in response to the change in the payout ratio.

Thus, Gordon's view on the optimum dividend payout ratio can be summarized as below:

1. The optimum payout ratio for a growth firm ($R > K$) is zero.
2. There is no optimum ratio for a normal firm ($R = K$).
3. Optimum payout ratio for a declining firm $R < K$ is 100%.

Thus, the Gordon's Model's conclusions about dividend policy are similar to that of Walter. This similarity is due to the similarities of assumptions of both the models.

Bird in Hand Argument

(Dividends and uncertainty)

Gordon revised this basic model later to consider risk and uncertainty. Gordon's model, like Walter's model, contends that dividend policy is relevant. According to Walter, dividend policy will not affect the price of the share when $R=K$. But Gordon goes one step ahead and argues that dividend policy affects the value of shares even when $R=K$. The crux of Gordon's argument is based on the following 2 assumptions.

- (a) Investors are risk averse and
- (b) they put a premium on a *certain* return and discount (penalise) uncertain return.

The investors are rational. Accordingly they want to avoid risk. The term risk refers to the possibility of not getting the return on investment. The payment of dividends now completely removes any chance of risk. But if the firm retains the earnings the investors can expect to get a dividend in the future. But the future dividend is uncertain both with respect to the amount as well as the timing. The rational investors, therefore, prefer current dividend to future dividend. Retained earnings are considered as risky by the investors. In case earnings are retained, the price per share would be adversely affected. This behaviour of investor is described as "**Bird in Hand Argument**". A bird in hand is worth two in bush. What is available today is more important than what may be available in the future. So the rational investors are willing to pay a higher price for shares on which more current dividends are paid. Therefore, the discount rate (K) increases with retention rate. This is shown below.

Thus Gordon concludes that dividend policy affects the values of the shares even in a situation where $R=K$

Illustration 2: If $K = 11\%$ and earnings per share is Rs. 15. Calculate the price per share of Sushma Ltd. For $r = 12\%, 11\%$ and 10% for the following levels of D/P ratios.

	D/P ratios	Retention ratio
1.	10%	90%
2.	30%	70%
3.	50%	50%

Solution:

1. If $R > K$ ($12\% > 11\%$)

$$P = \frac{E_1(1-b)}{K-b_r}$$

1. D/P ratio of 10%. Retention ratio = 90%

$$P = \frac{15(1-0.9)}{0.11-0.9 \times 0.12}$$

$$= \text{Rs. } 750$$

2. D/P ratio of 30%. Retention ratio = 70%

$$P = \frac{15(1-0.7)}{0.11-0.7 \times 0.12}$$

$$= \text{Rs. } 173.08$$

3. D/P ratio of 50%. Retention ratio = 50%

$$P = \frac{15(1-0.5)}{0.11-0.5 \times 0.12}$$

$$= \text{Rs. } 125$$

II. If $R=K$ (11% = 11%)

1. D/P ratio of 10%. Retention ratio = 90%

$$P = \frac{15(1-0.9)}{0.11-0.9 \times 0.11}$$

$$= \text{Rs. } 136.36$$

2. D/P ratio of 30%. Retention ratio = 70%

$$P = \frac{15(1-0.7)}{0.11-0.7 \times 0.11}$$

$$= \text{Rs. } 136.36$$

3. D/P ratio of 50%. Retention ratio = 50%

$$P = \frac{15(1-0.5)}{0.11-0.5 \times 0.11}$$

$$= \text{Rs. } 136.36$$

III. If $R < K$ (10% < 11%)

1. D/P ratio of 10%. Retention ratio is 90%

$$P = \frac{15(1-0.9)}{0.11-0.9 \times 0.10}$$

$$= \text{Rs. } 75$$

2. D/P ratio of 30%. Retention ratio is 70%

$$P = \frac{15(1-0.7)}{0.11-0.7 \times 0.10}$$

$$= \text{Rs. } 112.50$$

3. D/P ratio 50%. Retention ratio = 50%

$$P = \frac{15(1-0.5)}{0.11-0.5 \times 0.10}$$

$$= \text{Rs. } 125$$

From the above it is clear that, when $R > K$, the price per share increases and the payout ratio decreases, if $R = K$ price per share remains same at all payout ratios. When $R < K$, the price per share increases with the increases in the payout ratio.

Modigliani-miller Model

Irrelevance theory

According to MM, the dividend policy of a firm is irrelevant, as it does not affect the wealth of shareholders. The model which is based on certain assumptions, sidelined the importance of the dividend policy and its effect thereof on the share price of the firm. According to the theory, the value of a firm depends solely on its earnings power resulting from the investment policy and not influenced by the manner in which its earnings are split between dividends and retained earnings.

Assumption:

1. **Capital markets are perfect:** Investors are rational as information is freely available, transaction cost are nil, securities are divisible and no investor can influence the market price of the share.
2. **There are no taxes:** No difference between tax rates on divisible and capital gains.
3. The firm has a fixed investment policy. Which will not change. So if the retained earnings are reinvested, there will not be any change in the risk of the firm. So K remains same.
4. **Floatation costs does not exist:** The substance of MM arguments may be stated as below:

If the company retains the earnings instead of giving it out as dividends, the share holders enjoy capital appreciation, which is equal to the earnings, retained.

If the company distributes the earnings by the way of dividends instead of retention, the shareholders enjoy the dividend, which is equal to the amount by which his capital would have been appreciated had the company chosen to retain the earnings.

Hence, the division of earnings between dividends and retained earnings is irrelevant from the point of view of shareholders.

Criticisms

MM theory of division irrelevance is based on some assumptions. When these assumptions hold good, the conclusions derived by them are logically consistent and intuitively appealing. But the assumption will not hold water in the real world. So MM theory lacks practical relevance. The following are some of the limitations.

1. **Tax differentials:** MM's assumption that taxes does not exist is far from reality. Dividends are not taxed where as tax is levied on capital gains. So the shareholders may prefer dividend to capital gains.
2. **Floatation cost:** MM argue that payment of dividend and raising external funds are equivalent. This is not true in practice due to the presence of flotation costs. So a rupee of dividend cannot be replaced by a rupee by external funds. So it is advantageous to retain the earnings.
3. **Transaction costs:** In the absence of transaction cost a rupee of capital value can be converted into a rupee of current income and vice versa. This implies that if

the dividends are not paid, the shareholders desiring current income can sell a part of their holdings without incurring transaction cost. Because of the presence of the transaction cost, investors may prefer current dividend than retained earnings.

4. **Diversification:** If the company retains the earnings, investors cannot diversify their portfolios. As the investors are willing to pay a higher value to the company which pays more current dividend.
5. **Uncertainty:** MM argues that the prices of the 2 firms which are exactly identical in all the respect except with the dividend policy cannot be different. But this is not true due to "bird in hand argument".
6. **Informational content of dividend:** (financial signaling) - According to this argument dividends contain some information vital to the investors. The payment of dividends conveys the information from the managers to the shareholders about the prospects and profitability of the company. When the company changes its dividend policy, investor will assume that it is in response to the expected changes in the firms' profitability which will last long. An increase in the payout ratio implies a permanent increase in the firms expected earnings and vice versa. So dividend policy becomes relevant because of informational value.

MM accept the informational content of a dividend but still argue that dividends are irrelevant and that dividends are merely proxy for the expected future earnings, which really determines values. Or in other words dividend reflects the profitability of the company. They cannot by themselves determine the market value of the shares.

Illustration 3: The following is the information relating to the acquiring company (A) and the Target Company (T)

	A	T
Earnings after Tax (EAT) (Rs).	50,00,000	10,00,000
Number of shares	5,00,000	2,00,000
Earnings per shares (Rs)	10	5
P/E Ratio	15	10
Market price per share (Rs)	150	50

Based on the evaluation of T, A has agreed to offer Rs. 65 per shares to T. This is 30% premium over the premerger market price of Rs. 50. If the offer price is Rs. 65, exchange ratio is determined as below.

$$ER = \frac{\text{Offer price}}{\text{Share price of the acquires}}$$

$$= \frac{65}{150} = 0.4333 \text{ shares}$$

So A will issue 0.4333 shares for every one share of the target company. The total number of shares to be issued is exchanged ratio x number of shares of T Company.

$$0.4333 \times 2,00,000 = 86666 \text{ shares}$$

Earnings per shares of the surviving company after the merges is calculated as below.

$$\frac{\text{Combined earnings}}{\text{Total Number of shares}}$$

$$= \frac{\text{Rs. } 60,00,000}{5,00,000 + 86666}$$

In the above case the EPS of A has increased from Rs. 10 to Rs. 10.22

Assuming that the offer price of Rs. 65 is rejected by the target company. So A company will offer Rs. 90 per shares to the target company. Now the exchange ratio would be:

$$\text{ER} = \frac{90}{150} = 0.60 \text{ shares}$$

So 0.6 shares of A must be issued for every shares of T company.

Total number of shares to be issued is $0.6 \times 2,00,000 = 120,000$ shares.

Now EPS of the surviving company after the merger would be:

$$\text{EPS} = \frac{60,00,000}{5,00,000 + 1,20,000} = \text{Rs. } 9.67$$

So when the offer price is Rs. 90 per shares, the EPS of the A company falls to Rs. 9.67 from Rs. 10.

Practical Aspects of Dividend Policy

While deciding on the dividend policy, firms face two questions:

1. What should be the average pay ratio?
2. How stable should the dividends be over time?

Firms consider the following factors to determine the payout ratio:

1. **Funds requirement:** The dividend payout ratio of firms depends on the firm's future requirements for funds. Long term financial forecasting of funds can assess this requirement. Usually firms, which have plans for substantial financial investment, need funds to exploit the available opportunities. Thus, they keep their dividend payout ratio low. On the other hand, firms, which have very few investment avenues have larger dividend pay out ratio.
2. **Liquidity:** It is another factor which influences the dividend payout ratio as dividends involve cash payment. Firms, which desire to pay dividends may not do so, because of insufficient liquidity. This usually happens in the case of profitable and expanding firms, which have very low liquidity because of substantial investments.
3. **Availability of external sources of financing:** Firms which have easy access to external sources of funds enjoy a great deal of flexibility in deciding the dividend payout ratio. For such firms, dividend payout decision is somewhat independent of its investment decision as well as its liquidity position. Such firms are usually more generous in their dividend policies. While on the other hand, firms, which do not have an easy access to external sources of funds, have to rely on the internal sources of funds or investment purposes. Such firms are usually very conservative in their dividend policy decisions.
4. **Shareholder preference:** Preferences of shareholder are another major factor, which influence dividend payout. If shareholders prefer current income to capital

gains, then the firm may follow the liberal dividend policy. While on the other hand, if they prefer capital gain to dividend income, then firms follow the conservative dividend policy.

5. **Difference in the cost of external equity and retained earnings:** The cost of equity in all cases except for those raised by way of rights issue is higher than the cost of retained earnings. Depending on the extent of this difference in cost, firms decide the relative proportion of external equity and the retained earnings to be used. This affects the dividend policy decision of the company.
6. **Control:** Raising money from external resources may lead to dilution of control, in case money is raised by issuing public equity. Internal financing on the other hand does not lead to any dilution of control. Hence, if management and shareholders are averse to dilution of control, then firms prefer to rely more on retained earnings. Thus, such companies may adopt, the conservative dividend policy.
7. **Taxes:** In India dividend income for the individuals is free, however capital gains are taxable. Thus, in that case shareholders who are in high tax bracket may prefer dividend income rather than capital gains. However, if tax on dividends is viewed from point of view of corporates, they have to pay dividend tax. Thus, this may influence the companies' dividend policy.

Summary

Management of earnings means how the earnings of a firm are determined and how they are utilized or appropriated or allocated or distributed. Management of earnings policy must maximise value of the firm, there by maximise benefits to its owners.

The term 'dividend' refers to that portion of company's net earnings that is paid out to the equity shareholders (not for preference shareholders, since they are entitled to have a fixed rate of dividend).

Dividend policy of a firm decides the portion of earnings to be paid as dividends to ordinary shareholders and what portion is ploughed back in the firm for investment purpose. The alternative use of net earnings or net profit dividends and retained earnings are competitive and conflicting, since it affects the value of the firm.

There are different types of dividend policies: stable dividend policy, here "stability" refers to the consistency or lack of variability in the stream of dividend payments. In more precise terms, stable dividend means payment of a certain minimum amount of dividend regularly. There are three distinct forms of stability, they are (a) Constant dividend per share, (b) Constant payout ratio, and (c) Stable rupee dividend plus extra dividend.

Test Yourself

1. What is dividend?
2. What is property dividend?
3. What is stock dividend?
4. What is bonus share?
5. What is dividend policy?
6. Name different types of dividend policies.

7. What is scrip dividend?
8. What do you understand by Bond dividend?
9. What is stable dividend policy? Discuss the different forms of stable dividend policy.
10. List the advantages and disadvantages of stock dividend.
11. 'Payment of dividend involves legal considerations' - Discuss.
12. 'Stock dividends are unfair to those stockholders who desire cash income', comment.
13. Briefly discuss the different types of dividend policies.
14. Explain the factors that influence the dividend policy of a company.
15. Briefly discuss the legal and procedural aspects of dividends according to company's law.
16. Write short notes on:
 - (a) Stock dividend,
 - (b) Stable dividend policy
 - (c) Property dividend.
17. Distinguish between Scrip dividend and Bond dividend.